The Cost of Defence
ASPI Defence Budget Brief 2008-09

Sixty-one million, nine hundred & ninety-five thousand, four hundred and twenty-eight dollars & ninety-six cents per day.

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Note on title:

The figure of $61,995,428.96 represents one three-hundred-and-sixty-fifth of reported Total Defence Funding for financial year 2008–09. This does not include funds appropriated to the Defence Housing Authority, those administered by Defence for military superannuation schemes and housing support services, nor the additional funds provided directly to the Defence Materiel Organisation.

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EXECUTIVE DIRECTOR'S INTRODUCTION

This is ASPI's seventh annual Defence Budget Brief. Our aim remains to inform discussion and scrutiny of the Defence budget and the policy choices it entails.

As has been the custom in the past, we explore new areas in this year's Brief. Two new sections have been added; *Delivering Capability,* which explores Defence's capability planning and acquisition activities, and *Defence Funding,* which looks at the short and long term funding issues facing Defence. In addition, we have expanded the usually short discussion of Defence management and efficiency into a larger one focused entirely on *efficiency.*

A number of people have contributed to the preparation of this Brief including ASPI interns Ross Allen and Brendan Johansen, and staff members Andrew Davies, Justin Tim and Raspal Khosa. Fortunately, Ms Karla Bogart once again provided invaluable assistance by preparing the explanation of Defence's financial statements – a task of some complexity. The not inconsiderable task of preparing the document for publication has been ably taken care of by Janice Johnson and Renee Kirkham.

And our colleagues from the Australian Defence Magazine have again done a great job of capturing informative snapshots of twenty selected Defence projects. Many others have helped by providing comments, offering advice, and checking facts. Our thanks go out to them all.

Also, Defence was kind enough to look over a preliminary draft of this Brief and provide valuable comments. This helped clarify some important points and resulted in improved accuracy in many areas. Of course this does not in any way imply that Defence endorses this document or even supports its conclusions.

My colleague Dr Mark Thomson, who is the Manager of ASPI's Budget and Management Program, has once again pulled together the Brief in the short time available. For this I extend my sincere thanks. As always, responsibility for the judgements contained herein lie with Dr Thomson and me alone.

Lastly we should acknowledge that we at ASPI are not disinterested observers of the Defence budget. Our funding from government is provided through Defence at the rate of seven thousand two hundred and twenty six dollars and twenty-three cents ($7926.23) per day. Details can be found in our 2006-07 Annual Report.

Peter Abigail
Executive Director

EXECUTIVE SUMMARY

Defence awoke from the Howard years with a throbbing hangover. Despite eight years of very generous funding, the like of which had not been seen since the 1960s, Defence's medium to longer term budget situation looked dire. Billions of dollars worth of new equipment was soon to arrive without the funding to crew and operate it, and future equipment purchases were going to cost billions of dollars more than initially projected. Unless more money was found—lots more money—the defence force would have to be cut.

Such was the situation when, earlier this year, Defence embarked on a savings program to free up $10 billion over the forthcoming decade to help make means and ends meet. Then a very different picture emerged with the budget. To start with, any suggestion of near-term financial pressure was swept away when Defence revealed a projected underspend for this financial year of $812 million (on top of $440 million worth of capital investment that was deferred back in February).

At the same time, the arcane economic parameter used to maintain the buying power of the Defence dollar—the implicit non-farm GDP deflator—spiked to 6.25% and delivered an additional $11.6 billion to Defence across the forthcoming decade, including $939 million for next year. Given that there is no reason to think that the cost of delivering defence capability has risen as precipitously as the index, Defence had received a massive windfall.

Defence, or rather the government, now faced a tricky problem. Irrespective of whether the chronic longer-term funding situation was fixed or not; unless something was done immediately, Defence would have an acute case of overfunding next year.

The radical surgery set out in the budget is as follows; next year Defence has to cover the $1 billion cost of operational deployments from within its own resources, deliver $77 million worth of unfunded new initiatives and defer $191 million of spending until next decade. For details of how these aggregate chunks of the budget come together, see Section 2.2.2 of this Brief.

In addition, due to mounting delays in major acquisition projects, $2.3 billion of planned investment has been deferred into the future from the next four years, including $1 billion that was planned for next year. It is important to recognise that this latter move was a response to project underperformance rather than government penny-pinching. If it had been thought possible for the money to be spent and the equipment delivered, the funding would have remained.

In any case, the impact on the budget bottom line is the same. Defence will contribute more than $2 billion to the government's surplus next year as a result of deferred spending and absorbed costs announced in this budget.

As a result of the additions and subtractions in funding for 2008-09, Defence will have had to find $477 million worth of savings to cover the absorbed costs and deferrals planned for next year. Of this, $191 million of delayed spending will be achieved by deferring purchases of various sorts to beyond next year (not including major investment items). Of the remainder, as near as we can estimate, around $196

million will come from improved efficiency in how Defence does its business, while $91 million represents cuts in areas like minor acquisitions, IT projects, capital facilities and sustainment spending that will not be made up for in the future. As best we can judge, once the unspent funds and generous indexation are taken into account, it looks as though Defence will not be under too much duress next year. A detailed analysis of the funding situation appears in Section 4, including a proposal for a more realistic regime of future indexation.

How much money will Defence get?

As a result of the budget, Defence funding for 2008-09 will be… well, that's a good question that takes some answering.

Lets begin with what Defence describes as the 'most common way of presenting the Defence budget'; *Total Defence Funding*. In 2008-09 this will amount to $22.7 billion, an increase of $1.5 billion on the figure for 2007-08 but representing a real increase of only 0.8%. Nonetheless, across the next four years *Total Defence Funding* will rise by an average of 4% per annum.

Unfortunately *Total Defence Funding* is a very poor surrogate for how much money is being spent on defence, or even by Defence. For one thing, it includes around $300 million which Defence transfers to its acquisition agency, the Defence Material Organisation (DMO), which DMO dutifully transfers back to Defence to pay for, among other things, the military personnel it uses. This practice is harmless enough, except that this double shuffle ends up being counted twice in Total Defence Funding.

Then there are the unspent funds from the payments that Defence makes to DMO that have been accumulating in what's called the DMO 'special account'. Even though the money is not spent, it gets counted in *Total Defence Funding* anyway. And we are not talking loose change; more than $978 million has gone this route in the past three years. Confused yet?

As best we can estimate, the total amount of taxpayers dollars planned to be expended on defence in 2008-09, is $22.1 billion. This is an increase of $2.1 billion on the previous year, representing 3.9% real growth. Across the next four years what we have labelled *Net Defence Spending* will rise by an average of 4.9%. For more on how to measure spending on defence see Section 1.5.

Irrespective of how you choose to measure the Defence budget, as a share of GDP Australia will devote roughly 1.8% in 2008-09; although defence spending has been increasing, Australia's economic growth has been growing apace. If you are interested in the nexus between defence and economics see Sections 1.2 and 5.

Continuing deployment and new measures

Having dealt with the big numbers, we now turn to the details—of which there are not many. In many respects this year's budget is a holding move pending the outcome of the White Paper. The largest items are deployment costs—over the next three years another $702 million will be spent in Afghanistan, $268 million in Iraq and $193 million in East Timor. This will bring the total cost of operations in Afghanistan and

Iraq to $2.1 billion and $2.3 billion respectively. The cost of past and present deployments is further explored in Section 6.

The remaining measures in the budget are small and unexceptional. Among the larger of them is $102 million to implement the US-Australia defence trade cooperation treaty, $58 million for enhanced counter terrorism support, and $24 million for improved intelligence capabilities, all over four years. More details of budget measures can be found in Section 2.2.2.

The good news about personnel

There was some very good news in this year's budget. After struggling to maintain its size, let alone grow, for several years, the ADF has posted strong personnel numbers for the second year in a row. Army is up by 1,141 people, Air Force by 319 and Navy by 192 compared with last year. This is a credible achievement given the very tight labour market that the defence force has to compete in. There is no doubt the revitalisation of defence force recruiting and the various retention initiatives put in place over the past twenty-four months have made this possible. Of course, problems remain in particular skills categories and rank levels that will take a while to fix given the time needed to train and develop military personnel.

In the meantime, and consistent with this year's favourable results, the targets for the growth of the permanent force have been set ambitiously; from a strength of 53,156 today, the defence force will grow to 54,747 next year and 57,506 in four years time. Civilian numbers, on the other hand, are planned to fall from 20,795 this year to around 20,000 across the next four years (having risen by 1,328 positions in the past twelve months). A fuller discussion of personnel trends appears in Section 2.2.5 of this Brief.

The bad news about equipment

But while the defence force is finally getting the personnel it needs, the delivery of equipment continues to fall behind schedule. The $2.3 billion dollars worth of deferrals announced in this budget are just the latest instalment of more than $5.6 billion worth of delays that have arisen in the past eighteen months (including $440 million of deferrals within DMO that are not reflected in Defence's figures).

While industry capacity is no doubt an important factor causing delay in many projects, our analysis in Section 7 argues that delays correlate strongly with several risk factors including; Australian unique specifications, software and systems integration intensity, high levels of developmental work, and the duplication of production facilities in Australia. Conversely, recent military-off-the-shelf acquisitions have delivered effective capability into the hands of the defence force quickly.

Consistent with this, among the several recommendations in Section 7 for improving defence capability planning and procurement, we suggest making military-off-the-shelf acquisitions the default option for Australian defence purchases, with any exceptions to be specifically justified and costed.

The continuing need for efficiency

Even given the accumulating delays to the delivery of new capability and the extra $11.6 billion provided by extraordinary indexation in the budget, it appears that cost pressures are likely in the years ahead—if only because the persistent pattern is for Defence to substantially understate the cost of acquiring and operating new equipment. No evidence has emerged to suggest that this trend will not continue.

For this reason, the $10 billion dollar decade-long efficiency program is likely to be a critical factor in helping make present plans for the defence force affordable in the medium term and sustainable in the long term. But even for a colossus like Defence, a billion dollars a year is a lot of money.

Back in 2003, the last time that Defence was short of money, the decision was made to scale back the force structure rather than try to deliver capability more efficiently. It was then that two frigates were retired early and the withdrawal date for the F-111 fleet was brought forward.

Not wanting this to happen again, we have included a discussion of defence efficiency in Section 3, including suggestions on how to go about making the savings. It's been more than a decade since the last serious efficiency program in Defence, and since that time they've had eight years of generous funding, beginning in late 1999 and accelerating through the post-9/11 epoch. There is little doubt that Defence has some fat to shed as a result. Management structures have multiplied, executive and middle-manager positions have increased dramatically, and costs have grown in every part of the organisation—arguably beyond that reflected by increased tempo.

Nonetheless, no one should think that making savings of $1 billion will be easy or painless. Generating efficiencies without cutting the delivery of capability will take a targeted program that clears out the accreted layers of management and command to create an organisation with direct and clear accountabilities that allows managers and commanders to be held responsible for delivering cost effective defence capability.

This will not be achieved by salami slicing the budget or by the piecemeal measures that have been the stock in trade of Defence's magic pudding of administrative savings in recent years. In part, it will likely demand taking on some of the long standing 'too-hard' issues, like consolidating Defence's sprawling geographical disposition, further outsourcing of military support activities, and greater reliance on the Reserve component of the defence force.

To drive ongoing efficiency, there will also need to be a regime of financial and performance benchmarking across all areas of the organisation to allow productivity to be measured. In the absence of such a scheme, there is no guarantee that performance will improve or that the priorities will be addressed. We will instead continue to have a defence force that produces marching bands and ceremonial guards but cannot put all its submarines to sea.

SECTION 1 – BACKGROUND

1.1 Strategic Context for the Budget

Time and time again in the years following the attacks of 9/11, immediate events overshadowed future concerns. But as the dust settles on the frenetic events of the recent past, it's time to lengthen our horizon and survey Australia's long-term strategic prospects. What is it that we have to worry about in the future that justifies the planned growth in the defence budget?

Notwithstanding the series of deployments that have kept the defence force busy in recent years, in terms of the big picture Australia is sitting pretty; the Asia-Pacific has not experienced major interstate conflict for more than three decades, our alliance with the United States is arguably as strong as at any time since WWII, our relations with Japan and China are more cooperative than at anytime in history, and many obstacles have been overcome to see our relationship with Indonesia improved. Compared with the turmoil of the twentieth century, these are good times indeed.

But looking to the future, Australia is caught between two potentially adverse trends; a near region with high population growth and limited economic prospects, and an East Asian neighbourhood where rapid economic growth is changing long-established great power relations. The former has the potential to erode our local security while the latter, like it or not, will eventually reshape the strategic underpinnings of our region.

Beginning close to home; over the past decade several neighbouring countries have suffered from internal conflict and instability. In addition to a precautionary deployment to waters off Fiji, Australian troops have operated in East Timor, Papua New Guinea, Tonga and Solomon Islands. Although the situation in these countries does not bear comparison with the Balkans or sub-Saharan Africa, the fact remains that human security is declining in the smaller nations around us.

Despite the longstanding consensus that stability in these countries depends on building effective state institutions and improving economic capacity, progress has been limited on both fronts. For whatever reason, our efforts have fallen short of making anything more than modest gains in limited areas. In the absence of a renewed and deeper commitment, and perhaps not even then, it's more than likely that our soldiers and police will continue to be busy putting a lid on unrest in our neighbourhood for some time to come. And it could get worse. The populations of our least developed neighbours—East Timor, Papua New Guinea and Solomon Islands—are projected to rise to more than twice year 2000 levels within the next three decades. When coupled with already limited economic prospects, this rapid growth in population risks creating a bulge of underemployed youth. As a result, whatever problems we have today will probably grow in both scale and intensity.

While the humanitarian aspects of an unstable local region are a serious concern in and of themselves, there are less altruistic considerations. Poor governance and fragile policing can leave these countries prone to transnational crime and influence from extra-regional countries whose interests might be at odds to ours. For these reasons

it's simply poor strategic housekeeping to accept instability on our periphery if it can be prevented.

Beyond our immediate region, in Southeast Asia, the situation is better than might have been anticipated not so many years ago. Interstate conflict within the region is arguably as distant a prospect as it has ever been, we have made good progress in establishing security cooperation with the key players in the region on a variety of levels, and our relationship with Indonesia has improved, though more work remains, at the same time as democracy has taken root in that country.

Fortunately for the countries of Southeast Asia, stability has brought both greater prosperity and the potential for sustained economic growth. Inevitably, some of this wealth is feeding military modernization programs including in important areas like submarines and combat aircraft. For Australia, which has traditionally planned its defence force on the basis of regional military capabilities, the bar is being raised. However, given Australia's strong economic performance and favourable prospects, we can maintain a capability advantage for some time yet if we choose to do so.

In East Asia proper we face an evolving situation over which we have little or no control. The rapid economic rise of China, and to a lesser extent India, is reshaping a strategic landscape that has been effectively static since the early 1970s. At the risk of invoking an overly lurid view of the future, there are three factors to note.

First, in stark contrast to Western Europe where countries long ago set aside their differences, unresolved historical grievances and simmering nationalism underlie relations between the major powers of North Asia—most especially between Japan and China. And even though the United States is at pains to deny a policy of containing China, it certainly wants to limit the Middle Kingdom's options. And actions speak louder than words; strategic competition is already afoot in North Asia today.

Second, even the most pessimistic projections of economic growth in China foretell its eventual ascendancy even over the United States. Irrespective of how long it takes China to develop an economy commensurate with that of a true great power, the sobering fact is that the ability of the United States to maintain benign hegemony over the strategic affairs of North Asia is in slow decline.

Third, Taiwan remains a potentially grave flashpoint as do, though to a lesser extent, the several unresolved territorial disputes in the seas of North Asia and, of course, North Korea. Although the world has lived with these chronic problems for more than half a century, it remains to be seen how things play out as the relative strengths of nations shift in the years ahead.

Of course, none of this preordains conflict or crisis. Perhaps globalization will neuter the chauvinistic impulses of nations, and economic cooperation will take precedence over strategic competition. If so, the future could well lack the jolting discontinuities that have marked the affairs of nations for as far back as we can see. But to assume so would be an act of considerable optimism; unless we are confident enough to pronounce the end of history in the Asia Pacific, we need to be ready to deal with

circumstances very different from those we enjoy today or that we might extrapolate from recent experience.

And even if it is possible to chart a peaceful trajectory for the changing strategic landscape in East Asia, the best we can hope for is that the United States will be one of several powers mediating security in our region. The stark reality is that, in the long-term, we have no way to be sure that US engagement in Asia will prove to be any more enduring than that of the United Kingdom last century.

Such a prospect, though dire, is sufficiently distant to have been given scant regard amid the turmoil of recent years. At times it has seemed that all that mattered post-9/11 was counter-terrorism and the attendant imperatives to eliminate sources of WMD and deny safe havens in failed states. The longer-term implications of this so-called new security agenda for Australia are usefully explored in terms of the direct and indirect consequences.

The direct effects are manifest. From 2001 to 2005, terrorist attacks on New York, Bali, Jakarta and London accounted for the loss of more than one-hundred Australian lives. Although improved policing, intelligence and international cooperation have halted successful attacks in the West over the past two years, plots continue to be uncovered. In the longer term, the question is how great a threat does 'globalized Islamist terrorism' pose? Are we observing something like the anarchist movement of a century ago which, despite a bloody rampage, never managed to gain any real political or strategic momentum, or could the threads of globalization support the emergence of a threat of an entirely new character that is more lethal and enduring—such as the Bolshevik takeover of Russia in 1917. So far, concrete evidence for the latter proposition is sparse, as is demonstrated by the less than complete response the west has mounted.

Be that as it may, there are still the indirect consequences of 9/11 to sort through. For a close US ally like Australia the past several years have been demanding. Not one, but two invasions, each followed by a stabilization and nation building operation that proved more difficult than anticipated. Yet, even if the United States fails to learn the obvious lesson from Iraq and repeats the errors of the recent past, it would be a mistake to allow recent events to dominate thinking about the role, structure and funding of our defence force. Not because coalition operations are unimportant or unlikely to recur, but because our standing peacetime force has proved adequate to the task of coalition operations with only modest augmentation. Our relatively small but proficient contingents have met alliance expectations; and although the tempo of deployments has demanded agile management within the defence force, even this will be alleviated once the planned expansion of the Army is complete.

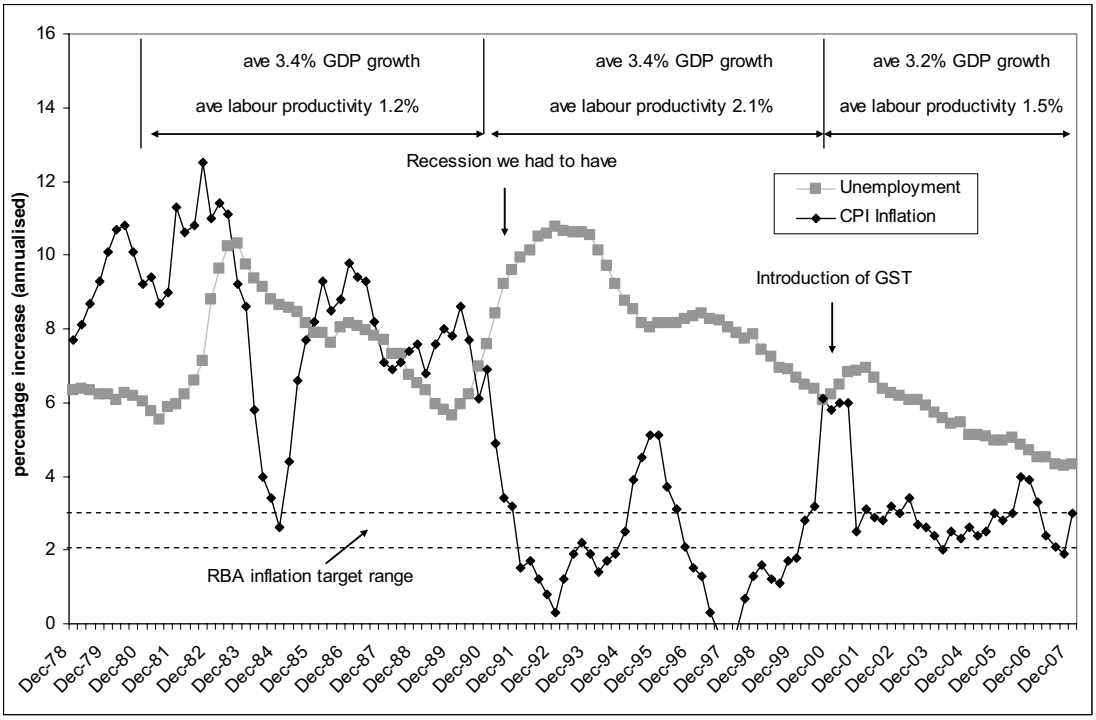
It is well to conclude our brief survey of Australia's strategic prospects on this positive note. Strategic fortune telling can too easily dwell disproportionately on those prospects that are as dire as they are, hopefully, unlikely. Yet it is it precisely such dark prospects that justify the diversion of around two per cent of the nation's economic output to defence each year; because if the future only holds trials and tribulations like those of recent years, we could meet such challenges with a defence budget much closer to one than two percent of GDP.

1.2 Economic Context for the Budget

Since the early 1990s, Australia has enjoyed relatively favourable economic conditions, Figure 1.2.1. Three things stand out:

- Economic growth has been healthy, averaging 3.4% during the 1990s and 3.2% this decade despite a fall in labour productivity growth.
- Unemployment has fallen from a peak of 10.8% in late 1992 to a thirty-four year low of 4.25% (at the same time, workforce participation has edged up from 62.7% to 65.2%).
- Following the 'recession we had to have' in 1991-92, the long-term rate of inflation has effectively fallen to half what it was in the 1970s and 1980s.

Figure 1.2.1: Australian economic performance 1978 to 2007



Source: RBA, ABS and Treasury statistics

The strong economic growth of recent years allowed the previous government to simultaneously increase spending and cut taxes. Despite the fact that the GST ensured that total tax revenues continued to rise as a share of GDP, it was a happy time all around. Few areas were happier than Defence, which saw its funding grow more or less in tandem with GDP from 1999 onwards.

But nothing lasts forever. From around 2003 when unemployment fell below 5%, Australia has—consciously or not—been conducting an empirical experiment in economics. The goal has been to find out the level of unemployment at which inflation begins to increase beyond comfortable bounds. For our present circumstances it looks to be a bit above 4%. There was plenty of forewarning of

this—reports of shortages of skilled labour have been increasing for at least the past three years.

To account for the tightening in the labour market and other pressures on inflation, the RBA has been increasing interest rates since 2001. The increases gathered pace around mid-2006 when the unemployment rate fell below 5% for the first time since Malcolm Fraser was Prime Minister, Table 1.2.1. At present, the RBA cash target rate stands at 7.25%, the highest level since June 1996.

Table 1.2.1: RBA target cash rate 2000 to 2008

Date	Aug 2000	Feb 2001	Mar 2001	Apr 2001	Sep 2001	Nov 2003	Dec 2003	Mar 2005	May 2006	Nov 2006	Aug 2007	Nov 2007	Feb 2008	Mar 2008
%	6.25	5.75	5.5.0	5.00	4.85	5.00	5.25	5.5.0	5.75	6.00	6.50	6.75	7.00	7.25

Source: RBA.

Nonetheless, inflation has continued to rise. The unadjusted CPI for the March quarter was 4.2% annualised while the underlying rate (which is what the RBA worries about) hit 4.4%. When announcing the latest rate rise in April this year, the RBA Governor said that inflation is likely to remain high in the short term but should decline over time 'provided demand slows as expected'.

The government is taking no chances and has moved to put downward pressure on interest rates in the budget. This strategy has two parts. First, steps have been taken to build capacity in the economy for the longer-term. Second, to suppress demand in the short-term, the government is withholding funds from the economy through a high surplus.

For our purposes it is the latter step that is of interest. Table 1.2.2 compares the fiscal balance from the last to the present budget. The difference may seem small, but it's thought in present circumstances that every additional $3 billion of surplus alleviates the need for a 0.25% hike in interest rates.

Table 1.2.2: Budget aggregates 2007-08 and 2998-09 Budgets (nominal dollars)

		06-07	07-08	08-09	09-10	10-11	11-12
Budget 2007-08	**Underlying cash balance ($b)**	**17.2**	**10.6**	**12.7**	**13.8**	**12.4**	-
	Per cent of GDP	1.6	1.0	1.1	1.2	1.0	-
	Fiscal balance ($b)	**17.2**	**10.0**	**11.9**	**14.1**	**13.7**	-
	Per cent of GDP	1.6	0.9	1.0	1.2	1.1	-
Budget 2008-09	Underlying cash balance ($b)	**17.2**	**16.8**	**21.7**	**19.7**	**19.0**	**18.9**
	Per cent of GDP	1.6	1.5	1.8	1.5	1.4	1.3
	Fiscal balance ($b)	**17.2**	**20.4**	**23.1**	**22.4**	**23.3**	**22.6**
	Per cent of GDP	1.6	1.8	1.9	1.7	1.7	1.6

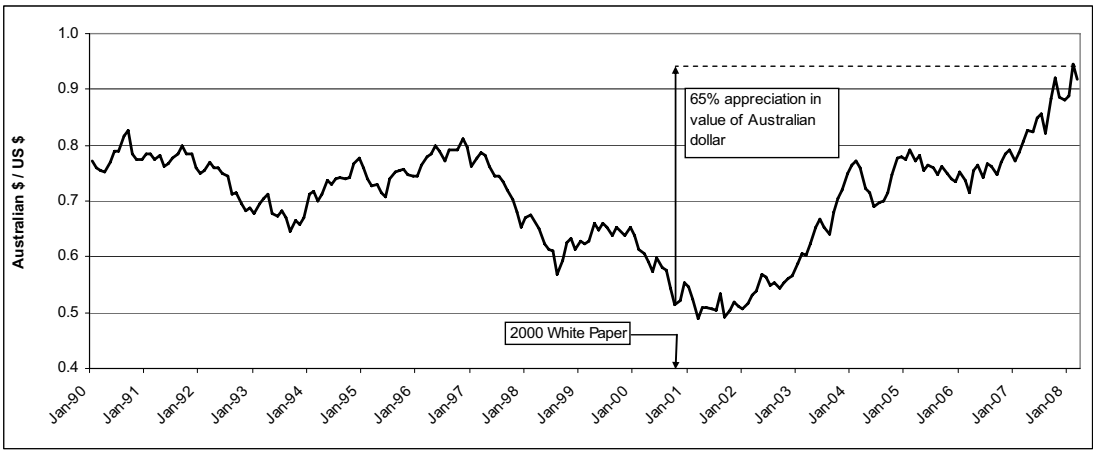
Source: Budget Papers No. 1, 2007-08 and 2008-09

Given that the increased surpluses have been delivered in spite of substantial tax cuts—not all of which were planned at the time of the 2007-08 budget—the government has had to reduce spending in a number of areas. And not surprisingly Defence has been asked to do its part.

According to Treasury estimates, inflation will moderate in 2008-09 to 3.5% and return to the RBA target band thereafter. The risk is not so much that the combination of fiscal stringency and tight monetary policy will fail, but rather that it will be too effective. The danger is that the economy will slow just as one or more adverse factors in the global economy and financial markets hit home. Given the lag effects inherent in monetary and especially fiscal policy, it will be some time before we can be sure how things are going.

Defence spends something like $5 billion a year offshore (no official figure is available) mostly in contracts written in US dollars. And while Defence is insulated from fluctuations on a non-win no-loss basis with Finance, the government and ultimately the taxpayer feels the pain or gain. Fortunately, since the 2000 White Paper the value of the Australia dollar has appreciated by 65%, thereby reducing the cost of imported materiel considerably.

Figure 1.2.2: Foreign exchange



Source: RBA

The final economic factor that's important to Defence is the awkwardly named *Implicit Non-Farm GDP Deflator* (*nfgdpd*) to which the Defence budget is indexed in an attempt to maintain its buying power. This is separate from and in addition to the adjustments made for foreign exchange and the 2% to 2.5% additional funding provided to cover rising personnel costs. Table 1.2.3 details actual and projected changes to the *nfgdpd* and CPI.

Table 1.2.3: Changes to the Implicit Non-Farm GDP Deflator and CPI

	actual							budget and estimated			
	01-02	**02-03**	**03-04**	**04-05**	**05-06**	**06-07**	**07-08**	**08-09**	**09-10**	**10-11**	**11-12**
nfgdpd	2.1	2.6	4.0	3.9	4.8	4.8	4.0	6.25	1.5	1.0	2.2
CPI	2.9	3.1	2.4	2.4	3.2	2.9	4.0	3.5	3.0	2.5	2.5

Source: APH Library, RBA, ABS and Budget Papers

As we shall see, the fact that the INFGDPD is projected to hit 6.25% in 2008-09 has profound consequences for the Defence budget across the forthcoming decade. This would be reassuring if there was any reason to believe that the *nfgdpd* had something do with the underlying cost of delivering defence capability—but there is not. Defence just hit the jackpot.

1.3 Defence Organisation and Management

The Outcomes and Outputs Framework

The Defence budget is set out according to a framework of outcomes and outputs. This framework was introduced by the Commonwealth in 1999, and is applied to all Commonwealth agencies. It works like this:

- **Outcomes** are the results or benefits that the Commonwealth aims to deliver to the community through the work of its agencies. They are specified for each agency, and are meant to express the purpose or goal of each agency's activities.
- **Outputs** are the goods and services that each agency produces to achieve its outcomes.

Under the framework, the performance of agencies is measured to assess both how much output they are generating, and the extent to which that output is actually delivering the outcomes intended. So the aim is to show not only how much an agency is *doing*, but how much it is actually *achieving.*

The outcomes and outputs framework is not just an accounting device. It is intended to provide a structure for management decision-making and resource allocation throughout Commonwealth agencies. So the way the framework is applied in an agency like Defence should be very important to its management and performance.

The Defence Outcomes

As of this budget, Defence's Outcomes have been reduced from seven to just three:

Outcome 1: Australia's national interests are protected and advanced through the provision of military capabilities and the promotion of security and stability.

Outcome 2: Military operations and other tasks directed by Government to achieve the desired results.

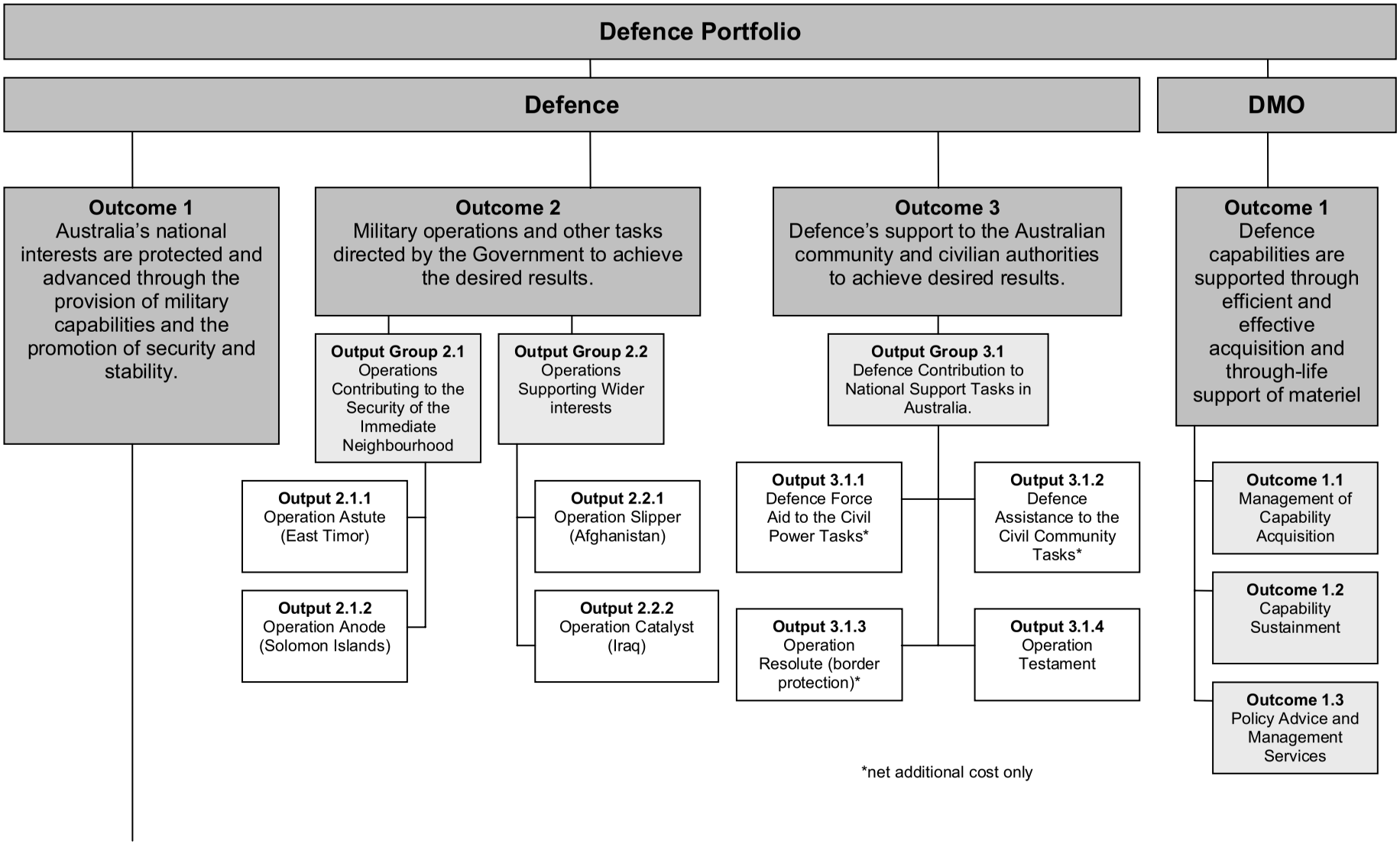
Outcome 3: Defence's support to the Australian community and civilian authorities achieves the desired results**.**

The Outputs that contribute to these three Outcomes are set out in Figure 1.3.1. The essential change is that the new Outputs are much more closely aligned with the actual organisational structure of Defence, as can be seen by comparison with the Defence 'wiring diagram' in Figure 1.3.3.

The new framework will provide greater visibility of resources consumption within the organisation. But this comes at the loss of knowing what it costs to deliver military capability, which is what the old framework attempted to do. Ultimately, what really matters in how much it costs to deliver ships, planes and battalions ready for deployment, not how much money is spent on health services, legal advice or personnel management. In a perfect world we would be told both.

In Section 2.5 of the brief we explore further the new Outcomes and Outputs framework including the level of resources provided for individual Outcomes and Outputs.

Figure 1.3.1: The new Defence Outcome-Output framework



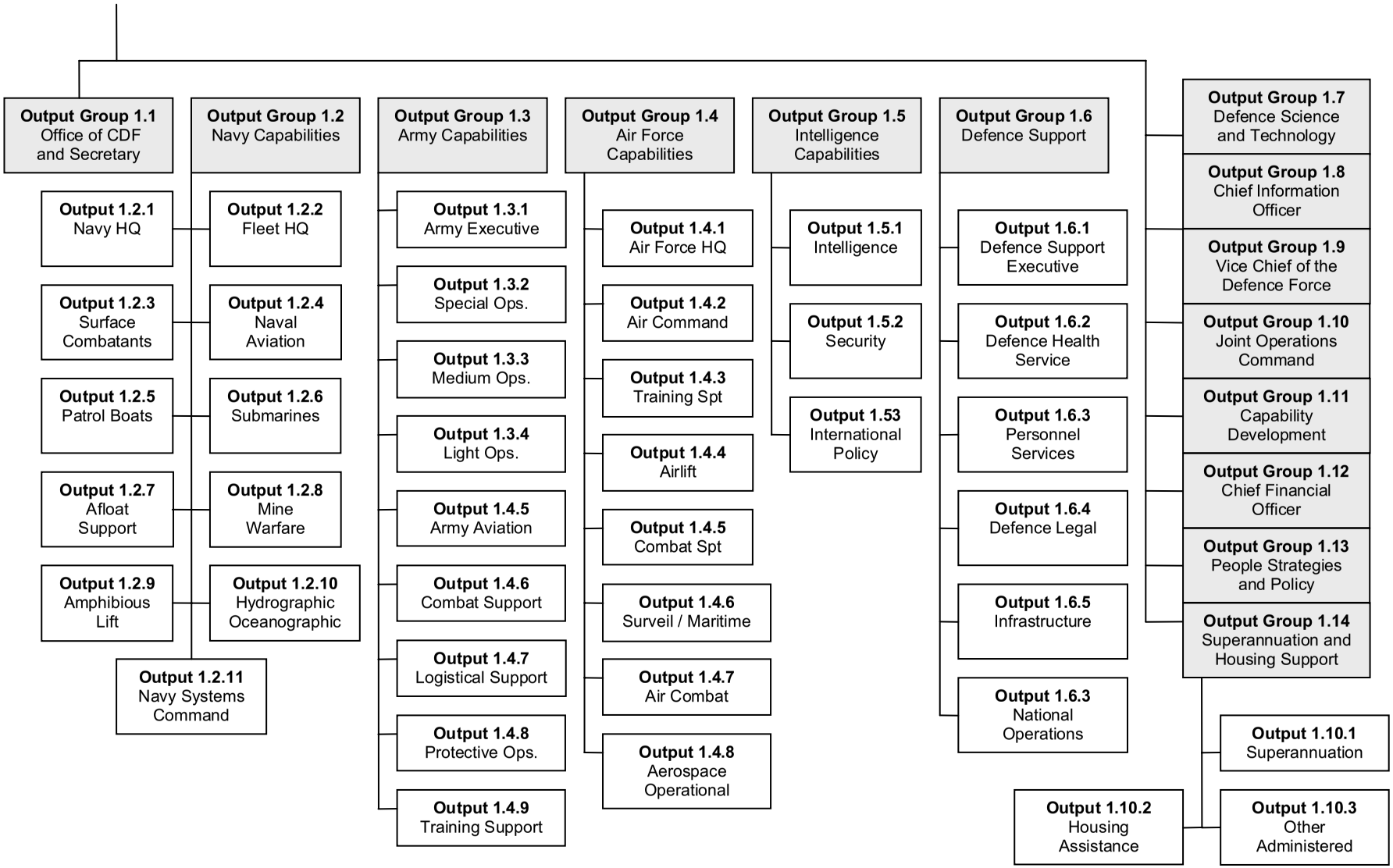
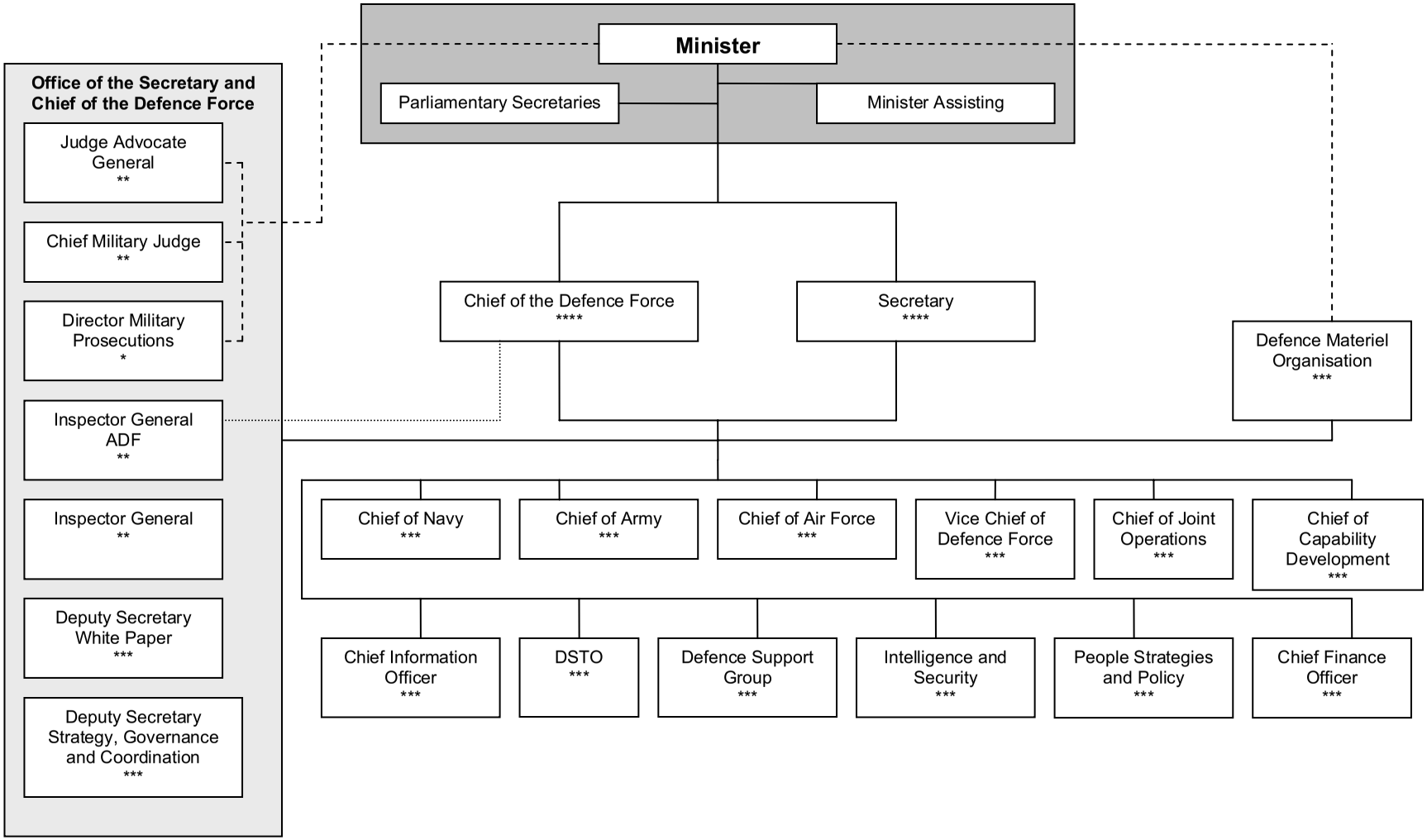

Output Group 1.1 Office of CDF and Secretary
Output 1.2.1 Navy HQ
Output 1.2.3 Surface Combatants
Output 1.2.5 Patrol Boats
Output 1.2.7 Afloat Support
Output 1.2.9 Amphibious Lift
Output 1.2.11 Navy Systems Command
Output Group 1.2 Navy Capabilities
Output 1.2.2 Fleet HQ
Output 1.2.4 Naval Aviation
Output 1.2.6 Submarines
Output 1.2.8 Mine Warfare
Output 1.2.10 Hydrographic Oceanographic
Output Group 1.3 Army Capabilities
Output 1.3.1 Army Executive
Output 1.3.2 Special Ops.
Output 1.3.3 Medium Ops.
Output 1.3.4 Light Ops.
Output 1.4.5 Army Aviation
Output 1.4.6 Combat Support
Output 1.4.7 Logistical Support
Output 1.4.8 Protective Ops.
Output 1.4.9 Training Support
Output Group 1.4 Air Force Capabilities
Output 1.4.1 Air Force HQ
Output 1.4.2 Air Command
Output 1.4.3 Training Spt
Output 1.4.4 Airlift
Output 1.4.5 Combat Spt
Output 1.4.6 Surveil / Maritime
Output 1.4.7 Air Combat
Output 1.4.8 Aerospace Operational
Output Group 1.5 Intelligence Capabilities
Output 1.5.1 Intelligence
Output 1.5.2 Security
Output 1.53 International Policy
Output Group 1.6 Defence Support
Output 1.6.1 Defence Support Executive
Output 1.6.2 Defence Health Service
Output 1.6.3 Personnel Services
Output 1.6.4 Defence Legal
Output 1.6.5 Infrastructure
Output 1.6.3 National Operations
Output Group 1.7 Defence Science and Technology
Output Group 1.8 Chief Information Officer
Output Group 1.9 Vice Chief of the Defence Force
Output Group 1.10 Joint Operations Command
Output Group 1.11 Capability Development
Output Group 1.12 Chief Financial Officer
Output Group 1.13 People Strategies and Policy
Output Group 1.14 Superannuation and Housing Support
Output 1.10.1 Superannuation
Output 1.10.2 Housing Assistance
Output 1.10.3 Other Administered

Figure 1.3.4: Defence organisational structure (as at May 2008)



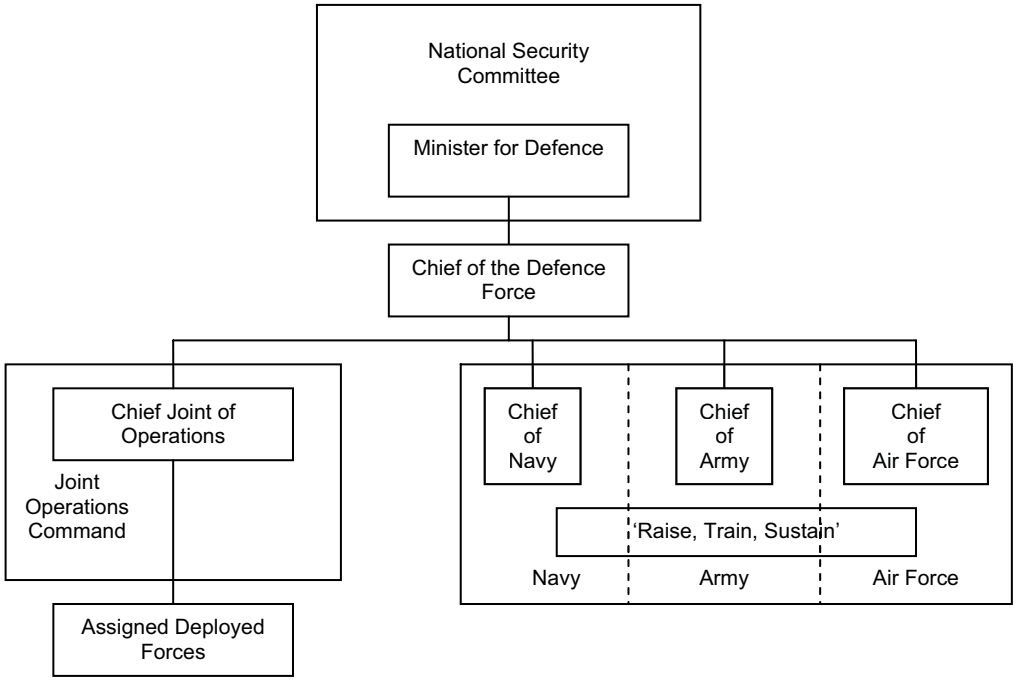
ADF command structure

It is important not to confuse the day-to-day management of the Department of Defence with the command of military operations. The former occurs through the diarchy and group/output arrangements discussed earlier. The latter is exercised through a formal command chain and dedicated headquarters structure. In this parallel arrangement, units are temporarily re-assigned from the Services to be commanded on operations and exercises as required.

The ADF is currently undergoing a phased transition to an integrated model of command and control. This new structure separates the command of operations from the Raise/Train/Sustain functions of the single Services (Figure 1.2.1 refers). Since January 2007, ADF operations have been controlled through a single joint headquarters, designated the Headquarters Joint Operations Command (HQJOC).

A co-located HQJOC facility is being constructed near Bungendore, NSW. It is to be staffed by up to 750 personnel and will be operational by the end of 2008. Until that time, control of operations, specified exercises and other activity will occur from existing headquarters facilities in Canberra and Sydney, with support from Joint Logistics Command in Melbourne.

Figure 1.3.2: ADF command structure



1.4 National Security Spending

The events of 9/11 prompted the recognition that no single agency has the capacity, or range of capabilities, necessary to ensure our security. The threat of terrorism within Australia, and to Australians abroad, has forced a whole-of-government approach to national security at the Federal level. Even beyond the threat of terrorism, it is increasingly recognised that our national security interests are best served by a coordinated approach that uses all the leavers available to government.

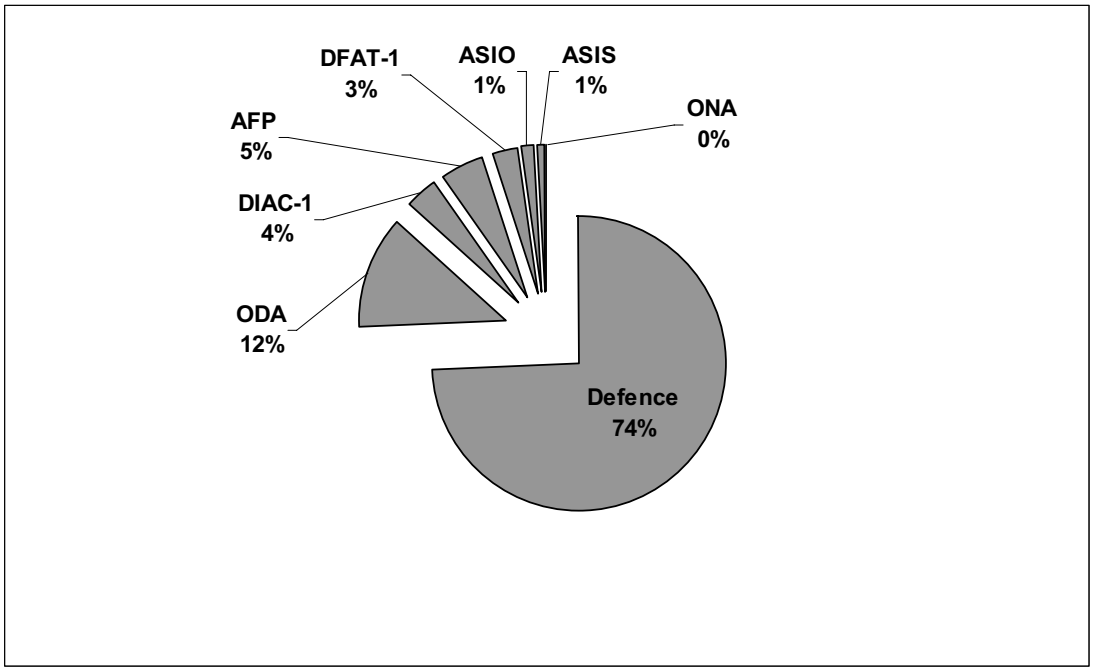
It's beyond the scope of this Defence budget brief to analyse and explain the budgets of all the agencies that contribute to national security. Instead, we'll content ourselves with a broad-brush description of how much is spent in key agencies. If nothing else, it provides a useful yardstick against which we can measure what's spent on defence. Unfortunately, because of the difficulty in finding data, our discussion excludes spending at the state and local levels.

A number of Federal agencies can make a credible claim to delivering some part of our national security. In selecting agencies, we have taken a liberal view of what constitutes national security, although we have excluded funding for Outcomes within agencies that are clearly unrelated. Here's our list in alphabetical order, which cannot be claimed as exhaustive:

- Australian Agency for International Development (AusAID)
- Australian Federal Police (AFP)
- Australian Security Intelligence Organisation (ASIO)
- Australian Secret Intelligence Service (ASIS)
- Department of Defence (DOD)
- Department of Foreign Affairs and Trade (Outcome 1: *Australia's national interests protected and advanced through contributions to international security, national economic and trade performance and global co-operation*.) (DFAT-1)
- Department of Immigration and Citizenship (Outcome 1: *Contributing to Australia's society and its economic advancement through the lawful and orderly entry and stay of people*.) (DIAC-1)
- Office of National Assessments (ONA)

Clearly, some of the activities of the listed agencies (even with the restriction to specific Outcomes) go beyond national security. Conversely, other agencies that have been left out, like the Australian Customs Service, make a significant contribution to national security within their broader range of responsibilities. Such is the challenge of dealing with the aggregated data available in the budget papers. Figure 1.4.1 compares the appropriations allocated to each of the aforementioned agencies in 2008-09. For AusAID, rather then use the appropriation we have listed Australia's total Overseas Development Aid for the year.

Figure 1.4.1: Federal National Security Spending



Source: 2008-09 Budget Paper No. 4

At the risk of stating the obvious, Defence dwarfs all other Federal areas of spending that contribute in some way to national security. This is despite the fact that many agencies (in particular, ASIS, ASIO and ONA) have received large boosts to their funding post 9/11 as Table 1.4.1 below shows. Because changes in outputs and the presentation of budget figures make it difficult to extract precisely comparable figure from year to year, the numbers should be used with caution—though the broad trends are clear.

Table 1.4.1: Federal National Security Appropriations 2001-02 to 2008-09

	2001-02 $ m	2002-03 $ m	2003-04 $ m	2004-05 $ m	2005-06 $ m	2006-07 $ m	2007-08 $ m	2008-09 $m	7-year % Increase
Defence	13,725	14,635	15,286	16,156	17,254	19,001	20,377	21,841	59%
ODA	1,755	1,831	2,019	2,198	2,698	3,018	3,172	3,660	109%
DIAC-1	829	814	866	810	907	1,037	1,274	1,050	27%
AFP	523	391	609	777	968	885	1,310	1,363	161%
DFAT-1	660	701	709	774	717	740	822	869	32%
ASIO	69	90	98	161	187	341	450	423	514%
ASIS	54	59	80	89	100	131	162	181	236%
ONA	7	8	11	18	28	28	35	38	441%

Source: 2002-03 to 2008-09 Budget Paper No. 4 – Schedule 1 & 2

Post 9/11 spending on security

For seven budgets in a row, spending on Australia's security in the areas of intelligence, counter-terrorism response, protective measures and regional cooperation on security has increased, as shown in Table 1.4.2. In this budget, further measures were put in place. Unfortunately, the labelling of initiatives in the 2008-09 Budget does not facilitate a breakdown in terms of the categories used in the past.

Table 1.4.2: The cost of 9/11 to the Australian Government 2001-2011 - part 1 ($m)

	1	2	3	4	5	6	7	8	9	10	11	Total
	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	
2002-03												
Aviation Security	20.7	40.2	40.9	47.3	41.1							190.2
Identification of Threats	6.9	110.9	117.7	136	154.5							526
Capacity to Respond	31.9	113.7	82.4	66.4	70.8							365.2
Capital	70.9	26.8	50.2	54.3	24.4							226.6
sub total												**1308**
estimated rollover						290.8						**290.8**
2003-04												
MYEFO		103										**103**
Infrastructure			43.2	24.8	11.7	12						91.7
Protective Guarding			60.1	41	5	5.2						111.3
Enhanced Intelligence			73.2	16.4	14.7	14.6						118.9
sub total		28.7										**350.6**
rollover							364	364	364	364	364	**1820**
2004-05												
MYEFO			143									**143**
Intelligence				65.5	68.1	66.5	69.9					270
Response Capability				24.4	5.5	5.3	5					40.2
Protective Security			46.1	73.1	30.5	32.5	25.1					207.3
Securing our Borders				51.9	35.6	30.1	32.7					150.3
Regional Coop				29.3	19.6	19.3	18.8					87
sub total												**754.8**
estimated rollover								151.5	151.5	151.5	151.5	**606**
2005-06												
Intelligence					33.1	49.5	90.3	66.3				239.2
response capability					5.7	7.9	6.9	5.6				26.1
Protective security					146.4	214.1	93.3	67.7				521.5
Securing our borders					24.5	42.1	25.8	19.9				112.3
Regional Coop					16.4	12.1	16.7	15				60.2
sub total												**959.3**
estimated rollover									174.5	174.5	174.5	**523.5**
MYEFO					324							**324**
2006-07												
Intelligence						163.2	179.9	175.7	213.2	176.3	176.3	1084.6
Incident Response						40.3	44.4	43.4	52.6			180.7
Protective Security						87.9	96.9	94.6	114.8			394.2
Border Protection						4	4.4	4.3	5.2			17.9
Regional Coop						18.9	20.8	20.3	24.6			84.6
sub total												**1,762**
estimated rollover										197.3	197.3	**394.6**
2007-08												
Intelligence							77.2	34.1	36	38		185.3
Incident Response							1.5	3.8	3.4	1.9		10.6
Protective Security							152	181	92	80.7		505.7
Sub total												**701.6**
estimated rollover											120.6	**120.6**
2008-09												
New Measures							11.8	46	22.2	24.5	60.4	164.9
Cancelled or Delayed							-9.3	-36.6	-9	-6	-5.4	-66.3
Capital Measures							1.3	131.8	42.5	1.4	7.5	184.5
Sub Total												**283.1**
Total ($ billion)	130.4	423.3	656.8	630.4	1032	1116	1329	1388	1287	1204	1247	**10,445**

Fortunately, the Australian Homeland Security Research Centre has produced an excellent summary of the domestic national security related initiatives in the budget; *2008-09 Federal Budget Briefing on Homeland Security Expenditure*. They calculate that the budget contained $349.4 million in new initiatives and $66.3 million in savings from cancelled or delayed initiatives across four years. This does not include initiatives that were funded from within agencies' existing budgets—and there are plenty of those in this year's inflation fighting budget—for which the absorbed costs are not available.

Aside from domestic security, we have fought one war as a direct result of 9/11 (Afghanistan), and arguably fought a second that would probably not have occurred without 9/11 (Iraq). As a consequence we have also provided development aid to both countries. The cost of these operations and the value of aid provided are detailed in Table 1.4.3.

Table 1.4.3: The cost of 9/11 to the Australian Government 2001-2011 - part 2 ($m)

	1	2	3	4	5	6	7	8	9	10	Total
	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	
Total of direct measures											10,445
Afghanistan Deployment	320	179	-5		91	223.3	623.2	618.9	81.1	2.9	2,134
Iraq Deployment		285.3	240.6	284.9	351.4	398.5	486.0	215.7	51.7		2,314
sub total											**4,449**
Total											**14,894**
ODA Afghanistan	26.6	21.5	23.7	22.8	20.9	77.1	131.4	112	0	0	436
ODA Iraq		58.2	44.1	20.4	358.8	386.4	23.2	60.0	40.0	40.0	1031.1
subtotal											**1467.1**
Final Total											**16,361**

Source: Budget Paper No 2, 2002-03 to 2008-09. All measures extrapolated past last know value except for operational deployment costs and aid.

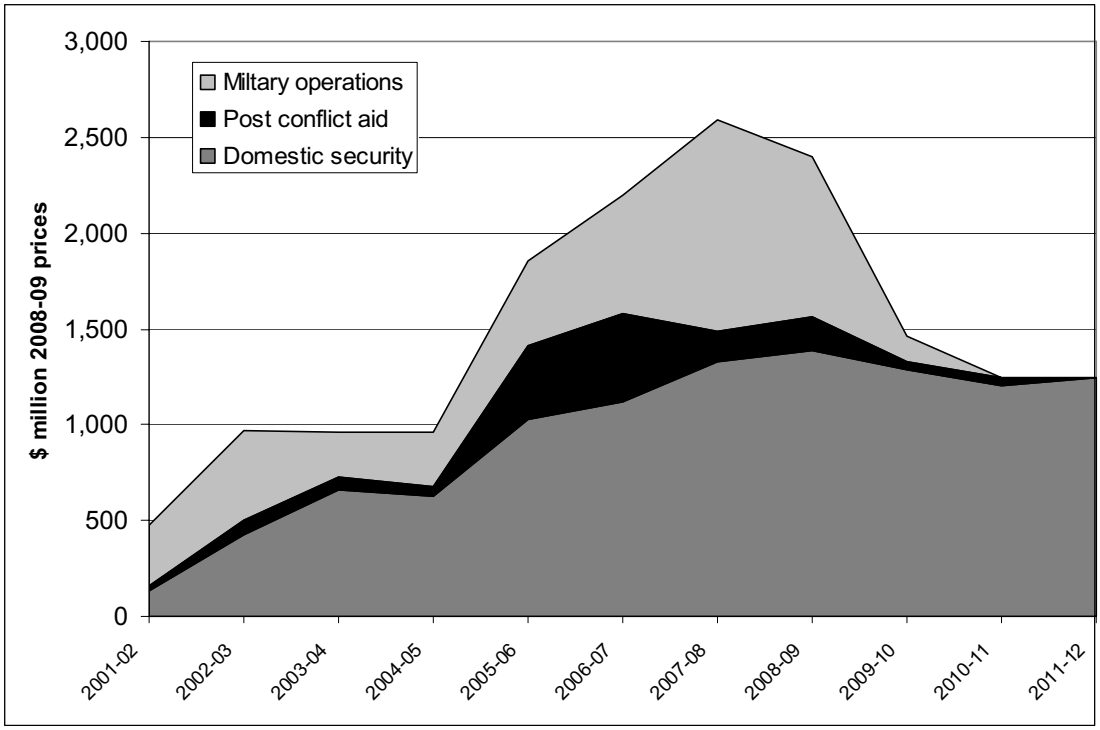
Exclusive of military operations, the total expenditure on post-9/11 security initiatives amounts to $10.4 billion across eleven years. Adding to this the cost of Afghanistan ($2.1 billion) and Iraq ($2.3 billion) yields a total of $14.9 billion. Add to this the cost of aid to Iraq ($1,031 million) and Afghanistan ($436 million) and you get a total of $16.4 billion. Of course, this does not include spending by state governments or the impact on businesses and individuals. Nor have we included the very substantial funds devoted to border protection from 2001-02 onwards.

Setting aside the cost of military operations in Afghanistan and Iraq, Defence received only a limited slice of the money directed to enhanced security. In fact, across the decade, Defence was only allocated around $2 billion, or less than one-fifth of the total exclusive of the cost of military operations. What money Defence did get went mainly to counter-terrorism response and intelligence capabilities.

To get a picture of where the money has been spent, it's useful to divide the total funds into three broad categories: military operations, domestic security and post-conflict aid. Our estimate of the year-by-year allocation of money to these categories is given in Figure 1.4.2.

In terms of the enduring impact of the initiatives, around a billion dollars has been added to the budget. Looking at the details, the largest ongoing cost is in the area of intelligence.

Figure 1.4.2: The cost of 9/11 to the Australian Government



Source: Budget Paper No 2, 2002-03 to 2008-09.

1.5 Measuring Defence Spending

How much money a country spends on defence is a direct measure of its commitment to protect itself. Accordingly, a lot of attention is placed on comparing levels of defence spending between countries and on tracking the rates at which those levels are increasing or decreasing. For example, here in Australia a lot of attention has been placed on the promised 3 per cent real growth in the defence budget in recent years. It is important, therefore, that reporting of defence spending captures what's actually going on.

In February this year, in the 2007-08 PBS, Defence changed the methodology and definitions it used to measure defence spending. It was an honest attempt to be more comprehensive and accurate. Unfortunately, it achieved the former without the latter by erroneously including GST refunds (which simply recompense Defence for GST they have paid to suppliers). This budget, they have gone back to the old method but with a refinement.

Defence's accounting experiment got us thinking; for one thing they included movements in what's called the appropriation receivable (their *de facto* internal bank account), which made good sense. And, in any case, ever since DMO was established as a prescribed agency, a rethink on how to present the overall Defence plus DMO budget has been overdue. So, at the risk of going into more detail than any reader cares about, here's our attempt.

Table 1.5.1 sets out the presentation in the 2008-09 PBS [Table 1.2.1, p.14] excluding the administered appropriations. (We ignore the administered appropriations for superannuation and housing because they are not controlled by Defence and are appropriated through the organisation for convenience.) The bottom line is *Total Defence Funding* which Defence describes as 'the most common way of presenting the Defence budget' [p.119].

Figure 1.5.1 Total Defence resourcing FY 2008-09

	2008-09 $'000
Departmental	
1. Output Appropriation	19,392,037
2. Equity Injection	32,365,736
3. Output for Previous Year	-
4. Current year's appropriation	**21,757,773**
5. Drawdown of appropriations receivable	55,000
6. Funding from Government	**21,812,773**
7. Net Capital Receipts	65,662
8. Own-source Revenue	811,892
9. Funding from other sources	877,554
10. Total Defence Funding	**22,690,327**

Source: 2008-09 PBS

The easiest way to explore what a better approach might be is to examine each of the elements appearing in Table 1.5.1.

Current year's appropriations: This is the least ambiguous part of the problem. Each year the Government formally appropriates money to Defence. The breakdown of the appropriation in terms of outputs and equity is an artefact of accrual accounting that need not concern us here (the interested reader should consult Section 9 of this brief for an explanation). What matters is that this is the quantum of cold hard cash that the government plans to make available to Defence for the financial year. As such, any credible measure of Defence funding must include this money.

Drawdown of appropriation carried forward: Following several years where Defence substantially underspent its budget, an *Appropriation Receivable* account was established to keep track of funds returned to government so that they might be drawn on in future years. Shifts to this account represent either the expenditure of additional public funds by Defence or the return of unspent funds. To properly track the funding employed by Defence, it makes good sense to take account of increases and decreases to the Appropriation Receivable account. However, if this is accepted, it follows that changes to Defence's cash holding must also be accounted for (since that's where the money in the appropriation receivable came from originally).

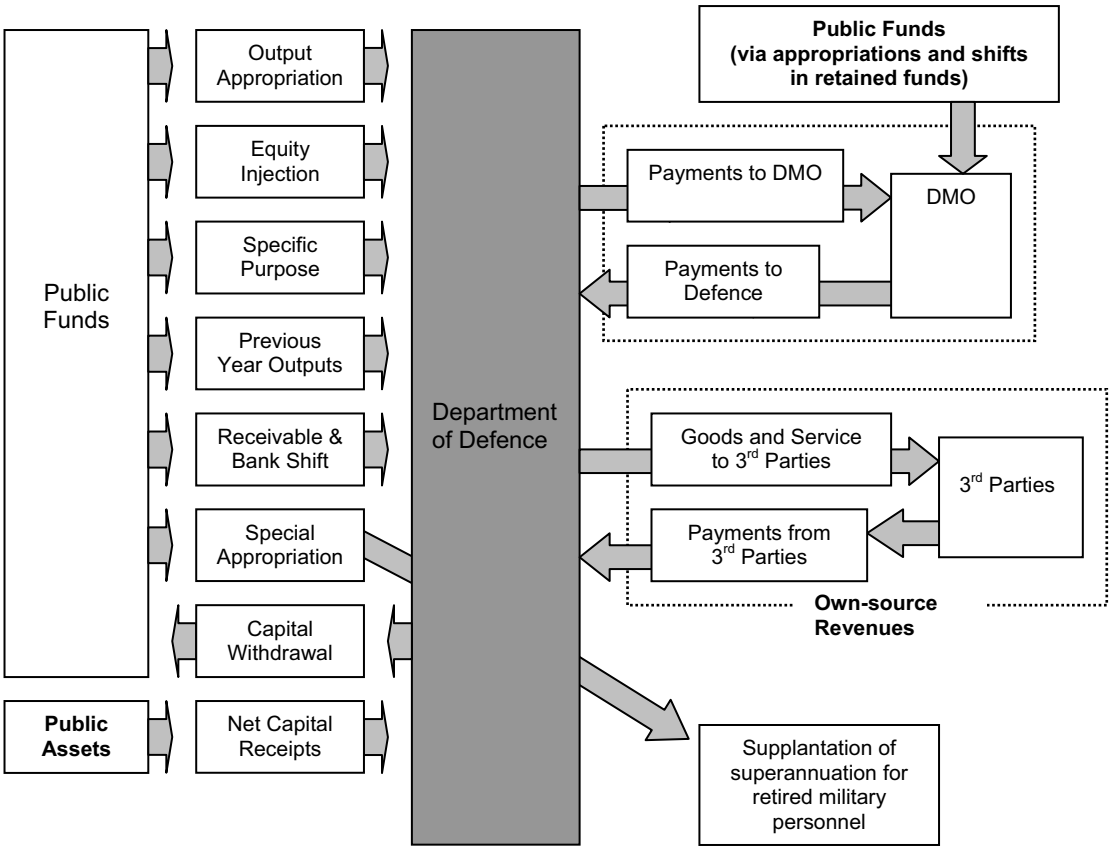
Net Capital Receipts: As custodian of more than $50 billion of public assets including land, buildings and military equipment, Defence inevitably receives cash from the disposal of items that are no longer needed. Some of this money is returned to government through what's called a Capital Withdrawal. The remainder is retained by Defence and is called Net Capital Receipts. Given that these funds are generated from the sales of public assets, it is correct to count this income as part of Defence funding.

Own-source Revenues: Defence receives revenue from a number of sources. These include the supply of goods and services to third parties such as Defence personnel, who pay a share of the cost of their food and lodging provided by Defence, and foreign governments that purchase items like fuel. It makes little sense to include this as part of Defence funding. While it is perhaps reasonable to include revenue raised by using public assets (like Defence accommodation), the vast bulk of Own-source Revenue reflects Defence acting as an intermediary that transfers goods between 3rd party providers and 3rd party customers. For example, the sale of fuel to a foreign government or rations to personnel delivers no revenue to Defence that is not at least equal to the cost of doing so. Or to put it another way, no one could seriously contend that Defence funding has risen by $50 million simply because, for example, an extra $50 million of fuel was purchased and sold on to the United States.

Own-source Revenues also includes transfers from DMO to Defence that cancel payments from Defence to DMO. The worst part is that these funds then get counted *twice* in the calculation of Total Defence Funding. It's hard to put an exact figure on it, but Defence's Own Source Revenues jumped by about $200 million the year that DMO became a prescribed agency, and it looks like DMO will pay Defence $318 million in 2008-09. If there was ever any doubt that Own Source Revenues should be excluded from what's counted as Defence spending, this should settle the matter.

Figure 1.5.1 is our best attempt to depict the situation graphically, though some simplification has been necessary.

Figure 1.5.1: Defence Cash and Resource Flows



Even if the double-shuffle payments to DMO were all there was, that would be enough to reject *Total Defence Funding* as a credible measure of the Defence budget. But there is more. *Total Defence Funding* also includes payments to DMO that remain unspent. Over the past three years more than $978 million has accumulated in the DMO Special Account including $414 million from this year. Thus, for 2007-08, *Total Defence Funding* overstates the amount spent on defence by at least $732 million dollars after the twice counted $318 million Defence-DMO transfers are included.

To make matters worse, at least $440 million in the DMO Special Account represents delayed major capital equipment purchases that are not disclosed in Defence's reckoning of White Paper funding [Table 1.2.10 p.26] or capital investment [Table 1.7.12 p.130]. Insufficient information is available to say what the remaining $538 million represents.

From a strict accounting perspective, no rules have been broken. Defence reports its funding accurately, and DMO reports its cash flow properly. Yet there is something surreal about failing to reconcile the net impact of the two things to show what's actually going on, especially given the high prominence of defence funding in recent years.

So what is the 'Defence Budget'?
While there is an accounting distinction between Defence and DMO, any sensible calculation of the 'Defence Budget' must reflect the total impost on the taxpayer in delivering defence capability. This is easily achieved by adding DMO funding to the calculation and ignoring the churn of money in between.

In light of the foregoing discussion, it seems sensible to include Funding from Government, Net Capital Receipts, Net Bank Balance Shifts, Appropriation Receivable and Special Account Shifts but exclude Own-source Revenue. And then to do the same for DMO and then add the results together, safe in the knowledge that the accounting transfers between the two entities have been excluded, Table 1.5.2.

Table 1.5.2: Total Defence resourcing FY 2008-09

	Total Defence Funding	ASPI Net Defence Spending
Departmental		
1. Output Appropriation	19,392,037	19,392,037
2. Equity Injection	32,365,736	32,365,736
3. Output for Previous Year	-	-
4. Current year's appropriation	**21,757,773**	**21,757,773**
5. Drawdown of appropriations receivable	55,000	55,000
6. Funding from Government	**21,812,773**	**21,812,773**
7. Net Capital Receipts	65,662	65,662
8. Own-source Revenue	811,892	
9. Funding from other sources	**877,554**	**65,662**
10. DMO Appropriation		94,960
11. DMO drawdown of Special Account		7,189
12. DMO prior year's Special Account		95,300
12. Total Defence Funding	**22,690,327**	
13. ASPI Net Defence Spending		**22,075,884**

The difference is not slight. Our calculation of Net Defence Spending yields a figure 2.7% below that of Total Defence Funding. The difference would be larger if not for the cancellation between the $800 million of own-source revenues and $197 million of DMO funding. For 2007-08, in which DMO retained $414 million of unspent funds, the difference is 5.6%. We believe that *ASPI Net Defence Spending* is a better measure of the 'Defence budget' than *Total Defence Funding.* It's what is spent *on defence*, rather than what's spent *by Defence* that matters.

There is absolutely no reason for Defence to continue to report its budget in terms of *Total Defence Funding.* The strictures of public sector accounting make many demands on how information is presented, but they do not prevent Defence from accurately and clearly stating how much money will be spent on delivering defence capability exclusive of accounting transfers with DMO and taking account of the money that has been accumulating in the hollow log of DMO's Special Account.

SECTION 2 – DEFENCE BUDGET 2008-09 PBS EXPLAINED

The 225 pages of the 2008–09 Defence Portfolio Budget Statements (PBS) set out the government's plan for the expenditure of more than $22 billion by Defence in the coming financial year.

This guide explains and where possible analyses the information in the PBS. In doing so, we skim over those parts of the PBS that are relatively clear, and focus on those areas where explanation might be useful. Unfortunately this task has been made more difficult this year's omission of some key information that was previously available. It is worth noting that the document is fully 128 pages shorter than last year.

Some of the material is unavoidably technical due to the disciplines and complexities of accounting. However, it is not necessary to read this section as a whole, or in sequence, to gain insight. Every attempt has been made to enable the reader to jump in and look at those items of most interest. The more technical accounting material has been relegated to Section 9.

This brief does not cover in any detail the funds administered by Defence on behalf of the government for superannuation and housing support services for current and retired Defence personnel.

Most parts of the guide are best read with the PBS at hand. Copies can be down-loaded from the web at <http://www.defence.gov.au/budget/>.

Section 2.1: Overview [PBS Chapter 1]

The overview chapter of the PBS begins with a brief discussion of the strategic and operational context. The key points of the budget are then outlined including, most usefully, a tabulation of measures [PBS Table 1.1.1]. Changes to the Defence's organisational structure and Output/Outcome arrangements are then surveyed (see Section 1 of this brief for an explanation).

Section 2.2: Resourcing [PBS Chapter 2]

The 'rubber hits the road' in Chapter 2 of the PBS, in terms of allocating money to get things done. It contains the financial statements, new budget measures and the funding bottom line.

How much money will Defence get?

With the Budget Summary on p.14 of the PBS, we get to the heart of the issue. Table 1.2.1 of the PBS gives three key figures for the Defence budget:

- **Total Revenue from Government,** being those funds formally *appropriated* to Defence by the government for departmental purposes. In 2008-09 this amounts to $21,812,773,000.

- **Total Departmental Funding,** being those funds actually *available* to Defence including appropriations and revenue from other sources. In 2008-09 this amounts to $22,690,327,000.

- **Total Defence Resourcing,** being Total Departmental Funding plus those funds appropriated administratively through Defence for superannuation and defence housing subsidies. In 2008-09 this amounts to $25,656,965,000.

Of these three figures, *Total Departmental Funding* is the one most usually quoted as the defence budget. It represents the funds expended by Defence to deliver the departmental outcomes and maintain the ongoing program of investment in new equipment and facilities. Note that it does not include administered funds covered by Outcome 7.

However, as explained in the last section, *Total Departmental Funding* is inflated by churning of money (including between DMO and Defence) that delivers no military capability or outcome. What's more, Total Departmental Funding ignores the money appropriated directly to the DMO and the money that in recent years has been accumulating unspent in the DMO Special Account. We believe that the *ASPI Net Defence Spending* figure accounts for these issues properly and therefore gives a more accurate picture of how much is being spent on delivering defence capability and outcomes. Henceforth, we will present both *Total Departmental Funding* and the *ASPI Net Defence Spending* figures. As show, the differences are significant.

Several other measures of the Defence budget arise within the complexities of the Commonwealth finance framework. Three that can be useful when trying to understand Treasury budget papers are described on page 119 although, in a departure from previous years, no actual figures are provided.

The mechanism through which Defence receives its funds is somewhat complex, so a detailed explanation appears in conjunction with the discussion of the financial statements in Section 9 of this brief.

How much has the Budget grown?

Table 2.2.1 displays Defence funding for the past eight, and next four, financial years. Also shown are both the nominal and real year-to-year percentage growth rates.

Table 2.2.1a: Total Defence Funding* – real (2008-09$) and nominal growth

	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12
Funds (nominal)	12,648	14,397	14,739	16,006	16,699	18,111	20,156	21,179	22,690	25,197	26,360	27,364
Growth (nominal)		13.83%	2.37%	8.60%	4.33%	8.45%	11.29%	5.08%	7.13%	11.05%	4.62%	3.81%
Funds (real)	17,494	19,485	19,328	20,183	20,266	20,973	22,273	22,503	22,690	24,825	25,713	26,118
Growth (real)		11.38%	-0.81%	4.42%	0.41%	3.49%	6.20%	1.03%	0.83%	9.41%	3.58%	1.57%

**Methodology as revised in 2008-09 PBS.*

Table 2.2.1b: ASPI Net Defence Spending – real (2008-09$) and nominal growth

	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12
Funds (nominal)	12,319	13,191	14,216	15,439	16,224	17,523	19,063	20,001	22,076	24,459	25,608	26,584
Growth (nominal)		7.08%	7.78%	8.60%	5.09%	8.01%	8.79%	4.92%	10.37%	10.79%	4.70%	3.81%
Funds (real)	17,039	17,852	18,643	19,468	19,690	20,292	21,065	21,251	22,076	24,097	24,979	25,374
Growth (real)		4.77%	4.44%	4.42%	1.14%	3.06%	3.81%	0.88%	3.88%	9.16%	3.66%	1.58%

In calculating the real growth rate, the nominal dollar values of the individual years have been converted to a single base year using the deflator used to maintain Defence buying power in real terms. Since 2001-02 this has been the implicit Non-Farm GDP Deflator (NFGDPD). Specifically, we have used the historical Defence deflator for the first year, and the actual and Treasury-projected NFDGPD up to 2008-09. Beyond that we used the deflators implied in Table 5.1 of Budget Paper No. 1 p.6-11 (1.5%, 1.0%, and 2.2%) there being no official public estimates past 2008-09.

Irrespective of the measure of the budget used, the average *linear* annual rate of real growth in the budget from 2000-01 (the last year prior to the White Paper funding period) to 2011-12 is 4.5%. The average *compounding* annual rate of real growth in the budget for the same period is slightly less at 3.7%. The average rate of growth over the next four years comes out as either 4.0% or 4.9%, the latter derived with the ASPI methodology. The ASPI methodology yields a higher rate of growth because it does not pretend that the hundreds of millions of dollars in the DMO special account have been spent in the preceding years.

What is the Defence share of GDP?

Table 2.2.2 gives Defence funding as a percentage of GDP which for 2008-09 agrees with the figure of 1.8% quoted in the PBS. With the rate of growth in Defence spending planned to outpace economic growth in the medium term, the share of GDP will rise by about one-tenth of a percentage point over the next four years.

Table 2.2.2: Defence Spending as a Percentage of GDP

Year	Total Defence Funding % of GDP	ASPI Net Defence Spending % of GDP
2000-01	1.84%	1.79%
2001-02	1.96%	1.79%
2002-03	1.88%	1.82%
2003-04	1.90%	1.83%
2004-05	1.86%	1.81%
2005-06	1.87%	1.81%
2006-07	1.93%	1.82%
2007-08	1.88%	1.77%
2008-09	1.85%	1.80%
2009-10	1.96%	1.90%
2010-11	1.97%	1.91%
2011-12	1.94%	1.89%

Source: 2008-09 Budget Overview page 42 and 2008-09 PBS.

What is the Defence share of Commonwealth payments?

Defence spending as a percentage of total Commonwealth payments is shown in Table 2.2.3. On current plans, Defence's share of payments will rise slightly before falling back at the end of the forward estimates period.

Table 2.2.3: Defence Spending as a Percentage of Commonwealth Payments

Year	Total Defence Funding % Commonwealth Cash Payments	Underlying Cash Balance Impact[1] % Commonwealth Cash Payments
2000–01	7.15%	6.97%
2001–02	7.64%	7.00%
2002–03	7.48%	7.21%
2003–04	7.63%	7.36%
2004–05	7.51%	7.30%
2005–06	7.54%	7.30%
2006-07	7.96%	7.53%
2007-08	7.70%	7.27%
2008-09	7.89%	7.67%
2009-10	8.20%	7.96%
2010-11	8.20%	7.97%
2011-12	8.13%	7.89%

Source: 2008-09 Budget Overview page 42 and 2008-09 PBS.

Changes since the last budget

Since the last budget, a number of significant initiatives have been undertaken that provide context for this year's budget. Table 2.2.4 shows the key initiatives from the 2008-09 PAES [Table 1.1, p.7]. These include:

Efficiency dividends

A 2% efficiency dividend was imposed on civilian and non-operational areas of Defence as part of a broader efficiency program promised in last year's Federal election. This will save $490.5 million over ten years. A further $27.9 million will be

saved over four years by increasing an existing efficiency dividend from 1% to 1.25%.

Operational supplementation
Additional funding was made available for operations in Iraq ($12.4 million), Solomon Islands ($19.7 million) and Iraq/Afghanistan for enhanced protective capability ($69.7million) in the Additional Estimates. A further $38.2 million was provided to adjust for 2006-07 operational costs.

Reprogramming of Major Capital Equipment
Because of delays in acquisition projects, major capital investment funding of $522.3 million was been shifted from 2010-11 to 2008-09 and 2012-13. A further reprogramming of $440 million occurred within DMO but is not reflected in Defence's figures.

NT emergency response
$15.5 million was provided in 2007-08 for Defence's role in the Northern Territory emergency response.

Enhanced Land Force – Stage 2
In August 2006 the then Prime Minister announced that the Army will expand through the addition of two light infantry battalions. At that time, the total cost of additional personnel, equipment, facilities and operating expenses was estimated to be about $10 billion. The expansion is occurring in two phases, each of which builds upon the $1.5 billion Hardened and Networked Army (HNA) measure from the 2006-07 Budget.

In December 2006 the Defence Minister announced formal approval to commence Stage 1 of the Army expansion at a cost of $4.1 billion dollars over eleven years. Included in this first stage were facilities design and development for both stages and the acquisition of more than 100 additional Bushmaster Infantry Mobility Vehicle. This first battalion is planned to be manned by the end of 2008 and ready to deploy overseas by 2010. In late 2007, the Stage of the Enhanced Land Force was approved with $4.4 billion committed over ten years. According to the 2007-08 PAES, the second battalion will be raised in 2008, achieve an operational capability by 2010 and be fully deployable by 2011.

Originally, $550.6 million was to be spent on the Enhanced Land Force in 2008-09 but this was revised upward to $650 million in the budget. However, although the government has said that the total overall cost of the initiative was not provided for in the initial two approvals (media reports put the shortfall as high as $700 million) the quantum of additional funds is yet to be estimated or provided for.

Table 2.2.4: Key initiatives from the 2008-09 PAES (million $)

		08-09	09-10	10-11	4 year total	11 year total
Efficiency dividends	-10	-51.5	-56.8	-57.8	-176.1	-518.4
Reprogramming of MCE	-	101.1	-	-522.3	-421.2	15.2
Operational supplementation	127.2	13.0	-	-		101.8
NT emergency response	15.5					
Enhanced Land Force – Stage 2	34.8	171.9	352.0	720.7	1,279.4	4,412.0
TOTAL	**167.5**	**234.5**	**295.2**	**140.6**	**837.8**	**4064.5**

Source: 2007-08 PAES. Note: does not include price and exchange or minor adjustments/measures.

The 2008-09 Budget Measures and Adjustments [PBS p. 16 – 21]

Changes to the 2008-09 Defence budget are set out in the PBS. The changes fall into two categories: budget measures and budget adjustments. The formal distinction between budget measures and budget adjustments is that the former are detailed in the Treasury budget papers and the later are not. In practice, the distinction is variable, with identical items classified differently from one year to the next.

There are twenty-three budget measures and eight adjustments in this year's budget, which are detailed on pages 7, 8 and 16 to 20 of the PBS. Budget measures and adjustment for DMO are dealt with later in this section of the Brief.

For ease of reference, the individual measures and adjustments have been detailed in Table 2.2.5. There are only seven budget measures that actually impact the budget bottom line. Of these, two take away money and one reprograms money from the budget year across the forward estimates period. In the budget year, the net impact of the seven measures is to remove $558.5 million. Across the four years including the forward estimates, the result is a loss of $277 million. It is only by moving to the ten year horizon that the impact crosses into positive territory—convincingly so with a net increase of $2.4 billion over the decade.

The eight adjustments to the budget, which are examined in detail later, remove $1 billion from the budget in 2008-09 but add a net $1.5 billion across the four years and an even more impressive $12.6 billion across the decade.

Of lesser size but no less interest are the sixteen unfunded budget measures listed in the PBS. Four of these unfunded measures, valued in total at $669 million, relate to the cost of overseas deployments in 2008-09. Taken together with the withdrawal of $367 million of operational supplementation, there is a little over a billion dollars in operational costs that Defence will have to find. The remaining twelve unfunded measures are for non-operational initiatives. These are valued at $77 million for 2008-09 and $165 across the four years. In addition, there is $191 million of previously planned spending for 2008-09 that has been reprogrammed into future years. The net result is that Defence will have to find around $1.3 billion in savings in 2008-09.

Before exploring where this money will come from and what the net impact will be, we survey the individual measures and adjustments.

The budget initiatives in detail

The PBS does a reasonable job of explaining the measures related to ADF deployments, (p. 26-29). However, since 2005-06, routine budget measures have not been described in the PBS. We rectify this below, drawing very heavily on the descriptions from Treasury's Budget Paper Number 2 – sometimes verbatim.

Continuation of 3% real funding growth to 2017-18

The 3% real growth in baseline defence funding has been extended out to 2017-18 at a cost of $2,785 million. Of this, only around $300 million is for capital investment. A little arithmetic shows that this is based on a 2015-16 Defence funding baseline of $29.4 billion. As a result, the *baseline* Defence budget will rise to $31.1 billion 2016-17 and $32.7 billion in 2017-18. (The implied rate of indexation over the period is 2.2%). This measure extends the promise the now government made during the 2007 election campaign to maintain the 3% funding provided by their predecessors.

Table 2.2.5: 2008-09 Budget Measures and Adjustments (million $)

	2007-08	2008-09	2009-10	2010-11	2011-12	4 year total	10 year total
Measures							
Extension of 3% growth to 2017-18							2785.2
Iraq operations			23.6			23.6	23.6
East Timor operations			18.7			18.7	18.7
Afghanistan operations			50.2	2.9		53.1	53.1
Withdrawal of ops supplementation		-367.3				-367.3	-367.3
Cut Capability Tech Demo Program			-4.3	-13	-13	-30.3	-108.3
Provisioning for future capability		-191.2	25	95.6	95.6	25	25.0
subtotal	**0.0**	**-558.5**	**113.2**	**85.5**	**82.6**	**-277.2**	**2,430.0**
Adjustments							
Price indexation		939.0	1,031.0	1,083.6	1,126.4	4,180.0	11,593.2
Foreign exchange		-126.5	-172.8	-168.3	-164.8	-632.3	-1,741.9
Reprogramming of unapproved MCI		-45.0				-45.0	4.1
Reprogramming of approved MCI		-1,065.9	-181.2	-275.6	-244.7	-1,767.3	197.6
Reprogramming of NPOC	-132.5	-139.7	-107.8	86.9	182.3	21.7	17.1
Extra reprogramming of approved MCI			-500.0	253.0	258.6	11.6	11.6
Reprogramming 2007-08 underspend	-679.7						107.9
Transfer of Kings Highway upgrade costs		-23.3				-23.3	-23.3
subtotal	**-812.2**	**-461.4**	**69.2**	**979.6**	**1,157.8**	**1,745.4**	**10,166.3**
Variation to Defence funding	**-812.2**	**-1,019.9**	**182.4**	**1,065.1**	**1,240.4**	**1,468.2**	**12,596.3**
Unfunded Measures - operations							
Iraq operations		131.8				131.8	131.8
East Timor operations		147.2				147.2	147.2
Afghanistan operations		375.6				375.6	375.6
Solomon Islands operations		14.1				14.1	14.1
subtotal		**668.7**	**0.0**	**0.0**	**0.0**	668.7	668.7
Withdrawal of ops supplementation		-367.3				-367.3	-367.3
total unfunded operations		**1035.9**	**0.0**	**0.0**	**0.0**	1035.9	1035.9
Unfunded Measures - non operations							
ADF mental health		0.4	0.4	0.4	0.4	1.6	?
ADF medical and dental		2.4	3.1	3.3	3.3	12.2	?
Illegal fishing Intelligence		1.2	1.3	1.3	1.3	5.1	?
Sea King helicopter safety		6.1	1.6	1.6	1.6	11	?
HMAS Adelaide gifting		3				3	?
US-AS trade cooperation treaty		28.6	25.9	23.5	24	102	?
Kings Highway upgrade		23.3				23.3	?
National security - threat assessment ctr.		0.6	0.6	0.6	0.6	2.5	?
National security - improved capability		5.5	7.1	5.6	5.6	23.8	?
National security - enhanced CT		14.2	14.4	14.5	14.9	58	?
National security - infrastructure modelling		2.2	1.7	1.6	1.8	7.4	?
National security - critical infrastructure		1.5				1.5	?
Reduced non-operational postings		-12.1	-20.6	-26.6	-27.0	-86.4	
subtotal		**77.0**	**35.6**	**25.8**	**26.6**	**164.9**	?
Total unfunded measures		**1112.8**	**35.5**	**25.8**	**26.5**	**1200.9**	?
Provisioning for future capability		191.2	-25	-95.6	-95.6	-25	-25.0
Total unfunded or unallocated		**1304.0**	**10.5**	**-69.8**	**-69.1**	**1175.9**	**1304.0**

Source: 2008-09 PBS and Budget Paper #2.
Numbers may not add due to rounding.

Deployments
The PBS provides a reasonable discussion of the supplementation provided to cover the net additional cost of deployments. Briefly, $267 million will be spent over two years to continue operations in Iraq until December 2008, $703 million will be spent over three years to continue operations in Afghanistan until June 2009, $193 million will be spent over two tears to maintain the ADF deployment in Timor Leste until June 2009, and $27.1 million will be spent on another year in the Solomon Islands. A further $39 million has been provided over three years to continue coastal surveillance operations. See Section 6 of this brief for more on the cost and composition of ADF deployments. Defence will have to meet the full cost of its overseas operations in 2008-09 following the withdrawal of $367 million in previously allocated supplementation.

Capability Technology Demonstrator Program
Funding for the *Capability Technology Demonstrator Program* will be cut from $26 million a year to $13 million from 2010-11. Transition funding has been provided for 2008-09 and 2009-10 to cover existing commitments. The program subsidises defence industry's development of demonstration technologies that may enhance ADF capability. However, the program has a low rate of successful transition to ADF service. The program's efficiency will be enhanced by focusing on priority technologies.

Provisioning for future capability
A total of $191.2 million of funding has been withdrawn from 2008-09 and reprogrammed into 2010-11 and 2011-12 to address emerging cost pressures. In addition, an extra $25 million of funding has been provided for 2009-10. We explore below where the reprogrammed funds will come from and what the impact will be.

ADF members and veterans mental health (unfunded)
This measure will be implemented as a partnership between the Defence, the Department of Veterans' Affairs and the Australian Centre for Post-traumatic Mental Health. In total $3.8 million will be provided over four years (including $1.6 million to be met from within Defence funding) to introduce a package of nine strategic mental health initiatives to improve access to mental health services for current and former ADF members and active reserve personnel.

This initiative will be integrated across the four stages of an Australian Defence Force member's career lifecycle: recruitment, service, transition or discharge, and rehabilitation and resettlement into civilian life. The package aims to enhance psychological resilience among serving members, ensure successful transition into civilian life and provide effective rehabilitation and support.

ADF – general medical and dental care (unfunded)
A total of $12.2 million over four years will be spent to trial the provision of basic medical and dental services to dependants of full-time ADF members at bases in Tindal, Cairns, East Sale, Singleton and the Karratha area. The trial will provide free basic general practitioner services and free basic dental services up to a cap of $300 per dependant per annum. The trial will commence in February 2009 to align with the ADF posting cycle. The measure will also lead to an increase in revenue of $3.1 million over four years from fringe benefits tax paid by the Department of Defence.

Illegal foreign fishing – intelligence support (unfunded)
This is an interdepartmental measure that will see $8.4 million spent over four years to continue intelligence support to Australia's response and law enforcement operations in the Southern Ocean. This funding will assist in protecting Australia's sovereign rights over our Exclusive Economic Zone, help ensure a sustainable fishery, and uphold the integrity of the Commission for the Conservation of Antarctic Marine Living Resources. The cost of this measure will be met from within the existing resourcing of the Department of Defence ($5.1 million), the Office of National Assessments, the Australian Secret Intelligence Service and the Australian Customs Service.

Sea King helicopter safety (unfunded)
A total of $11.0 million will be spent over four years from 2008-09 to complete implementation of the recommendations of the Sea King Helicopter Board of Inquiry. The funding will be used to fit crash-resistant seating to the Sea King fleet and to provide additional ongoing personnel to enhance the governance framework for maintenance of the Sea King and its successor.

HMAS Adelaide gifting (unfunded)
$3.0 million will be spent in 2008-09 for the gifting of the Royal Australian Navy Frigate HMAS Adelaide to the New South Wales Government. The funding will be used to prepare the ship for sinking for use as a dive wreck.

Australia-US Defence Trade Cooperation Treaty (unfunded)
$102.0 million will be spent over four years from 2008-09 for activities relating to the security and regulatory provisions flowing from the Australia-United States Defence Trade Cooperation Treaty. This includes the expansion of the Defence Industry Security Program and Defence export control arrangements, and enhancements to the Department of Defence's electronic vetting systems.

Kings Highway upgrade (unfunded)
The Kings Highway between Queanbeyan and Bungendore will be upgraded at a cost of $23.3 million in 2008-09. The Kings Highway is the main link to the new Defence Headquarters Joint Operations Command. The upgrade will improve road safety for local communities and reduce the impact of the new establishment on traffic volumes.

National security—National Threat Assessment Centre (unfunded)
$2.4 million will be spent over four years from 2008-09 to maintain Defence's contribution to the National Threat Assessment Centre. The Centre strengthens Australia's counter-terrorism capabilities by consolidating several agencies' threat assessment efforts into a single, dedicated unit based in the Australian Security Intelligence Organisation.

National security—improved intelligence capability (unfunded)
$23.8 million will be spent over four years from 2008-09 to enhance Defence's capability to meet high priority intelligence requirements. This measure includes $4.6 million in capital funding for infrastructure and equipment costs.

National security—enhanced counter-terrorism support (unfunded)
$58.0 million will be spent over four years from 2008-09 to maintain Australia's counter-terrorism capabilities and protect against possible threats to Australia's

national security. This funding will allow the Department of Defence to maintain its capacity to provide analysis and assessment of high priority potential threats.

National security—critical infrastructure modelling and analysis (unfunded)
This is a multi-agency initiative that will see $23.4 million spent over four years to further develop the Critical Infrastructure Protection Modelling and Analysis program, which uses computer models to simulate the effect of disasters on Australia's people, infrastructure and economy. The program helps to develop plans to protect communities from natural and human-made disasters. Provision for funding of $6.0 million over four years for the Attorney-General's Department and $0.8 million over four years for Geoscience Australia has already been included in the forward estimates. The Department of Defence will absorb costs of $7.4 million over four years from within its existing resourcing.

National security—critical infrastructure protection (unfunded)
This is a multi-agency initiative that will see $8.8 million spent in 2008-09 to continue the critical infrastructure protection program. The program provided protective security for critical infrastructure from natural and other disasters. Defence will meet costs of $1.5 million from within its existing resourcing and provision for the remaining funding for 2008-09 has already been included in the estimates. Funding requirements beyond 2008-09 will be reviewed in the 2009-10 Budget.

Fewer non-operational Defence postings and reduced overseas travel (unfunded)
The Government will phase out 89 Defence non-operational overseas postings and exchanges and will reduce funding for overseas travel by $7.0 million per year. There will be no reduction in ADF numbers as a result. This will deliver savings of $86 million over four years. This measure is peculiar in that it is an unfunded measure that reduces rather than adds to what Defence has to find.

Funding adjustments

Price and exchange
Defence will receive an additional $4.180 million over four years ($11,593 million over ten years) as a price adjustment, and will hand back $632 million ($1,742 million over ten years) for foreign exchange movements. These adjustments are designed to maintain the buying power of the Defence dollar.

Reprogramming of the 2007-08 Underspend
Defence is projected to underspend its 2007-08 budget by $680 million. This money has been reprogrammed to beyond the forward estimates period. The underspent funds include $10 million of unapproved, and $146 million of approved major capital equipment. The possible inferences to be drawn from Defence failing to spend its budget are explored in Section 4 of this brief.

Reprogramming of Major Capital Equipment
Once again, the Major Capital Equipment program has been delayed. All up $2.3 billion was reprogrammed in this year's budget. Adjustments in this year's budget along with those from the previous eighteen months are detailed in Table 2.2.6. We have included in the additional $440 million of deferrals from mid-year that appear on DMO's accounts but which have not been disclosed in Defence's presentation. Insufficient information exists to tell if earlier major capital investment program deferrals within DMO that have not been reflected in Defence's accounts. On the

basis of what we know, $5.6 billion of investment has been delayed and $101 million has been brought forward in the past eighteen months.

Table 2.2.6: Shifts to the major capital investment program (million $)

	06-07	07-08	08-09	09-10	10-11	11-12	12-12	13-14	post 13-14
2006-07 PAES									
approved/unapproved	-390	112	288						
2007-08 PBS									
approved/unapproved		-615		631					
further approved		-378	-230	-559	38	193	543	382	120
2007-08 PAES									
approved			101		-522		436		
DMO reprogramming		-440	93.5	?	?	?	?	?	?
2008-09 PBS									
approved			-1,066	-181	-276	-245	84	573	1,308
unapproved			-45					49	
further unapproved				-500	253	259			
2007-08 underspend		-156					52*	52*	52*

*Source: Defence PBS and PAES (*2007-08 reprogramming estimated only)*

Reprogramming of NPOC

Net Personnel and Operating Costs (NPOC) associated with delayed new equipment have been reprogrammed into the future including $133 million from 2007-08, $140 million from 2008-09 and $108 million from 2009-10.

Okay, I'm confused, what really happened?

So what are we to make of the confusion of measures and adjustments—some of which add money, some of which take away money, some of which are funded and some of which are unfunded? If we ignore the labels and categories that have been assigned in the PBS, the net impact of the budget is pretty simple:

- The 3% growth in the defence funding baseline has been continued across the last two years of the forthcoming decade at a cost of $2.8 billion.
- Just over $813 billion of planned 2007-08 funding has been deferred because Defence cannot spend the money. This includes around $133 million in unspent net personnel and operating costs for DCP projects and $680 million of 'underspend'.
- In a marked departure from the largess of recent years, only $120 million of new funding has been provided for the next four years.
- $191 million has been reprogrammed from 2008-09 to meet funding pressures in the forward estimates period.
- In 2008-09 there are no less than $1.1 billion worth of unfunded measures to be covered from internal resources.
- Another $2.3 billion of capital investment has been delayed.

In the near term, the bottom line is somewhat forbidding; in 2008-09 Defence will have to find $1.3 billion including $1,036 million for overseas operations, $77 million for unfunded non-operational measures, and $191 million to be reprogrammed to meet future funding pressures—all from internal resources.

To help close the gap between means and ends, Defence has identified savings initiatives valued at $447.6 million for 2008-09. In order to understand the impact of these initiatives we have grouped them in Table 2.2.7 in terms of efficiencies, cuts and delays. While the demarcation between these categories is somewhat imprecise the taxonomy is useful nonetheless. Efficiencies are good, delays are disappointing, and cuts are bad. Fortunately, the good outweigh the bad by a factor of two in what's been planned. Pity the delays were not more modest.

Table 2.2.7: The good the bad and the disappointing (million $)

	2008-09	2009-10	2010-11	2011-12	Total
Identified internal funding sources-efficiencies					
Efficiencies in sustainment and procurement	115.2	2.1	2.1	1.9	31.9
Efficiencies in telecommunication contracts	13	13	10.9	11.9	35.8
Efficiencies in garrison support contracts	9.8				
Efficiencies in use of civilian workforce	0.8				
Efficiencies in the delivery of sustainment services	22.3				
Rationalisation of access control	2.9				
Reduction in administrative costs	13.4				
Reduction in administrative travel	18.5	12.7	12.8	12.8	51.1
Reduction in non-operational ADF OS postings	12.1	20.6	26.6	-27	-86.4
subtotal	**195.9**	**27.8**	**25.8**	**26.6**	**118.8**
Identified internal funding sources-cuts					
Reduction in use of external service providers	19.4				
Reduction in sustainment budget	3				3
Reduction in minor capital projects	26				
Reduction in capital facilities spending	23.3				23.3
Reduction in scientific research	2				2
Reduction in costs for MCI	10	7.8			17.8
Reduction in scope of IT projects	6.8				
subtotal	**90.5**	**7.8**	**0**	**0**	**46.1**
Identified internal funding sources-delays					
Delayed sustainment purchases	86.2				
Delayed facility investment and maintenance	50				
Delayed trainee living-in accommodation	44.8				
Delayed scientific support	10.2				
subtotal	**191.2**				
Total	**477.6**				

Source: 2008-09 PBS

Astute and numerate readers will have noticed that $447.6 million worth of savings is far less than what's required—$826.5 million less to be precise. But don't worry, here's where a rabbit comes out of the hat; $826.5 million of 2008-09 price indexation has been diverted to create a Defence Operations Reserve. Problem solved; sort of.

Price indexation is intended to maintain the buying power of the Defence budget against inflation, and in normal circumstances it would hard to justify asking Defence to make-do in the face of the declining purchasing power of the dollar—especially in a period of moderately high inflation like the present. But these are not normal circumstances. Defence underspent its budget in 2007-08 by $813 million, of which only $156 million came from the major capital equipment program; thereby raising the question of whether they need all the money they have in their baseline budget. More critically, the indexation received was abnormally large because the implicit non-farm GDP deflator used to index the Defence budget rose precipitously—from an estimated 2.5% mid-year to an extraordinary 6.25% just prior to the budget. In comparison, CPI inflation is estimated to be only 3.5% in 2008-09.

In Section 4 of this Brief we look more closely at the funding Defence has received, and has not received in this budget.

Other information provided

The remainder of Chapter 2 of the PBS contains a range of interesting information including:

- ***Status of White Paper Funding*** [PBS p. 23–25] which we explore Section 4 of this brief.
- ***Funding for Operations*** [PBS p. 26–31] which we explore in Section 6 of this brief.
- ***Payments to the DMO*** [PBS p. 30] which we explore later in this section when we discuss DMO.
- ***Discretionary Grants*** [PBS p. 51–53] which details funding to various organizations including the Royal United Services Institute of Australia and the Submarine Institute of Australia.

Section 2.3: Defence Reform [PBS Chapter 3]

Chapter 3 of the PBS surveys a number of initiatives underway to improve the way defence operates. Several areas rate special mention:

- Consistent with an election promise, a new Defence White Paper is being prepared. Key activities include:
    - A community consultation program to allow people to input their views on the future of Australia's defence.
    - A *Force Structure Review* that will examine the sort of military capabilities that Australia will need out to 2030.
    - A series of *Companion Reviews* that will examine various aspects of how Defence operates and delivers capability.
- As promised in the election, the government will undertake an audit of the Defence budget to examine the adequacy and efficiency of the Defence spending.

Section 2.4: Capital Investment Program [PBS Chapter 4]

The Capital Budget section of the PBS describes Defence's plans for capital investment in new equipment, upgrades, facilities and other non-military capital items. It's formally described in accounting terms in the Capital Budget Statement in Table 1.7.12 on page 130 of the PBS, although that is not very revealing.

Capital Investment Program [PBS p.65–98]

The capital investment program is detailed in Table 1.4.1 page 43, which we have reproduced in part in Table 2.3.1. Unfortunately, the projected result for 2007-08 has not been included in this year's PBS so we have had to use the revised estimate from the 2007-08 PAES. Note that in 2006-07 an underspend in the major capital equipment program was partially compensated for by overspends in facilities and other capital.

Table 2.4.1: The Capital Investment Program (million $)

$ million	04-05 actual *budget*	05-06 actual *budget*	06-07 actual *budget*	07-08	08-09	09-10	10-11	11-12
Not Yet Approved Major Capital Equipment (DCP)				74.1	405.7	1,346.0	1,970.0	3,170.0
Approved Major capital Equipment	3,322.5 *2,912.7*	3,888.4 *3,747.8*	4,019.0 *4,735.0*	4,385.4 *4,807.5*	4,419.9	4,443.0	4,218.7	3,480.3
Subtotal **actual - budget**	**3,322.5** ***2,912.7*** ***+409.8***	**3,888.4** ***3,747.8*** ***+140.6***	**4,019.0** ***4,735.0*** ***-716***	**4,385.4** ***4,807.4*** ***-422.1***	**4,825.6**	**5,789.1**	**6,188.6**	**6,657.3**
Capital Facilities Approved & Unapproved	393.3 *468.7*	430.3 *447.1*	653.4 *491.3*	599.9 *643.6*	838.3	1,196.6	1,376.4	1,171.0
Other Capital	602.1 *472.5*	722.4 *582.7*	925.0 *527.9*	710.8 *768.8*	757.4	775.7	758.1	706.5
Total Capital Investment Program	**4,317.8** ***3,853.9***	**5,041.1** ***4,777.6***	**5,597.5** ***5,754.2***	**5,770.1** ***6,219.8***	**6,421.4**	**7,761.4**	**8,323.2**	**8,534.9**

Source: 2008-09 PBS, DAR, 2007-08 PAES

There are four components to the Capital Investment Program:

Not Yet Approved Major Capital Equipment or Defence Capability Plan (DCP) This is the remaining unapproved projects from the 2006 Defence Capability Plan, made up of all the Major Capital Equipment projects that have not yet received second pass approval from government. Major Capital Equipment projects are generally of more than $20 million value and predominantly involve the purchase of military equipment, (previously called 'Pink Book' projects). The preparation of these projects for approval is the responsibility of the Chief of the Capability Development Executive. Once approved, projects pass to the DMO for delivery.

Approved Major Capital Equipment: Projects already approved by government and under way. (Previously called the 'White Book'). The delivery of these projects is mostly the responsibility of the Defence Materiel Organisation.

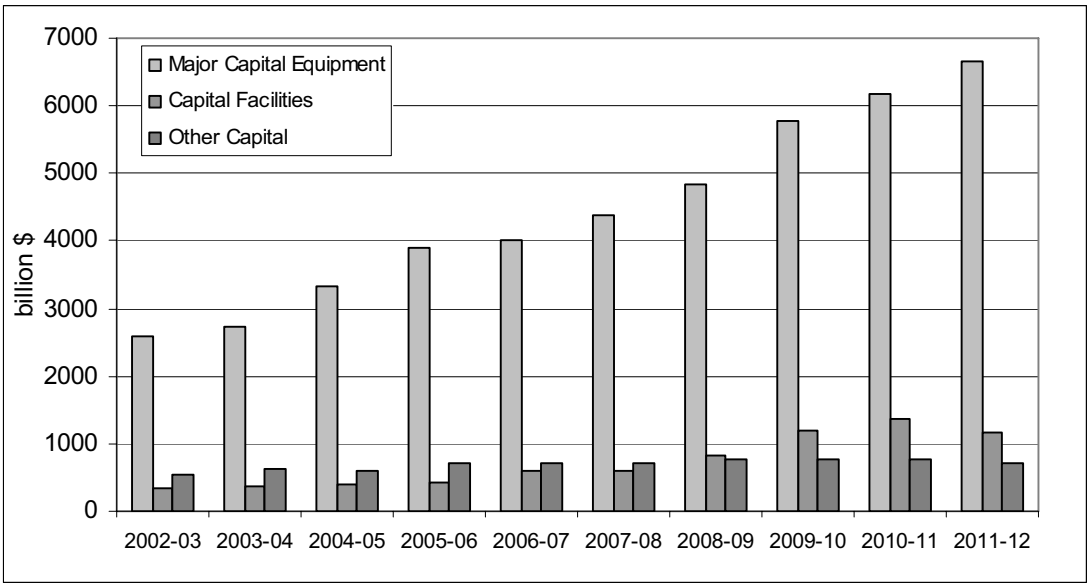
Capital Facilities: Approved and Unapproved Capital Facilities Projects, including everything from new barracks to upgrades of existing facilities. These projects are the responsibility of the Infrastructure Division in the Defence Support Group.

Other Capital: including Minor Capital Equipment (projects costing less than $20 million), repairable items, non-capital facilities, plant and equipment, and software and intangibles.

What are the trends in the Capital Investment Program?

The trend across the forward estimates is for an increase in the Capital Investment Program from $5.8 billion in 2007-08 to $8.5 billion in 2011-12, in nominal dollars. Within these amounts, expenditure on Capital Facilities and Other Capital fluctuates while the spending on major capital equipment grows (Figure 2.4.1). As shown, after the latest reprogramming of capital investment funds, there is significant near-term growth in spending on major capital equipment planned—in part a reflection of the F/A-18 Super Hornet and C-17 strategic airlift acquisitions. The growing mountain of investment will undoubtedly test the capacity of DMO and defence industry to deliver (see Section 2.8 and Section 7 of this brief for a further discussion of DMO performance).

Figure 2.4.1: Planned trends in the Capital Investment Program



Source: 2008-09 PBS and 2007-08 PAES and previous Defence Annual Reports
Note: we have not attempted to adjust the figures for DMO reprogramming.

Operating Component of Capital Investment

Not all of the money in the Capital Investment Program actually represents capital investment. There's also an Operating Component of Capital Investment that includes those funds treated as expenses in the process of acquiring the capital equipment or facilities. This includes project office costs, studies, research and development, travel, professional service providers and other overheads.

The operating component of capital investment is not evenly spread across the four components of the capital program, nor is it constant in time (see Table 2.4.2). The mix of funding will continue to change reflecting project throughput and the individual circumstances of each project. The operating component of the major

capital equipment program will probably fall given the number of very large projects anticipated including the two massive Foreign Military Sale purchases from the United States; the F/A-18 Super Hornets and the C-17 strategic transports. That said; it appears as though the operating component of the capital program is being calculated on a different basis this budget when looking at the discontinuity from 2007-08 onwards.

Table 2.4.2: Percentage of operating component in Capital Investment Program

	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12
Major Capital Equipment	9.8%	13.6%	17.9%	13.9%	13.6%	14.7%	7.3%	8.5%	4.8%	6.2%
Capital Facilities	0.0%	4.8%	14.8%	11.7%	11.5%	3.6%	10.8%	11.2%	9.2%	11.4%
Other Capital	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: various DAR, 2007-08 PBS and 2008-09 PBS

Relationship with the Capital Budget

It's important not to confuse the Total Capital Investment Program [PBS Table 1.4.1 p. 43] with the Total Capital Expenditure given in the Capital Budget [Table 1.7.12 on page 130 of the PBS]. The difference is the operating component of capital. The two quantities are reconciled in Table 2.4.3 below.

Table 2.4.3: Total Capital Investment Program ≠ Total Capital Payments

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Total Capital Investment Program a	3,470	3,360	4,318	5,041	5,598	5770	6,421	7,761	8,323	8,535
Operating Component of Capital b	278	392	602	592	621	675	471	674	443	576
Total Capital Payments Expenditure a - b	3,191	2,968	3,715	4,449	4977	5095	5951	7087	7881	7959

Source: various DAR, 2007-08 PAES and 2008-09 PBS

Unapproved Major Capital Equipment Program [PBS page 43] and Approved Major Capital Equipment Program [PBS page 45]

The PBS contains a list of DCP projects planned for first or second pass approval in 2008-09 [Tables 1.4.3 and 1.4.4, p. 44–45]. The approved capital equipment program is mainly, but not exclusively, the responsibility of DMO. As a result, most of the information on approved projects can be found in the DMO section of the PBS [page 143] including details of the top 30 projects. To ensure a coherent discussion of these topics, we've collected them together in Sections 2.7 and 7 of this Brief. Nonetheless, an explanation of Table 1.4.5 of the PBS [page 46] is necessary at this point.

To start with, PBS Table 1.4.5 makes clear that other parts of Defence – the Chief Information Officer, ADHQ and DSTO – are engaged at the margins in purchasing major capital equipment. Of more interest in Table 1.4.5, is the just over $2 billion of 'slippage' to major capital equipment projects. This represents an *internal* mechanism by which DMO calculates the practical level of spending on the basis of 'over-programming' the spending profile. The key point is that this is an internal process that does not represent a delay in the projects as occurs with reprogramming.

Facilities Projects [PBS pp.46–58]

The PBS lists 34 approved Capital Facilities Projects. This includes 16 major projects of more than $15 million with a total value $1.89 billion, and 18 medium projects of between $25,000 and $15 million with a total value $93.2 million. In the 2008–09 Budget the government has foreshadowed 13 new major capital works projects for parliamentary consideration and 28 medium capital works projects. These are listed in Table 1.4.8 and Table 1.4.11 of the PBS respectively. Expenditure on facilities projects in 2008-09 is planned to be $838 million compared with $599 million in 2007-08.

Table 1.4.7 of the PBS lists the approved major facilities projects. The largest such projects are the RAAF Amberley Redevelopment ($332 million) and Heavy Airlift Capability facilities ($268 million), the development of Special Forces working accommodation and base redevelopment at Holsworthy ($208 million) and the redevelopment of RAAF Pearce ($142 million) and RAAF Williamtown ($132 million).

The PBS also mentions [p. 53] the Private Financing arrangements being put in place for the $339 million HQ Joint Operations Command to be built in Bungendore and three other accommodation projects. In addition, Table 1.4.9 on page 54 of the PBS lists 17 future possible private financing projects that are under development as part of the Single Leap initiative. Defence's program of approved and yet-to-be-approved facilities projects is called the Green Book. It used to be found on the Defence web site but no longer appears to be publicly available.

Other Capital Purchases [PBS page 58]

Other capital purchases include Minor Capital Equipment, Repairable Items and Other Plant and Equipment. Defence plans to spend $757 million on other capital purchases in 2008-09

Capital Sales and Receipts [PBS page 95]

The capital budget is funded in part through the proceeds from sales of property, plant and equipment and other capital receipts. On a year by year basis some or all of this money is returned to the government through a capital withdrawal. This is taken into account in determining the appropriations necessary to deliver Total Defence Funding. Table 2.4.4 shows recently planned and achieved assets sales (including both property and other assets) within the Defence Capital Budget. The target of only $66 million in sales for 2008-09 represents the diminished number and value of properties going up for sale compared with recent years, as well as the transfer of accounting for commercial vehicle sales onto DMO's financial statements. Future sales of Defence properties are unlikely to be anywhere near as high in value as they were several years ago because the program of divestment set out in the Defence Reform Program has largely concluded.

Table 2.4.4: Capital Budget Asset Sales ($ million)

	Budgeted	Achieved	Shortfall
DRP to June 2000	–	77	–
2000–01	820	87	733
2001–02	1023	199	824
2002–03	700	632	68
2003–04	306	184	122
2004-05	231	143	88
2005-06	95	108	-13
2006-07	38	134	-96
2007-08	99	67	32
2008-09	66		
2009-10	66		
2010-11	76		
2011-12	53		

Source: Defence Annual Reports, 2007-08 PAES, 2008-09 PBS
Note: 2007-08 result revised estimate only.

Section 2.5: People [PBS Chapter 5]

Overview [PBS p. 61]

The Overview of the PBS 'People' chapter outlines the scale and importance of personnel in Defence in under a page (The People chapter has shrunk from 19 to 4 pages in the year's PBS).

From a budget perspective there is a lot more to be said. Since 2000 there have been a range of initiatives to improve the management of personnel from a business and planning perspective, and to enhance the development, care, recruitment and retention of personnel. Many of these initiatives began in 2001-02, when $500 million was allocated over five years to deal with high priority personnel issues. More recently, in the 2006-07 budget, there were two further personnel measures. First, $182 million was provided over four years for enhanced Reserve remuneration. Second, $194 million was allocated to improve recruitment and retention.

Then, in late 2006, the then government allocated another $1 billion for recruitment and retention over ten years, and in last years budget a further $2.1 billion was made available. The only personnel measure in this year's budget were the ADF and Veterans mental health initiatives ($1.6 million over four years) and the trial health and dental program for ADF members families ($12.2 million over four years)

How big is the workforce?

The establishment of DMO as a prescribed agency complicates the reporting of personnel numbers especially given the different accounting for civilian and military personnel and costs that has been adopted. We've collected together the figures for the entire workforce from the Defence section on page 62 of the PBS and the DMO section on page 157. (We examine the DMO workforce in Section 2.7 of this brief.)

Table 2.5.1: Workforce summary for Defence plus DMO (average funded strength)

	00-01 actual	01-02 actual	02–03 actual	03–04 actual	04–05 actual	05–06 actual	06–07 actual	07–08	08–09	09–10	10–11	11-12
Navy	12,396	12,598	12,847	13,133	13,089	12,767	12,690	12,882	13,230	13,670	13,752	13,744
Army	24,488	25,012	25,587	25,446	25,356	25,241	25,525	26,666	27,461	28,348	28,904	29,649
Air Force	13,471	13,322	13,646	13,455	13,368	13,143	13,289	13,608	14,056	14,170	14,220	14,113
TOTAL	**50,355**	**50,932**	**52,080**	**52,034**	**51,813**	**51,151**	**51,504**	**53,156**	**54,747**	**56,188**	**56,876**	**57,506**
Active Reserve	19,835	18,868	19,620	20,488	19,275	19,464	19,562	18,200	18,300	18,350	18,350	18,400
High Readiness	-	-	-	-	-	-	-	1,330	1,615	2,080	2,460	2,760
Total Reserve	**19,835**	**18,868**	**19,620**	**20,488**	**19,275**	**19,464**	**19,562**	**19,530**	**19,915**	**20,430**	**20,810**	**21,160**
Defence	16,292	16,819	18,385	18,303	13,390	13,577	14,516	15,228	14,754	14,763	14,780	14,752
DMO	-	-	-	-	4,363	4,502	4,951	5,567	5,375	5,309	5,302	5,274
Civilian	**16,292**	**16,819**	**18,385**	**18,303**	**17,753**	**18,079**	**19,467**	**20,795**	**20,129**	**20,072**	**20,082**	**20,026**
PSP	-	-	2,311	1,878	1,906	1,712	1,475	1,417	1,420	1,420	1,419	1,417

Source: Defence Annual Reports, 2007-08 PBS.

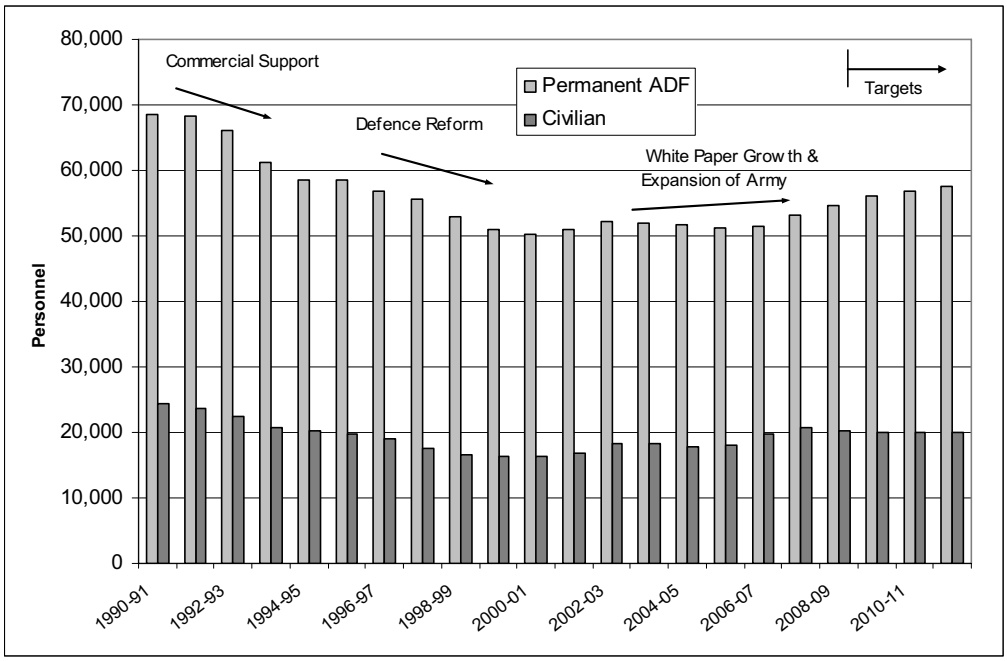
In 2008–09 Defence will be funded to maintain an average of around 54,747 full time military personnel, 20,129 civilians (including 5,567 in DMO) and 19,915 Reservists.

In addition, there will be 1,420 Professional Service Providers, including 253 in DMO.

How did we get to this point?

During the 1990s ADF numbers dropped from around 70,000 to 50,000 permanent personnel, as shown in Figure 2.5.1. Over the same period civilian numbers dropped from around 24,400 to 16,300.

Figure 2.5.1 Historical Defence Workforce



Source: Defence Annual Reports, 2001-02 Defence Budget Brief and 2008-09 PBS

The bulk of these reductions were due to outsourcing under the Commercial Support and Defence Reform programs (although around 5,600 permanent ADF positions had already been transferred to the Reserve by the 1991 Force Structure Review). In fact, the initial goal of the Defence Reform Program was to reduce the strength of the ADF to 43,500 but this was soon revised up to 50,000, thereby arresting the decline. This was done by re-directing DRP savings to buy-back the ADF positions, the goal being to redirect personnel from support areas to the combat force.

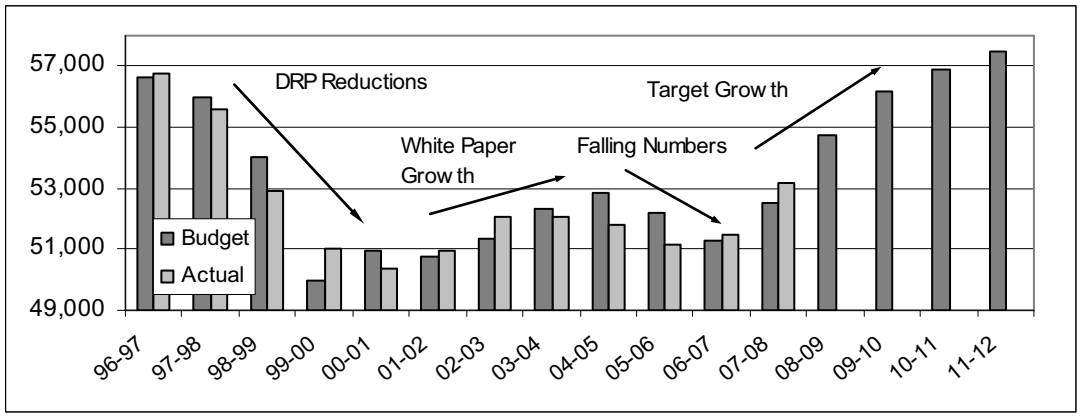
The 2000 White Paper then set permanent ADF numbers on a growth path. Until 2003, the target was to build a force of 'around 54,000' permanent ADF personnel by 2010. However, the government accepted the recommendations of the 2003 Defence Capability Review, which will see some capabilities withdrawn from service in the next decade. As a result, the 2004-05 PBS [p.5] referred to 'continued growth of the ADF towards 53,000'. However, subsequent budgets added additional personnel for a range of initiatives including, most especially, the expansion of the Army. We will do our best to explain this revised figure later in this section. According to the PBS, the current target strengths for the permanent ADF are 57,500 by 2011-12 and 'to more than 57,000 over the decade'.

What are the recent trends?

Permanent ADF Numbers

The changing size of the permanent ADF is captured in Figure 2.5.2. In the initial years following the 2000 White Paper, permanent ADF numbers grew steadily until 2003-04 when poor recruiting outcomes saw numbers fall for three years in a row—notwithstanding budgeting for growth in each case. Then, in 2006-07, numbers began to rise to the extent that budget estimates were exceeded two years in a row. Most telling is the projected result for 2007-08 which will see the ADF grow by more than 1,600 personnel. Thus, all signs are that the recent revamp of recruiting and retention policy (and a lot of extra money) is finally turning around the personnel situation.

Figure 2.5.2 Permanent ADF personnel: 1996-97 to 2010-11 (average funded strength)



Source: Defence Annual Reports, 2001-02 Defence Budget Brief and 2008-09 PBS

Unfortunately, the improved numbers have not been shared equally between the three services. Army has done best, exceeding its target for 2007-08 by 540 to register an increase of 1,140 personnel. Air Force grew by 319 personnel which is 128 positions over what was planned. And although Navy's strength grew by 192, this was a little under the budgeted figure.

Over the next four years the permanent ADF is planned to increase by around 4,350 people including: Navy (862); Army (2,983) and Air Force (505). Given recent trends, we can probably be cautiously optimistic that this will be achieved—though Navy has a hard task ahead.

The annual change in ADF strength is the difference between the numbers of people recruited into and separated from the force (typically around 5,000 in each case). Since the planned change in strength is usually no more than 1000, the outcome is finely balanced. With this in mind, we turn now to examine ADF recruitment and separations.

Recruitment

Table 2.5.2 shows the percentages of recruitment targets that have been met over the last twelve years. Following solid improvements earlier this decade, which saw the rate grow from 76% to 93% in 2001-02, performance dropped back to the mid-80% in 2002-03 and 2003-04 before deteriorating to 80% in 2004-05 and recovering to 84% for the past two years.

It is important to note that recruitment results vary from Service to Service, and that within each Service skilled personnel (like technicians and trades people) are particularly hard to recruit. This no doubt reflects the very buoyant labour market and the national skilled labour shortage that Australia is experiencing. As the data shows, Navy has the most serious problem at the moment.

Table 2.5.2: Percentage of recruitment targets met

	95/96	96/97	97/98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07
Navy	98%	92%	98%	76%	57%	74%	85%	84%	86%	73%	72%	79%
Army	99%	98%	94%	78.5%	83%	79%	100%	79%	84%	81%	98%	86%
Air Force	86%	93%	101%	90.5%	83%	88%	87%	94%	90%	91%	88%	86%
ADF	**96%**	**94%**	**97%**	**80%**	**76%**	**80%**	**93%**	**84%**	**86%**	**80%**	**84%**	**84%**

Source: Defence Annual Reports and Defence submission to the FAD&T References Committee inquiry into ADF recruitment and retention, May 2001 and DAR

Retention

Table 2.5.3 shows the percentages of ADF personnel who separated from full-time military service over the last twelve years. It shows separation rates reaching a plateau after falling slowly for three years. Some care must be taken with this data because figures for earlier years were impacted by the deliberate reduction in the size of the ADF between 1997 and 2001 under the Defence Reform Program. Nevertheless, separation rates from 2001-02 to 2004-05 were better than in 1995-96 before the cuts to personnel commenced.

Table 2.5.3: ADF separation rates

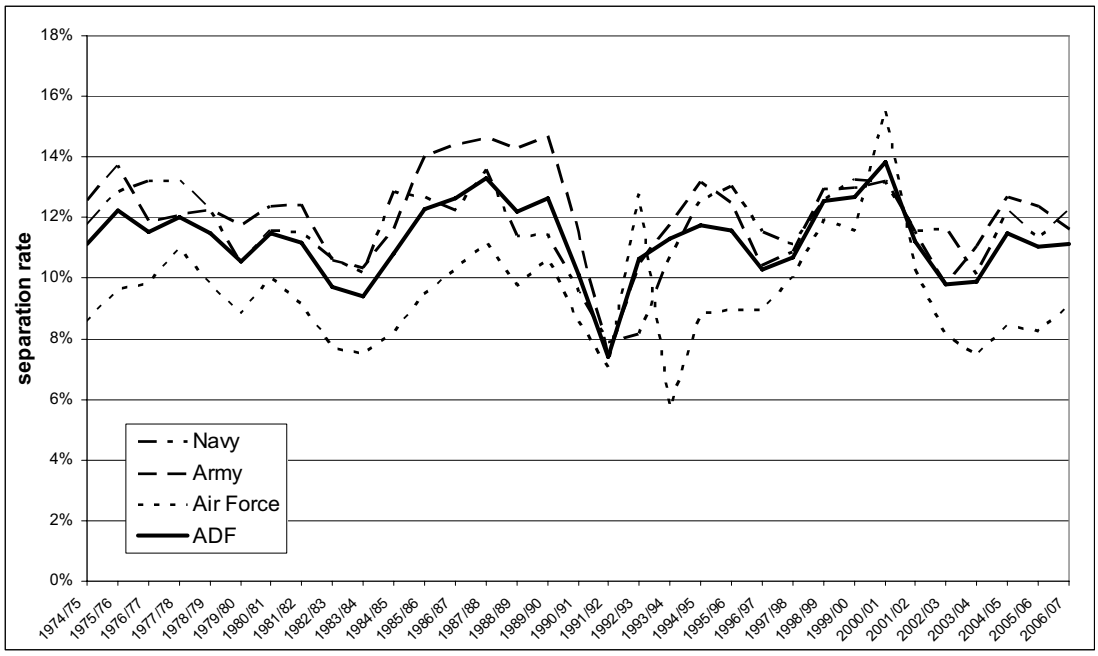
	95/96	96/97	97/98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07
Navy	13.0%	11.5%	11.1%	12.6%	13.3%	13.2%	11.5%	11.6%	10.1%	12.2%	11.3%	12.2%
Army	12.5%	10.4%	10.9%	12.9%	13.0%	13.2%	11.5%	9.8%	11.0%	12.7%	12.4%	11.6%
Air Force	9.0%	9.0%	10.0%	11.9%	11.6%	15.6%	10.4%	8.1%	7.4%	8.4%	8.5%	9.0%
ADF	**11.6%**	**10.3%**	**10.7%**	**12.6%**	**12.7%**	**13.8%**	**11.2%**	**9.8%**	**9.9%**	**11.5%**	**10.7%**	**11.1%**

Source: Defence Annual Reports and Defence submission to the FAD&T References Committee inquiry into ADF recruitment and retention, May 2001.

To put the recent ADF separation rate in context, Figure 5.2.3 plots the separation rate over the past thirty years. The key point to notice is that the current separation rate is commensurate with that achieved over the past three decades. Given that a number of factors have arisen in that time to make long-term ADF service more difficult—growing numbers of employed spouses, greater geographical dispersal of the ADF and the trend in society to shorter-term employment—the fact that the ADF is keeping people on average for the same length of time as in the 1970s is a real achievement. It follows that the ADF's problem with personnel numbers is principally a recruitment problem.

That is not to deny that retention is an issue in particular categories and ranks. The strong demand for skilled workers in the broader economy is driving up wages in areas like the trades and engineering that Defence requires to keep its high-tech capability edge. Fortunately, remuneration arrangements are being revamped to give Defence more agility to respond to market forces so that it can retain critical personnel.

Figure 2.5.3: Permanent ADF separation rate: 1974-75 to 2006-07

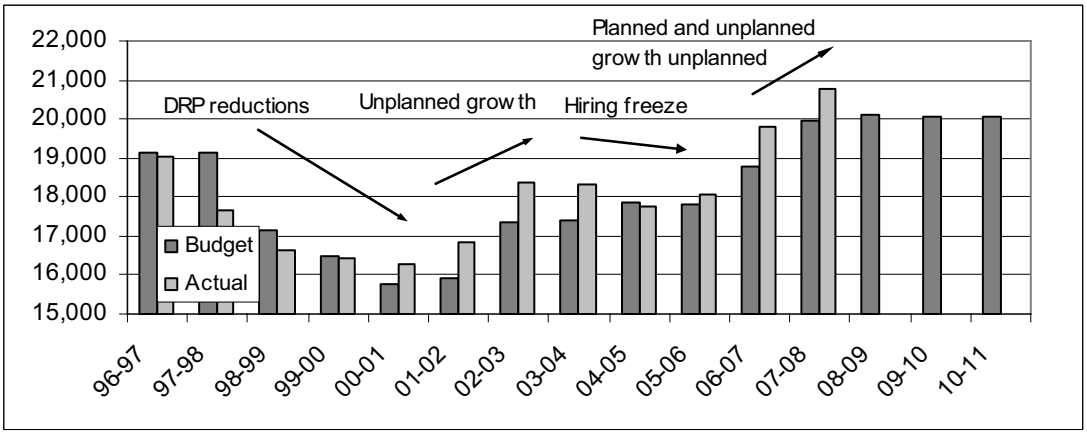


Source: DAR 1974-75 to 2006-07

Civilian Numbers

The situation with civilian numbers is captured in Figure 2.5.4 which plots budgeted and actual civilian numbers from 1996-07 onwards. Although civilian numbers fell quickly under the Defence Reform Program, they grew back very rapidly in the first two years of White Paper implementation – three times more quickly than military numbers grew. What is more, the growth was largely unplanned, with the size of the civilian workforce in 2001-02 exceeding budget estimates by 5.8% and similarly in 2002-03 (6.1% in excess). However, in January 2003 a civilian hiring freeze was imposed within Defence after it became clear that the projected number of civilian personnel would exceed the revised estimate given less than two months earlier.

Figure 2.5.4: Civilian personnel: 1996/97 to 2007/08



Source: Defence Annual Reports, 2001-02 Defence Budget Brief and 2008-9PBS

In April 2003, the freeze was lifted but direction was given to maintain civilian numbers at current levels. The move to stem the rise in civilian numbers was understandable given that additional personnel must be funded from within current Defence funding unless linked explicitly to a specific government-funded initiative. In

the 2003-04 budget, a programmed reduction plan was set in place to reduce civilian numbers by 1,008 from 18,385 to 17,377.

However, the actual result for 2003-04 came out at 18,303 only 82 positions below the previous year's figure due, mainly, to a series of government initiatives but also because of an extra 349 new civilian positions unrelated to government initiatives or more efficient practices.

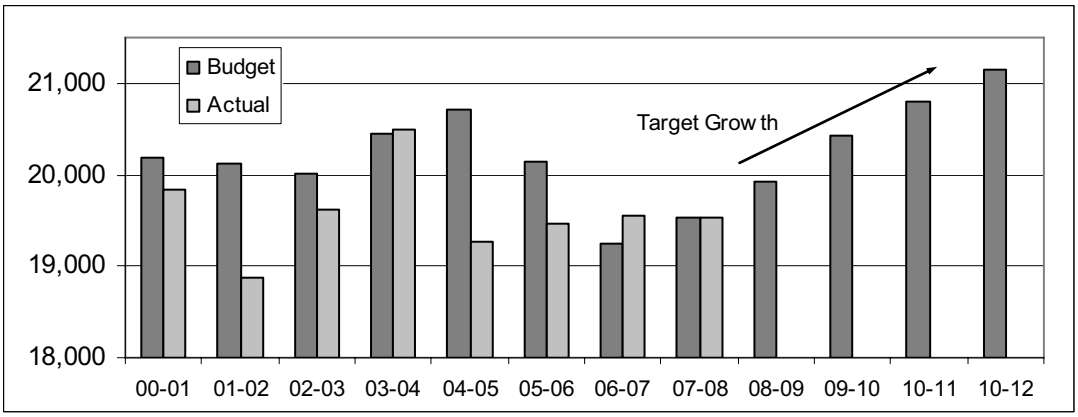
For a while, in 2004-05 and 2005-06, personnel numbers were largely under control resulting in a close alignment of budgeted and actual figures. In 2006-07, civilian personnel numbers were set to rise by 950. Most, but not all, of these positions were related directly to either new government initiatives or the creation of a more efficient workforce. However, the actual result for 2006-07 was an increase of 1,388 personnel, more than 450 above the estimate. Then, in 2007-08, civilian numbers grew by another 1,328, fully 860 above the initial budget estimate. Whatever constraints were imposed in 2004-05 and 2005-06 appear to have disappeared.

The plan for 2008-09 is for civilian numbers to fall by 666 positions and then remain largely static across the forward estimates at around the 20,000 figure.

Reserve numbers

After a period of volatility, Reserve numbers have remained constant at around 19,500 personnel for the past three years, Figure 2.5.5. The 2008-09 PBS targets steady growth across the next four years that would see the Reserve reach 21,160 in 2011-12. Much of the growth is due to the development of Army and Air Forces High Readiness Reserves.

Figure 2.5.5 Active Reserve personnel: 2000-01 to 2006-07



Source: Defence Annual Reports and 2008-09 PBS

What is the long-term target for the permanent ADF?

To understand the target strength for the ADF requires some history. The starting point is the original post Defence Reform Program goal of a 50,000 strong ADF. A number of things have happened since then. First, in late 1999 the Prime Minister announced that the ADF would grow by 3,555 personnel to bolster Air Force's deployable capability and build six full strength permanent Army battalions (up from four). Second, a series of post-9/11 counter-terrorism budget initiatives added to Army's strength. Third, the 2003 Defence Capability Review cut capability from the Navy and Air Force by retiring two FFG frigates, removing two mine hunters from

service and retiring the F-111 fleet past 2010. Then, in the 2005-06 budget, two additional patrol boats added further personnel to Navy.

Three initiatives from the 2006-07 Budget increased the target strength for the ADF. First, the reactivation of the two Mine Hunters added an extra 30 people to Navy. Second, the HNA initiative will add an extra 1,485 full time military personnel. Third, the restructure of ADF command and control arrangements delivered a saving of 232 personnel. Since then, we've seen 2,600 people added to the long-term target (mainly in Army) to deliver two additional battalions, while another 563 new people have been added to Air Force's long-term strength due to the C-17 (86 personnel) and F/A-18F Super Hornet (477 personnel) acquisitions.

The recorded and estimated figures, as best we can determine, for the long-term target strength of the ADF are set out in Table 2.5.4.

Table 2.5.4: Long-term target for the permanent ADF

	Navy	Army	Air Force	Total
Post DRP Baseline	13,800	23,000	13,000	50,000
East Timor Boost 1999		3,000	555	3,555
White Paper Target	**13,800**	**26,000**	**13,555**	**53,355**
2002-03 PBS				
Tactical Assault Group		154		154
Incident Response Regiment		117		117
2003-04 PBS				
Special Operations Command	3	321	3	327
Defence Capability Review				
Retire 2 oldest FFG	-416			-416
Retire F-1111 strike fleet			-486	-486
2005-06 PBS				
Crew for additional Armidale class	63			63
2006-07 PBS				
Reactivate Minehunters	30			30
Rationalisation of ADF C2	-71	-96	-65	-232
HNA		1,485		1,485
2006-07 PAES				
Enhanced Land Force – Stage 1	47	1,446	185	1,678
GAP Year initiative	250	500	275	1,025
2007-08 PBS				
C-17			86	86
F/A-18F Super Hornets			477	477
civilianisation and other adjustments	-17	-311	25	-303
Enhanced Land Force – Stage 2		922		922
Total	**13,689**	**30,538**	**14,055**	**58,282**

It is important to remember that these figures may not take proper account of all the additional personnel required to operate the new equipment that will be entering service over the next several years like the three new Air Warfare Destroyers to be delivered from 2013 (a visit to the Defence web-site confirms that the FFG fleets is not planned to be retired until well after the ADW enter service).

How much do personnel cost?

Personnel expenses for Defence including DMO in 2008–09 will be around $7.9 billion rising to $10 billion in 2011–12. (Note: these figures include the cost of military personnel and Defence civilians from PBS Table 1.5.3 on page 64 and DMO civilians from Table 2.7.1 on page 205. The cost of DMO military personnel is recorded on Defence's accounts as a supplier expenses. We explain why in Section 2.7 of this Brief.)

Separate military and civilian personnel expenses have appeared in the last seven annual reports and in the 2008-09 PBS. This allows us to calculate the recent and estimated per-capita cost of civilian and military personnel over time. The results of this calculation appear in Table 2.5.5 and 2.5.6. The per-capita expenses include salaries, allowances, superannuation, health, redundancies, housing and fringe benefits tax.

To ensure consistency we have adjusted the historical data for military personnel expenses in Table 2.5.5 to remove military compensation, which has been transferred to the Department of Veteran's Affairs, and removed one-off expenses incurred in 2004-05. This ensures a like-with-like comparison between the years as far as possible.

The percentage growth rates are nominal (not corrected for inflation) but we have listed the nominal indexation granted to Defence for comparison. These are:

- For civilians; Implicit Non-Farm GDP Deflator +2 per cent
- For military; Implicit Non-Farm GDP Deflator +2½ per cent

It is important to note that indexation of +2 per cent and +2½ per cent did not commence until 2004-05. Prior to that time Defence had to make do with the implicit Non-Farm GDP Deflator (NFGDPD). Nonetheless, the comparison over the entire period is valid for judging the adequacy or otherwise of the present regime.

Table 2.5.5: Per-capita permanent ADF personnel expenses

	Military Numbers	Expense $ 000's	Per Capita	Nominal Growth	Nominal Indexation
00-01	50,355	4,047,121	$80,372		
01-02	50,932	4,273,863	$83,913	4.41%	4.70%
02-03	52,080	4,458,208	$85,603	2.01%	5.70%
03-04	52,034	4,890,100	$93,979	9.78%	6.50%
04-05	51,813	4,757,900	$91,828	-2.29%	6.40%
05-06	51,151	5,093,100	$99,570	8.43%	7.30%
06-07	51,504	5,515,651	$107,092	7.55%	7.30%
07-08*	53,109	6,055,800	$114,026	6.47%	6.50%
08-09	54,747	6,380,900	$116,553	2.22%	8.65%
09-10	56,188	6,787,300	$120,796	3.64%	4.00%
10-11	56,876	7,240,200	$127,298	5.38%	3.50%
10-12	57,506	7,622,900	$132,558	4.13%	4.70%
				4.70%	**5.93%**

*Source: Defence Annual Reports and 2008-09 PBS, expenses adjusted pre-2003-04 to take account of Reserve component. *2007-08 PAES*

The key result from the time series of military per capita costs in Table 2.4.5 is that actual growth has been around 1.2% per cent below nominal indexation. What's more, for 2007-08 and 2008-09, per-capita expenses grew by only 8.7% at the same time as indexation grew by 15.2%.

Table 2.5.6: Per-capita Defence civilian personnel expenses

	Civilian Numbers	Expense $ 000's	Per Capita	Nominal Growth	Nominal Indexation
00-01	16,292	956,661	$58,720		
01-02	16,819	1,086,116	$64,577	9.97%	4.2%
02-03	18,385	1,235,752	$67,215	4.09%	5.2%
03-04	18,303	1,363,205	$74,480	10.81%	6.0%
04-05	17,753	1,293,100	$72,838	-2.20%	5.9%
05-06	13,577	1,084,382	$79,869	9.65%	6.8%
06-07	14,516	1,212,393	$83,521	4.57%	6.8%
07-08*	14,824	1,248,500	$84,222	0.83%	6.0%
08-09	14,754	1,368,200	$92,734	10.11%	8.2%
09-10	14,763	1,473,400	$99,804	7.62%	3.5%
10-11	14,780	1,584,000	$107,172	7.38%	3.0%
11-12	14,752	1,659,800	$112,514	4.98%	4.2%
				5.7%- 6.2%	**5.4%**

Source: Defence Annual Reports and 2008-09 PBS.
*Note: excludes DMO past 2005-06. *2007-08 PAES*

In contrast, civilian costs have been increasing by at least 0.3 per cent faster than indexation. The explanation for this rapid rise is likely the ongoing 'level enrichment' that has seen the number of senior personnel grow disproportionately. In part, this can be explained by the need to compete in a tight labour market for skilled personnel.

Comparison of the Defence civilian per capita rates with those available for DMO appears in Table 2.5.7. It is unclear why Defence per capita civilian expenses are rising so much more quickly than those in DMO, though it is worth noting that the rate of increase of Defence civilian expenses also exceeds that occurring in the ADF for the corresponding period (33%).

Table 2.5.7: Per-capita DMO civilian personnel expenses

	DMO Civilians	DMO Expenses	DMO per capita	Defence per capita
05-06	4,502	353,892	78,608	79,869
06-07	4,951	409,262	82,662	83,521
07-08	5,567	446,291	80,167	83,883
08-09	5,375	474,694	88,315	92,734
09-10	5,309	500,479	94,270	99,804
10-11	5,302	513,284	96,810	107,172
11-12	5,274	525,605	99,660	112,514
		7-year growth	**26.8%**	**40.9%**

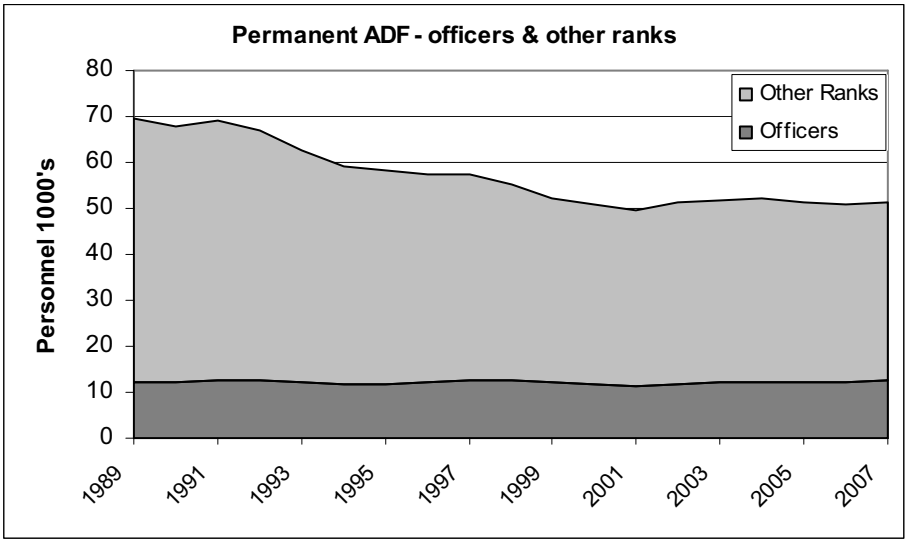
Source: 2008-09 PBS and DAR

Finally, a caution is in order when looking at the data in the last three tables; the ongoing impact of accrual (non-cash) shifts can make very significant differences. This has probably contributed to some of the big year-on-year variations in growth in both civilian and military per-capita expenses. Accordingly, the trends are at best indicative and should be treated with care – but they are the best that we can extract from the budget papers.

Personnel Structures

The breakdown of ADF personnel by rank, and civilians by level, appears in Table 1.5.2 on page 63 of the PBS and in Table 2.4.2 on page 158 for DMO. As the ADF has contracted over the last decade the number of officers has remained more or less constant so that the percentage of officers in the permanent ADF has grown from 17% to 24.6% Figure 4.5.6. The result is that there are now around 3.3 enlisted men for every officer. In comparison, recent figures for the UK and US are around 19% and 16% respectively although it should be noted that they both have very much larger economies of scale. For the period covered by the last two annual reports, the number of officers rose by 474 at the same time as the number of enlisted personnel fell by 484.

Figure 2.5.6: Permanent ADF Numbers as at 30 June 1989 – 2007



Source: Defence Annual Reports 1989-90 to 2006-07.

Generals and Mandarins

The trends in star rank, senior executive, and senior officer numbers are shown in Table 2.5.8, the most recent data is taken from the 2008-09 PBS. Changes in reporting account for the gaps and lack of earlier data.

Table 2.5.8 Numbers of Senior Ranks and Executive Levels; average funded strength

	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08		%
Civilian												
Executives (Defence)	100	106	103	117	130	123	96	102	108	115	122	
Executives (DMO)							30	29	29	37	35	
Total	**100**	**106**	**103**	**117**	**130**	**123**	**126**	**131**	**135**	**140**	**157**	**57%**
Senior Officers (Defence) [1]	0	0	3317	3844	3824	3889	3081	3349	3656	3862	3874	
Senior Executives (DMO) [1]	0	0	0	0	0	0	995	1064	1225	1452	1406	
Total	**0**	**0**	**3317**	**3844**	**3824**	**3889**	**4076**	**4449**	**4844**	**5049**	**5280**	**59%**
Military												
Star Officers	110	0	120	119	120	119	125	135	151	165	171	**55%**
Senior Officers[2]	1360	0	1415	1467	1507	1528	1551	1594	1693	1783	1780	**30%**

Source: Defence Annual Reports and 2008-09 PBS. [1] EL 1 and 2 Levels. [2] Colonel and Lt Colonel Ranks. SES and senior officer figures include relief staff.

As shown, in the past decade the number of civilian senior executives has increased by 57% and military star-rank officers by 55%. At the same time, the civilian workforce grew by only 20% and the military workforce only grew slightly.

Over a similar time frame, the number of civilian and military senior officers has grown by 59% and 30% respectively. However, the fastest rate of increase has occurred at the level of Deputy Secretary and 3-star military officer (Table 2.5.9) where much of the growth has occurred in recent years including as a result of the 2007 Defence Management Review.

Table 2.5.9 Numbers of Senior Ranks and Executive Level positions

	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	%
Deputy Sec. (Defence)	3	4	5	5	5	5	5	5	5	7	7	133%
Deputy Sec. (DMO)*	1	1	1	1	1	1	1	1	1	4	4	400%
subtotal	**4**	**5**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**10**	**10**	**150%**
3-Star Officers	4	4	4	4	4	5	5	5	5	5	6	25%
Total	**8**	**9**	**10**	**10**	**10**	**11**	**11**	**11**	**11**	**15**	**16**	**100%**

Source: Defence Annual Reports and 2008-09 PBS.
**Includes CEO which was previous deputy secretary level*

Professional Service Providers

A small part of the Defence workforce is made up of specialist Professional Service Providers (PSP) in line positions within the organisation. There is a program underway to replace them, where cost effective, with permanent APS personnel. Recently planned and achieved figures appear in Table 2.5.10. It appears that progress is being made in reducing the number of PSP. The savings achieved by doing so contribute to Defence's program of administrative savings.

Table 2.5.10: Professional Service Providers

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Numbers (planned)		2,111	1,771	1,679	1,536	1,472	1,420
Numbers (actual)	2,311	1,878	1,906	1,712	1,475	1,417	
Difference		-233	+135	+33	-61	-55	

Source: Defence Annual Reports and 2007-08 PBS.

Defence Remuneration

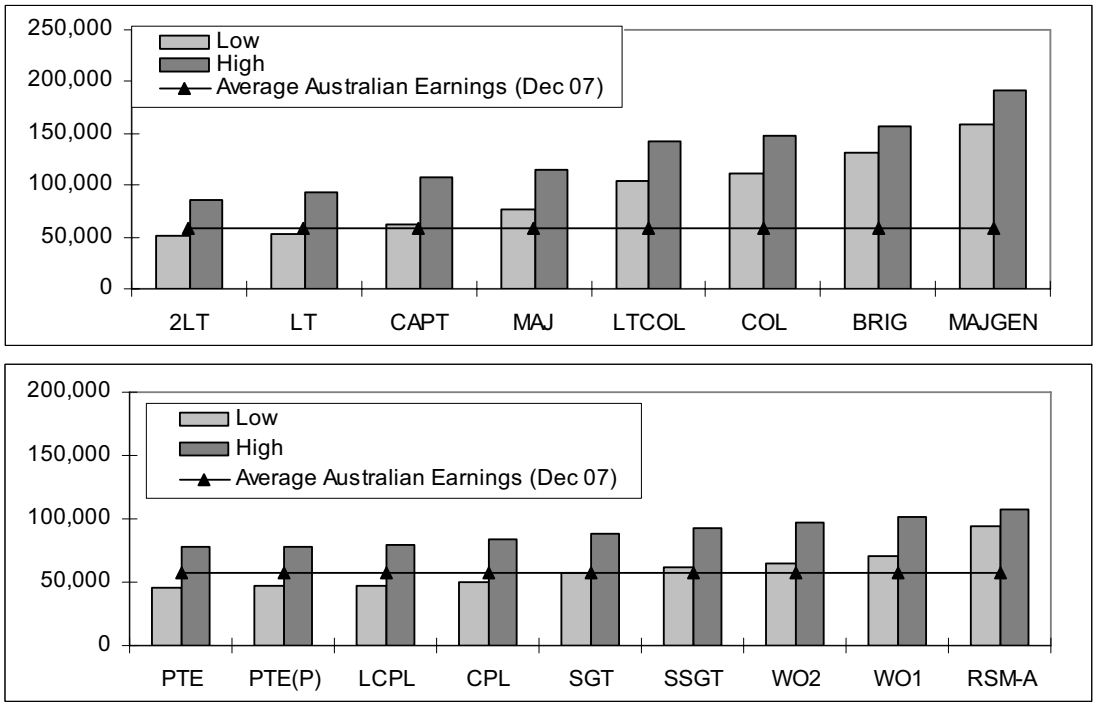
The PBS does not deal with Defence remuneration. But because the largest single slice of the Defence budget goes towards civilian and military salaries we have included a short summary of the key data. Further detail can be found on the Defence Personnel Executive web-site: *http://www.defence.gov.au/dpe/*

Defence Salaries

Figure 2.5.7 and 2.5.8 show Defence military and civilian salaries circa late-2006/ mid-2007 benchmarked against the latest available Average Weekly Ordinary-Time Earnings for Full-Time Earning Adults (AWOFTEA) from December 2006. The military figures include both salary and the service allowance of $10,098 per annum received by all service personnel below the rank of Colonel. No account has been taken of the ancillary benefits received by military personnel like housing, medical,

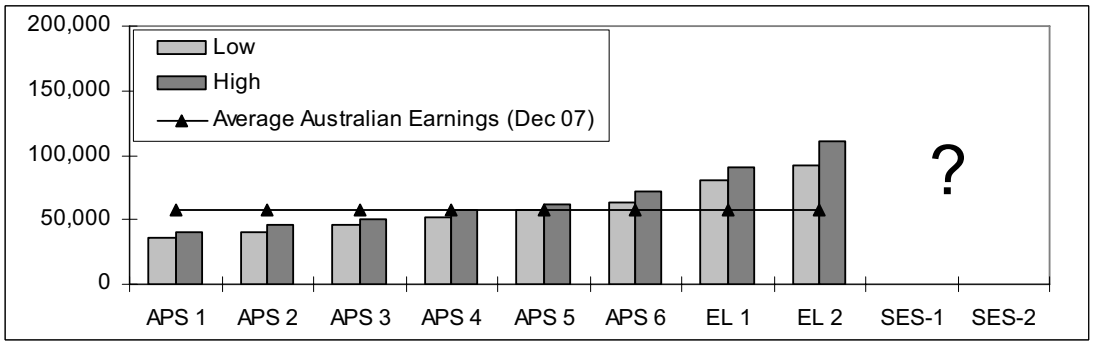
rations and specific allowances for skill, hardships and deployments. Unfortunately, the current salaries of Defence civilian executives within the SES are unavailable.

Figure 2.5.7 Defence military salaries plus service allowance as at August 2007



Source: ABS weekly earnings data and Defence pay rates available on http://www.defence.gov.au/dpe

Figure 2.5.8 Defence civilian salaries as at March 2008



Source: ABS weekly earnings data and Defence pay rates available on *http://www.defence.gov.au/dpe*

To facilitate understanding of the salaries listed in the three tables above, a comparison of relative ranks/levels has been provided in Table 2.5.11 below.

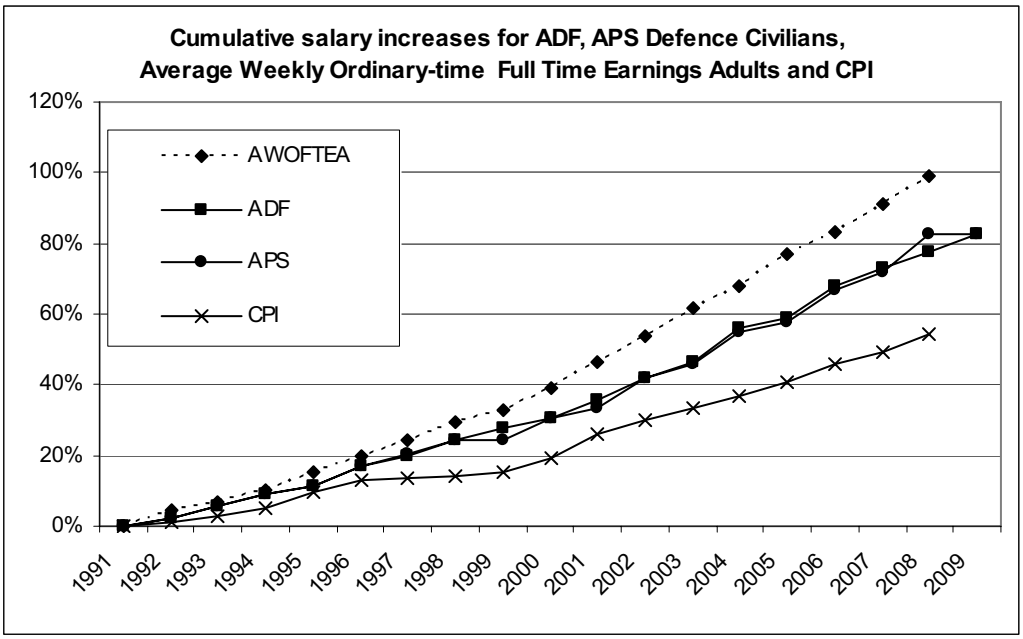
Table 2.5.11: Rank/level comparison:

Civilian	Navy	Army	Air Force
APS-4	Sub-Lieutenant	Lieutenant	Flying Officer
APS-5	Lieutenant	Captain	Flight Lieutenant
APS-6	Lt-Commander	Major	Squadron Leader
EL-1	Commander	Lt-Colonel	Wing Commander
EL-2	Captain	Colonel	Group Captain
SES-1	Commodore	Brigade	Air Commodore
SES-2	Rear Admiral	Major General	Air Vice Marshall

The comparison of defence salaries with AWOFTE in Figure 2.5.7 and 2.5.8 represents only a snapshot in time. The relative dynamics of average earnings, defence salaries and the cost of living is quite another issue. Indeed, as Figure 2.5.9

shows, over the past decade and a half, defence salaries have consistently grown more slowly than average earnings but more quickly than the Consumer Price Index (CPI).

Figure 2.5.9 Defence civilian and military salaries – rate of increase



Source: ABS weekly earnings data and Defence pay rates available on *http://www.defence.gov.au/dpe*

Three observations can be made about the relative growth in average earnings, defence salaries and consumer prices:

- Because the salary increases for the (largely distinct) ADF and APS workforces are now explicitly linked, any suggestion that they are driven by productivity is tenuous to say the least.

- The fact that average earnings have outpaced defence salaries does not *necessarily* mean that defence remuneration has failed to keep pace with community standards. It may be that the growth in average earnings reflects structural changes in the Australian workforce. More analysis is needed prior to a firm conclusion.

- The actual remuneration of civilian personnel has increased much more quickly than for the military workforce, in part, through the 'level enrichment' shown in Table 2.5.8. (Note that civilian senior officers make up 25% of the civilian workforce while military senior officers only account for 3%, so that the former is much more sensitive to growth than the latter.)

2.6 Outcomes and Performance [PBS Chapter 6]

Under the outputs and outcomes framework explained in Section 1.3 of this Brief, the government 'buys' Outputs from Defence to achieve designated Outcomes. Chapter 6 of the PBS describes these transactions between the government as customer for Defence's Outputs, and Defence as supplier of those outputs.

The Cost of Outcomes and Outputs

The core of the Defence Budget is the statement of the costs and performance of outcomes and outputs on p.65–109 of the PBS. The net cost of the outputs and output groups into which they are collected, appears in Table 2.6.1 below. The net cost is derived by subtracting revenues from expenses. To capture the overall cost of delivering outputs, non-cash expenses due to the depreciation of equipment are included in the net cost.

Figure 2.6.1 Net outcome and output costs

Outcome 1: ***Australia's national interests are protected and advanced through the provision of military capabilities and the promotion of security and stability***	**Net Cost 2008-09**
Output Group 1.1: Office of the Secretary and CDF	**82,848**
Output Group 1.2: Navy Capabilities	
Output 1.2.1 v Navy Headquarters	27,906
Output 1.2.2 — Fleet Headquarters	317,718
Output 1.2.3 — Capability for Major Surface Combatant Operations	1,098,741
Output 1.2.4 — Capability for Naval Aviation Operations	333,608
Output 1.2.5 — Capability for Patrol Boat Operations	113,573
Output 1.2.6 — Capability for Submarine Operations	477,655
Output 1.2.7 — Capability for Afloat Support	105,705
Output 1.2.8 — Capability for Mine Warfare	176,880
Output 1.2.9 — Capability for Amphibious Lift	147,695
Output 1.2.10 —Capability for Hydrographic and Oceanographic Operations	77,542
Output 1.2.11 — Navy Systems Command	759,194
subtotal	**3,636,215**
Output Group 1.3: Army Capabilities	
Output 1.3.1 — Army Command and Executive	331,834
Output 1.3.2 — Capability for Special Operations	330,627
Output 1.3.3 — Capability for Medium Combined Arms Operations	644,294
Output 1.3.4 — Capability for Light Combined Arms Operations	1,112,436
Output 1.3.5 — Capability for Army Aviation Operations	415,777
Output 1.3.6 — Capability for Combat Support to Operations	193,640
Output 1.3.7 — Capability for Operational Logistics Support to Land Forces	304,375
Output 1.3.8 — Capability for Reserve Protective Operations	364,226
Output 1.3.9 — Training Support - Army	871,483
subtotal	**4,568,693**
Output Group 1.4: Air Force Capabilities	
Output 1.4.1 — Air Force Headquarters Executive and Agencies	801,322
Output 1.4.2 — Air Command Headquarters and Executive	36,388
Output 1.4.3 — Capability for Training Support	202,316
Output 1.4.4 — Capability for Airlift Operations	594,853
Output 1.4.5 — Capability for Combat Support of Air Operations	207,135
Output 1.4.6 — Capability for Strategic Surveillance and Maritime Attack Operations	709,284
Output 1.4.7 — Capability for Air Combat Operations	1,222,659

Output 1.4.8 — Capability for Aerospace Operational	62,734
subtotal	**3,866,691**
Output Group 1.5: Intelligence Capabilities	
Output 1.5.1 — Intelligence	441,893
Output 1.5.2 — Security	65,502
Output 1.5.3 — International Policy	140,400
Subtotal	**647,795**
Output Group 1.6: Defence Support	
Output 1.6.1 — Defence Support Executive	214,955
Output 1.6.2 — Defence Health Services	280,048
Output 1.6.3 — Personnel Services	432,609
Output 1.6.4 — Defence Legal	57,687
Output 1.6.5 — Infrastructure	588,641
Output 1.6.6 — National Operations	1,534,682
subtotal	**3,108,623**
Output Group 1.7: Defence Science and Technology	**351,990**
Output Group 1.8: Chief Information Officer	**699,984**
Output Group 1.9: Vice Chief of the Defence Forces	**262,016**
Output Group 1.10: Joint Operations Command	**48,437**
Output Group 1.11: Capability Development	**342,919**
Output Group 1.12: Chief Finance Officer	**421,723**
Output Group 1.13: People Strategies and Policy	**341,132**
Output Group 1.14: Superannuation and Housing Support Services for Current and Retired Defence Personnel and other Administered Items	**2,943,388**
Total Defence Outcome 1 (excluding administered)	**18,379,067**
Total Defence Outcome 1 (including administered)	**21,322,455**
Outcome 2: ***Military operations and other tasks directed by the Government to achieve the desired results***	
Output Group 2.1: Operations Contributing to the Security of the Immediate Neighbourhood	
Output 2.1.1 — Operation Astute (net additional costs only)	175,217
Output 2.1.2 — Operation Anode (net additional costs only)	27,094
subtotal	**202,311**
Output Group 2.2: Operations Supporting Wider Interests	
Output 2.2.1 — Operation Slipper (net additional costs only)	594,847
Output 2.2.2 — Operation Catalyst (net additional costs only)	202,949
subtotal	**797,796**
Total Defence Outcome 2	**1,000,107**
Outcome 3: ***Defence's support to the Australian community and civilian authorities to achieve the desired results***	
Output Group 3.1: Defence Contribution to National Support Tasks in Australia	
Output 3.1.1 — Defence Force Aid to the Civil Power Tasks (net additional costs only)	-
Output 3.1.2 — Defence Assistance to the Civil Community Tasks (net additional costs only)	-
Output 3.1.3 — Operation Resolute (net additional costs only)	12,863
Output 3.1.5 — Operation Testament (net additional costs only)	-
Total Defence Outcome 3	**12,863**

Source: 2008-09 PBS

The outcome and outputs for the Defence Material Organisation (DMO) are listed in the second part of the PBS [p. 161], for convenience these are listed below in Table 2.6.2.

Figure 2.6.2: Net outcome and output costs

Outcome 1: ***Defence capabilities are supported through efficient and effective acquisition and through-life support of materiel***	
Output 1.1 — Management of Capability Acquisition	4,677,908
Output 1.2 — Capability Sustainment	4,866,624
Output 1.3 — Policy Advice and Management Services	102,804
Total DMO Outcome 1	**9,647,336**

Source: 2008-09 PBS

There is considerable overlap between the funds listed under the Defence outcomes/outputs and those for DMO. Around $4.9 billion worth of Defence's outcome costs represent the purchase of sustainment services from DMO (Output 1.2). Put simply, around half of DMO's outputs are inputs to Defence's outputs. DMO other $4.7 billion output (Output 1.1) does not contribute to Defence's outputs. Instead, it represents the purchase of new capital equipment that will be used to deliver Defence's outputs in the future.

As mentioned in Section 1, the new outcomes and outputs are much more closely aligned with the actual organisation of Defence than were those employed from 1999-00 to 2007-08. Nonetheless, there are significant linkages between certain elements. We have tried to capture the situation in Figure 2.6.1.

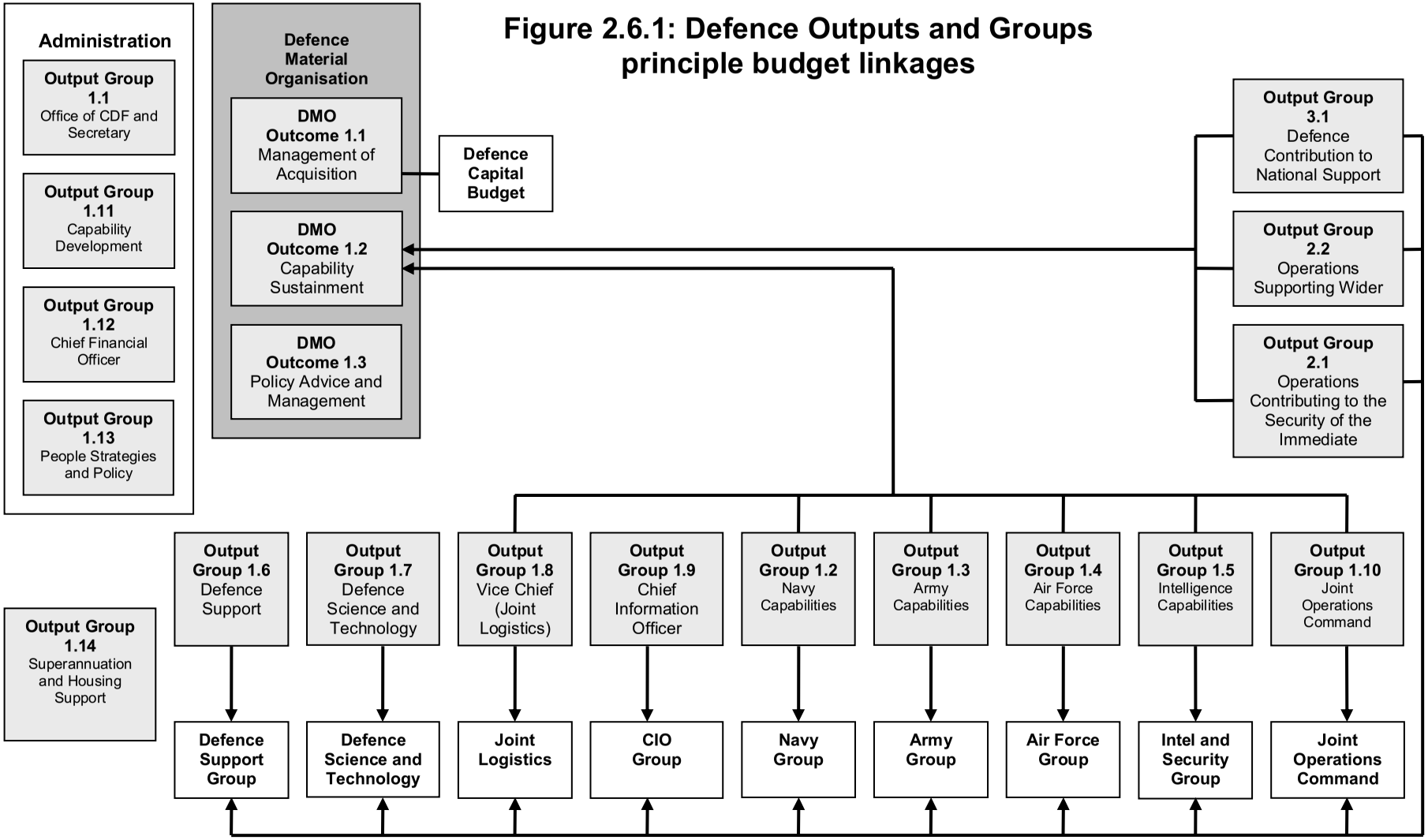
The essential points are as follows. The outputs under Outcome 3 do not align with any single organisational entity. Instead they capture then net additional cost of operations that is apportioned to those groups that actually support and deliver the operations including DMO. At the same time, the DMO sustainment budget is reflected in the costs attributed to the various output groups, principally Navy, Army and Air Force.

Output Statements

For each of the output groups the PBS contains an entry detailing the key performance indicators and a cost summary. In many cases, the key performance indicators read like the entries in a corporate plan. For example, the Office of the Secretary and CDF has six unexceptional key performance indicators including; *Ensure both Defence strategic policy and business strategy align with Government direction and priorities, provide clear guidance for the activities of Defence, and be responsive to external developments,* and *Enhance Defence's governance framework, through clearer authority and accountability and more rigorous performance management, assurance and audit processes.* Little would be gained by rehearsing the very large number of equally sensible key performance indicators that appear in the PBS. The interested reader can pursue them at leisure.

Of more interest are the concrete performance measures set out for the military capability outputs.

Figure 2.6.1: Defence Outputs and Groups principle budget linkages



Capability Performance

There are three broad performance measures employed at the output level in the capability related outputs; preparedness, core skills and quantity. These same performance measures have been employed in Defence Annual Reports and PBS is one way or another since 1999. We explore these three measures below. It's important to note that many of the output groups have additional specific performance measures.

Preparedness

Preparedness refers to the readiness and sustainability of the ADF to undertake operations, be it national support tasks, peacekeeping or war. The process by which preparedness targets are set bears recounting.

To begin with, the government's White Paper and Strategic Updates set out the broad strategic tasks that the ADF needs to be prepared to undertake – for example 'contributing to the security of our immediate neighbourhood'. Using this as a basis, Defence develops what is called *Australia's Military Strategy* which includes for each strategic task a series of *Military Response Options* which define the broad operational objectives without specifying how they are to be accomplished – for example 'maintain sea lines of communication to the north of Australia'. These Military Response Options then form the basis of the annual *Chief of the Defence Force's Preparedness Directive*.

The final result is a series of specific targets for each output. They are classified. But, for example, the light infantry output might be required to 'be prepared to deploy a battalion at 90 days notice to assist in a regional peacekeeping operation and to maintain the deployment for 12 months' (this example is purely illustrative).

Core Skills

Preparedness targets set for outputs are driven by Military Response Options with an anticipated warning time of less than 12 months. To take account of possible longer-term tasks and the requirement to retain broad expertise in the three Services, an enduring performance target for nearly all the Outputs is to 'achieve a level of training that maintains core skills and professional standards across all warfare areas'.

The assessment of what is to be achieved, and whether it has been achieved, is ultimately based on the professional military judgement of the Service Chiefs. A key consideration is whether planned training has been completed or not.

Quantity

Most of the Outputs include one or more 'quantity' measures that try to capture some aspect of *how much* capability will be delivered. Each of the three Services uses a different type of measure.

Navy: The basic measure of quantity used by Navy relates in some sense to the availability of ships and their crew to undertake a mission. From 1990-91 to 1998-99 the measure used was the average number of vessels available over the year, from 1999-00 to 2000-01 it was the number of vessel days at Minimum Level of Capability (MLOC) and in 2001-02 it was the numbers of vessel days Fully Mission Capable (FMC). In 2005-06 yet another measure was introduced, the planned number of Unit Ready Days (URD), defined as follows: Unit Ready Days are the number of days that a force element is available for tasking, by the Maritime Commander, within planned

readiness requirements. While this looks similar to the previous definition of Fully Mission Capable we're told that it is a new measure, and we therefore caution against comparison between the two quantities.

As of the 2003-04 DAR a new measure was introduced by Navy: 'Achieved Mission Capability' (AMC) which is the fraction of the URD for which a vessel meets the required level of readiness for the actual tasking for which the force element has been scheduled at any time through it's operational cycle. Until a baseline for AMC accumulates we will continue to focus on URD as the measure of quantity.

Army: With the exception of Army Aviation, the quantity measure used by Army is the presence of adequate quantities of trained personnel and equipment within an Output. No quantified targets are released publicly. In practice we get a qualitative assessment in the Annual Report.

Air Force: The quantity measure used by Air Force and Army Aviation is the number of flying hours undertaken by the Output. These measures have been applied consistently for over a decade and constitute a useful diagnostic tool given the established baseline.

Of all measures employed, flying hours are the only real measure of ADF activity that is disclosed. As shown in Section 3 of this brief, the long-term trend has been clearly downward. This has continued again this year. Table 2.6.3 details the planned flying hours for key ADF platforms for 2007-08 and 2008-09. While Army has largely remained where it was, and Navy has a mixed bag, the trend in Air Force continues downward.

Figure 2.6.3: Net outcome and output costs

Platform	*2007-08*	*2008-09*	*Change*
F-111 bomber	*3,600*	*3,250*	*-10%*
F/A-18 fighter	*12,500*	*11,500*	*-8%*
C-130 transport	*9,200*	*10,200*	*+11%*
AP-3C Orion	*8,200*	*7,900*	*-4%*
Hawk Lead in fighter	*8,000*	*7,600*	*-5%*
Chinook helicopter	*1,270*	*1,270*	*0%*
Blackhawk helicopter	*7,500*	*7,500*	*0%*
Kiowa helicopter	*10,000*	*10,360*	*4%*
Seahawk helicopter	*2,800*	*3,100*	*11%*
Sea King helicopter	*1,600*	*1,100*	*-31%*

Recent Performance

The last six Defence Annual Reports have maintained a largely consistent format of reporting against performance targets at the sub-Output level which equates to the current Outputs. This makes year by year comparisons possible. Table 2.6.4 summarises the results from the 2006-07 Annual Report and tracks the changes from the year before. Defence uses a four-point performance scale for preparedness and core skills: Achieved, Substantially Achieved, Partially Achieved and Not Achieved. To facilitate presentation we have mapped the numerical 'quantity' results according to the key at the bottom of the table.

Table 2.6.4: Output Performance from the 2006-07 Defence Annual Report

Output	Preparedness	Core Skills	Quantity
1. DEFENCE OPERATIONS			
1.1 Command of Operations	Achieved ↔		
1.2 Military Operations	Achieved ↔		
1.3 National Support Tasks	Achieved ↔		
2. NAVY			
2.1 Major Surface Combatants	Achieved ↔	Substantially ↔	Substantially ↓
2.2 Naval Aviation	Partially ↔	Substantially ↔	Partially ↔
2.3 Patrol Boats	Substantially ↔	Achieved ↔	Achieved ↔
2.4 Submarines	Substantially ↔	Substantially ↓	Partially ↓
2.5 Afloat Support	Achieved ↔	Achieved ↔	Achieved ↔
2.6 Mine Warfare	Achieved ↔	Achieved ↔	Substantially ↓
2.7 Amphibious Lift	Achieved ↔	Achieved ↔	Achieved ↑
2.8 Hydrographic	Achieved ↔	Achieved ↔	Achieved ↔
3. ARMY			
3.1 Special Ops	Achieved ↔	Achieved ↔	Achieved ↔
3.2 Medium Combined Arms	Achieved ↑	Partially ↔	Substantially ↔
3.3 Light Combined Arms Ops	Achieved ↔	Substantially ↔	Achieved ↔
3.4 Army Aviation Ops	Achieved ↔	Achieved ↔	Substantially ↔
3.5 Ground-Based Air Defence	Partially ↔	Partially ↓	Partially ↔
3.6 Combat Support Ops	Substantially ↔	Substantially ↔	Substantially ↔
3.7 Regional Surveillance	Achieved ↔	Achieved ↔	Achieved ↔
3.8 Operational Logistics Spt	Partially ↔	Partially ↔	Partially ↔
3.9 Motorised Ops	Partially ↔	Partially ↔	Substantially ↔
3.10 Protective Ops	Achieved ↔	Partially ↔	Partially ↔
4. AIR FORCE			
4.1 Air Combat Ops	Achieved ↔	Achieved ↔	Substantially ↔
4.2 Combat Spt of Air Ops	Achieved ↔	Partial ↔	Substantially ↔
4.3 Strategic Surveillance & Res	Achieved ↔	Achieved ↔	Substantially ↔
4.4 Air Lift	Achieved ↔	Achieved ↔	Achieved ↑
5. STRATEGIC POLICY			
5.1 Strategic Engagement	Achieved ↔		
5.2 Military Strategy & Cmd	Achieved ↔		
6. INTELLIGENCE	Achieved ↔		
Improved since 2005-06: ↑	Static since 2005-06: ↔		Declined since 2005-06: ↓
Quantity: Above 95% = Achieved, 95% to 75% = Substantially, Below 75% = Partially			

Source: 2005-06 and 2006-07 DAR

Figures 2.6.2 to 2.6.4 plot the delivery of Defence outputs as reported in the Defence annual reports between 2000-01 and 2006-07. There was a steady improvement over the first four years and a somewhat of a levelling off of performance in the last two although the trend remains positive overall.

Figure 2.6.2: Output performance – preparedness

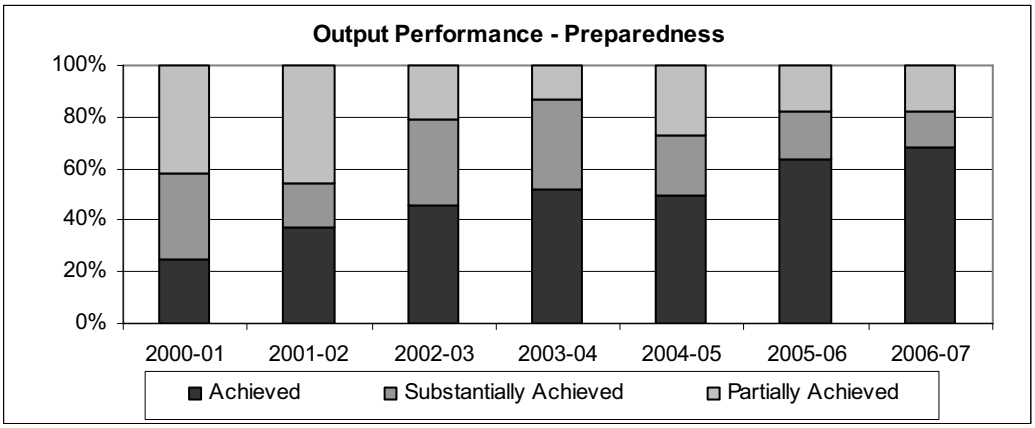


Figure 2.6.3: Output performance – core skills

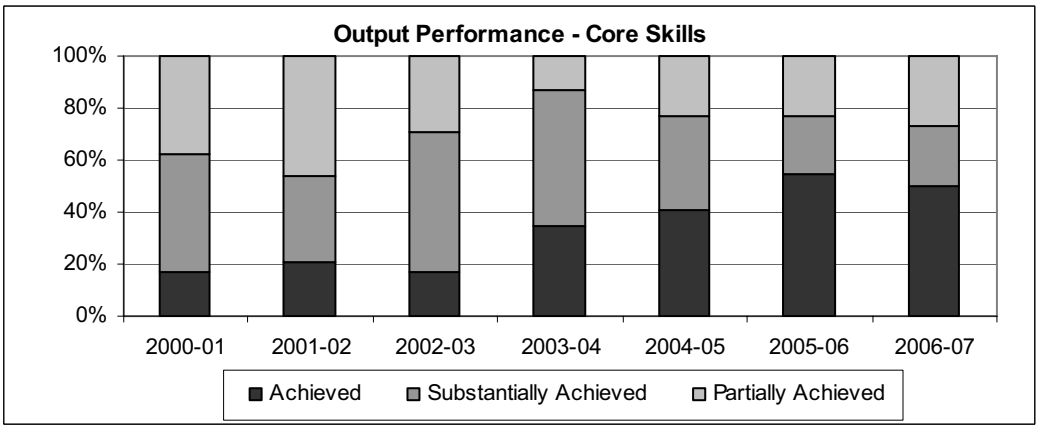
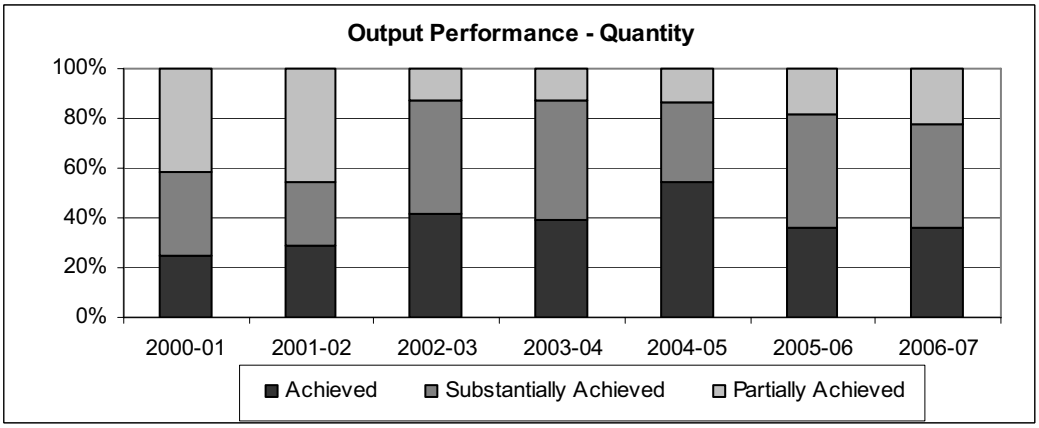


Figure 2.6.4: Output performance – quantity



Risks and Limitations

Each of the narratives for the capability output groups in the 2008-09 PBS identifies risks and limitation for the year ahead.

The **high tempo of concurrent operations remains** a concern but does not appear to be as pressing an issue as in previous years. Nevertheless, for some outputs the operational tempo has disrupted training and exercises.

All three services express concern about **personnel,** especially in specific skill areas. But the problem is not spread evenly. Navy seems worst off and they are finding both recruitment and retention difficult. Air Force appears to be in the best situation but still has problems in some specific areas.

It looks like the injection of extra funds into **logistics** over the last couple of years has come close to fixing the long-standing problem of systemic logistics shortfalls. Where there are problems, they seem to have more to do with the availability, rather than the affordability, of logistics supplies. Overall then, there is a consistent picture developing. Over the past six years the logistics problems identified in the PBS have been getting less severe, and the last five Annual Reports have reflected improved performance, as logistics funding has increased. All of the Outcomes have specific and unique problems that are raised in the PBS as briefly set out in Table 2.6.5 below.

Table 2.6.5: Outcome risks and limitations from the 2007-08 PBS

Outcome Group 1.2 Navy	Outcome Group 1.3 Army	Outcome Group 1.4 Air Force	Outcome Group 1.5 Intelligence
▪ Personnel shortages ▪ Concurrent operations ▪ Remediation of the submarine and aviation capabilities ▪ Gap left by the Seasprite cancellation	▪ Personnel shortages ▪ Remediation of logistics support ▪ Costly infrastructure ▪ Introduction of new capability	▪ Personnel shortages ▪ High operational tempo ▪ Transition to new capabilities	▪ Changing demands

Output Summaries

To augment the information provided in the PBS at the Output level, we have prepared one page Output summaries that seek to draw together relevant background information including on recent performance. In doing so, we have not sought to reproduce the material in the PBS but to compliment it.

An important part of the summaries is a graphical comparison of current targets with past performance. Unfortunately, it has not always been possible to include all the available data on flying hours and sea days within the summaries, so the data has been restricted to key platforms where necessary.

Because the new outcome/output structure has only been available for less than a week at the time of writing, the presentation is based on the old output structure. This has the advantage of allowing historical data to be incorporated.

Output 1.1 Command of Operations (Command of Operations)

Force Structure & Role

The Chief of the Defence Force (CDF) has delegated operational command responsibility to the Chief of Joint Operations (CJO). CJO commands Joint Operations Command (JOC), which comprises a headquarters and joint task forces and assigned force elements. CJO is responsible for planning and conducting ADF campaigns, operations, joint exercises and other activities as directed by CDF.

The ADF is currently undergoing a phased transition to an integrated model of command and control. This new structure separates the command of operations from the Raise Train Sustain of force elements by the single Services. From January 2007, ADF operations have been controlled by JOC through a single joint headquarters designated Headquarters Joint Operations Command (HQJOC) at Potts Point, NSW.

A co-located HQJOC facility is being constructed near Bungendore, NSW. It is to be staffed by up to 750 personnel and will be operational by the end of 2008. Until that time, control of operations, specified exercises and other activity will occur from existing headquarters facilities in Canberra and Sydney, with support from Joint Logistics Command in Melbourne.

In Canberra, CDF and CJO are supported by a strategic military staff – Military Strategic Commitments (MSC) branch – that works closely with other ADHQ areas and JOC. CDF's strategic intent for operational commitments is translated into direction by MSC staff. MSC also provides the military expertise for strategic engagement with government and representation and coordination at both the inter-departmental and coalition level.

Past Performance (Annual Report):

*estimate	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Achieved	Not Reported	Achieved
2001-02	**-**	Achieved	Not Reported	Substantially Achieved
2002-03	$527 million*	Achieved		
2003-04	$479 million	Achieved		
2004-05	$356 million	Achieved		
2005-06	$465 million	Achieved		
2006-07	$415 million	Achieved		
2007-08	$427 million			

Output 1.2 ADF Military Operations and Exercises

Force Structure & Role

As for Command of Operations (Output 1.1) plus forces specifically assigned for the purpose of the operation or exercise. As the title suggests, this is the actual conduct of operations and joint ADF combined (international) exercises.

Past Performance (Annual Report):

* estimate	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Achieved	Not Reported	Substantially Achieved
2001-02	**-**	Achieved	Not Reported	Achieved
2002-03	$326 million*	Achieved		
2003-04	$240 million	Achieved		
2004-05	$401 million	Achieved		
2005-06	$493 million	Achieved		
2006-07	$850 million	Achieved		
2007-08	$1,130 million			

Output 1.3 Contribution to National Support Tasks (Command of Ops)

Force Structure & Role

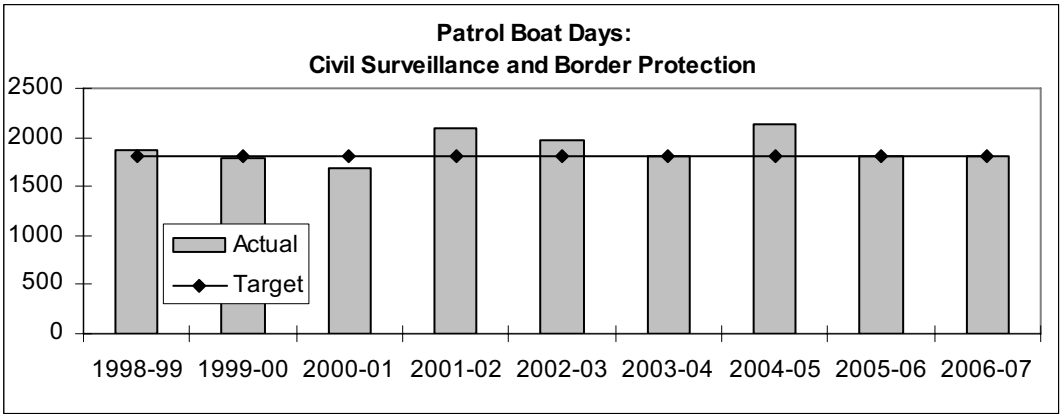
As for Command of Operations (Output 1.1) plus forces specifically assigned for the purpose of national support in non-combat roles. This ranges from the ongoing routine allocation of Patrol Boat and AP-3C Maritime Patrol Aircraft time, to the allocation of specific capabilities at short notice in a national support emergency. National Support tasks include security, ceremonial, civil maritime surveillance, search and rescue, bush fire response and support to the Army / ATSIC community assistance program.

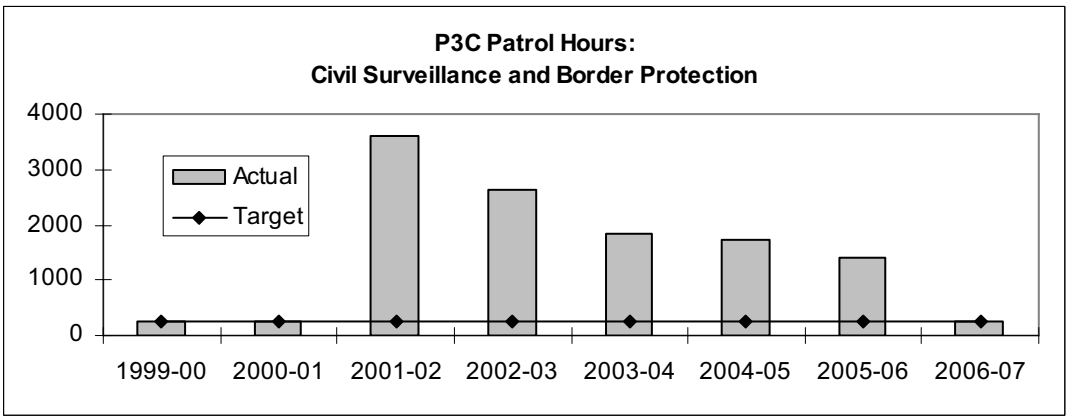
ADF support to the civil surveillance program, in consultation with Coastwatch, includes 250 flying hours by AP-3C surveillance aircraft, 1,800 Armidale-class patrol boat days, and 240 Regional Surveillance Unit (RSU) patrol days. (In 2006-07 a total of 240 RSU patrol days were achieved.) Other qualitative performance targets are listed in the PBS.

From 2001-02 through to 2005-06 the ADF's contribution to the civil surveillance program was displaced by border protection operations (Op Relex/Cranberry) which nevertheless resulted in a higher overall rate of effort.

Past Performance (Annual Report):

* estimate	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Achieved	Not Reported	Substantially Achieved
2001-02	-	Achieved	Not Reported	Achieved
2002-03	$16 million*	Achieved		
2003-04	$21 million	Achieved		
2004-05	$23 million	Achieved		
2005-06	$18 million	Achieved		
2006-07	$44 million	Achieved		
2007-08	$20 million			





Output 2.1 Major Surface Combatant Operations (Navy Capabilities)

Force Structure & Role

Four 1980s ***Adelaide class*** (US Oliver Hazard Perry class) ***Guided missile frigates (FFG)*** plus eight newer German-designed and Australian-built ***Anzac class frigates (FFH)***. Both vessels carry Harpoon anti-shipping missiles (Anzac currently being fitted), anti-submarine torpedoes and, eventually, Evolved Sea Sparrow surface-to-air missiles. Only the FFG are equipped with the more capable Standard surface-to-air missile (which are being upgraded to SM-2). The Anzac class have a 5" gun useful for shore bombardment (as seen in the Gulf in 2003) while the FFG has a less capable 3" gun. Both classes of vessel can embark a Seahawk anti-submarine helicopter, although the current availability and capability of these aircraft is less than desired. The Anzac class was awaiting the entry into service of the Super Seasprite helicopter but that project has been cancelled.

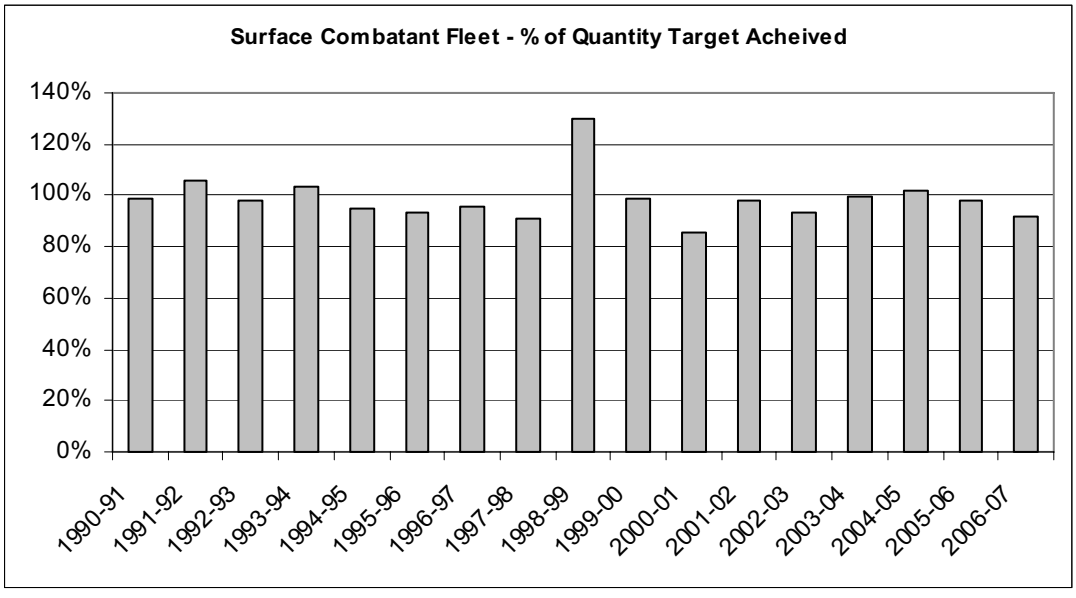
The FFH and FFG are Navy's fighting ships. They have the role of controlling sea-lanes, attacking hostile ships, submarines and aircraft, escorting shipping, protecting land forces and contributing to high intensity operations in coalition operations. They are sometimes tasked to undertake lesser roles like civil surveillance and border & fisheries protection.

Issues

- Issues for Navy in general include: personnel shortages, limited air-warfare, aviation and undersea warfare capabilities and force protection. Following long delays, the $1.4 billion FFG Upgrade program is still yet to deliver a vessel fully accepted back into service.
- In 2006-07 the major surface combatants achieved 2,780 Unit Ready Days (URD) against a target 3,029 URD (92%). The target for 2007-08 is 2,901 URD and for 2008-09 is 2,956.

Past Performance (Annual Report):

* estimate only	Net Cost	Preparedness	Core Skills	Achieved Quantity
2000-01		Achieved	Substantially Achieved	86%
2001-02	-	Achieved	Substantially Achieved	98%
2002-03	$1,277 million*	Achieved	Substantially Achieved	93%
2003-04	$1,368 million	Achieved	Substantially Achieved	99%
2004-05	$1,677 million	Achieved	Substantially Achieved	103%
2005-06	$1,680 million	Achieved	Substantially Achieved	98%
2006-07	$1,835 million	Achieved	Substantially Achieved	92%
2007-08	$1,902 million			



Output 2.2 Naval Aviation Operations (Navy Capabilities)

Force Structure & Role

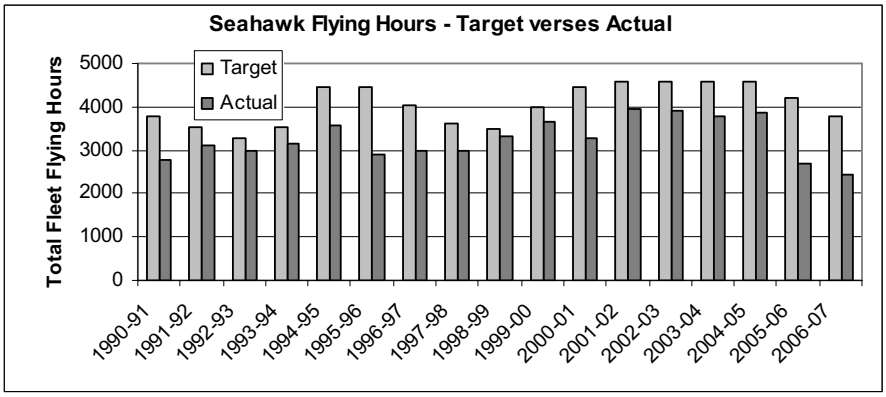
The RAN has sixteen 1980s US-designed ***Seahawk helicopters*** that can be embarked on the Anzac and FFG class frigates. They are configured for anti-submarine and surface search/targeting although the later role is increasingly less practiced. There are six 1970's UK-built ***Sea King helicopters*** used for troop lift and logistics tasks will be replaced by 6 MRH-90 aircraft from 2010. Thirteen ***Squirrel light helicopters*** are used for training and short-term operations at sea. In addition, ten Australian-designed ***Kalkaras unmanned aerial targets*** provide a training capability. A project to deliver eleven ***Super-Seasprite helicopters*** for the ANZAC frigates was cancelled in early 2008. Navy leases 3 Augusta Westland A190E aircraft for training and general duties.

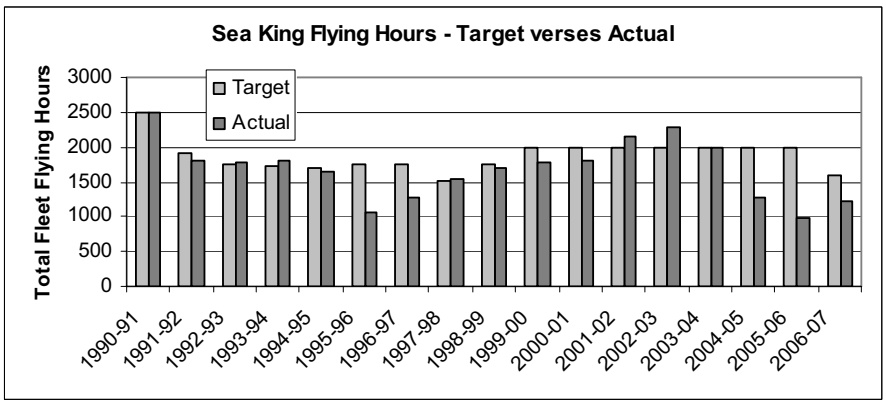
Issues: In 2006-07 aircrew shortages and maintenance issues negatively impacted preparedness. Also in 2006-07; maintenance problems reduced Sea King flying hours, maintenance and personnel shortages reduced Seahawk activity, and Squirrel flying hours were reduced due to whether limitations in mid-2007. Only 28% of planned Kalkaras presentations occurred in 2006-07. The cancellation of the Seasprites leaves the Navy with 40% fewer combat helicopters for the frigate force than would have otherwise been the case.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Achieved Quantity**
2000-01		Achieved	Achieved	79%
2001-02	-	Achieved	Achieved	92%
2002-03	$393 million*	Achieved	Partially Achieved	94%
2003-04	$520 million	Achieved	Substantially Achieved	94%
2004-05	$567 million	Partially	Substantially Achieved	85%
2005-06	$649 million	Partially	Substantially Achieved	63%
2006-07	$588 million	Partially	Substantially Achieved	67%
2007-08	$641 million			

* estimate only **Sea King plus Seahawk percentage of planned flying hours achieved.





Output 2.3 Patrol Boat Operations (Navy Capabilities)

Force Structure & Role

All of Navy's fleet of fifteen 1980s vintage Australian-built, UK-designed, ***Fremantle Class Patrol Boats (FCPB)*** has now been replaced by 14 new ***Armidale Class Patrol Boat (ACPB)***. These vessels are mainly tasked in support of Coastwatch's civil surveillance program (see Output 1.3) through Border Protection Command. They can also be used for the insertion and extraction of army patrols on the coast including Special Forces.

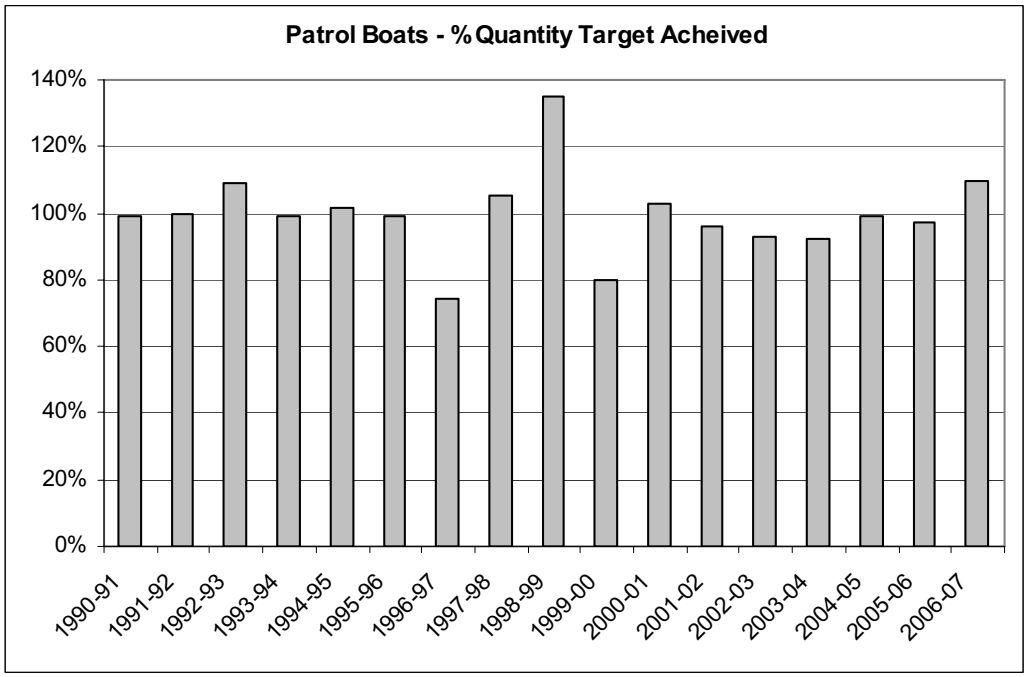
The patrol boat fleet also plays an important role in training junior officers by providing an opportunity for early independent command, and is an essential element in the ADF's engagement with South West Pacific nations.

Issues

- Although the transition from the Fremantle to Armidale class was achieved with only minimal disruption to the rate of effort, the need to re-train personnel impacted negatively of the preparedness of the fleet.
- The multi-crewing strategy for the Armidale is being bedded down and should allow a return to full preparedness.
- In 2006-07 the patrol boats (Armidale plus Fremantle) achieved 3,449 URD compared with a target of 3,143 (110%) due to the early delivery of new boats. The target for the Armidale class in 2007-08 is for 3,227 URD, and for 2008-09 the target is 3,500.

Past Performance (Annual Report):

* estimate only	Net Cost	Preparedness	Core Skills	Achieved Quantity
2000-01		Partially Achieved	Achieved	103%
2001-02	-	Achieved	Achieved	96%
2002-03	$240 million*	Achieved	Achieved	93%
2003-04	$265 million	Achieved	Substantially Achieved	92%
2004-05	$281million	Achieved	Achieved	98%
2005-06	$282 million	Substantially	Achieved	97%
2006-07	$299 million	Substantially	Achieved	110%
2007-08	$277 million			



Note: Differing and incompatible quantity measures used over time have been converted to percentages.

Output 2.4 Submarine Operations (Navy Capabilities)

Force Structure & Role

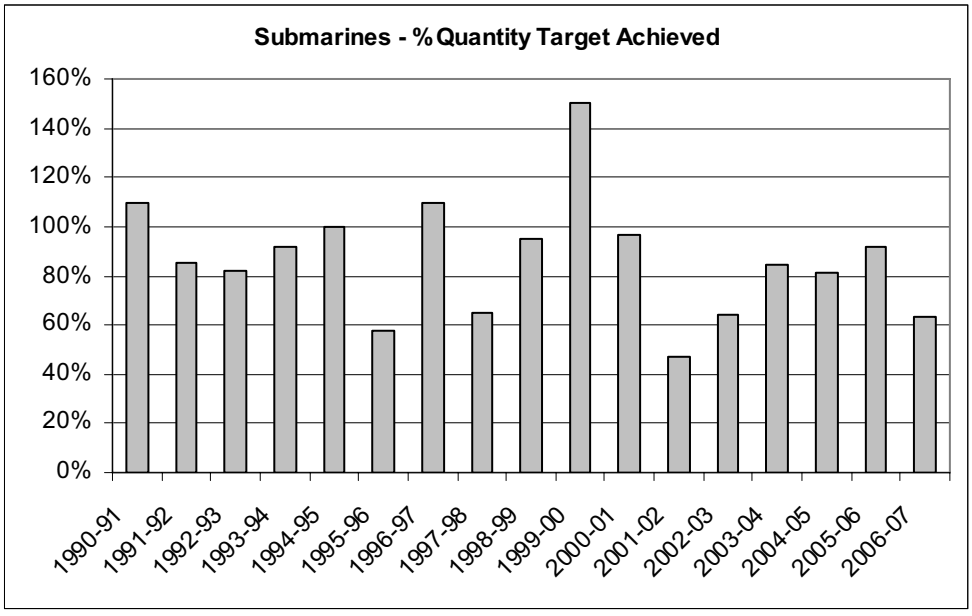
The RAN now has all six ***Collins class submarines*** at an interim level of capability. Their primary roles are to attack enemy shipping and to counter the threat of adversary submarines. In addition, they can collect intelligence and insert and extract Special Forces. The Collins Class is equipped with Harpoon anti-ship missiles and the US Mk 84 heavyweight torpedo.

Issues:

- The delay in the introduction of the Collins class into service as the Oberon class payed-off disrupted both submariner training and the retention of skilled personnel. This is now being corrected although a shortage of submariners is severely adversely impacting the Output.
- Around a billion dollars of additional work is planned in order to bring the vessels up to the required operational standard. This includes a new combat system to replace the current interim arrangements and replacement Mk 48 ADCAP CBASS torpedoes. These are technically challenging projects that are not without risk. Until all vessels are upgraded the preparedness of the submarine force will be reduced.
- Personnel shortages are acute in the submarine force to the extent that submarines are being tied up or put into maintenance early.
- Three submarines (half the fleet) will be laid-up for maintenance for most of 2007-08.
- In 2006-07 the submarines achieved only 802 URD compared with a target of 1,265. The target for 2007-08 is for 1,004 URD, and for 2008-09 the target is 684.

Past Performance (Annual Report):

* estimate only	Net Cost	Preparedness	Core Skills	Achieved Quantity
2000-01		Partially Achieved	Substantially Achieved	97%
2001-02	-	Partially Achieved	Substantially Achieved	47%
2002-03	$650 million*	Partially Achieved	Substantially Achieved	65%
2003-04	$845 million	Substantially Achieved	Substantially Achieved	85%
2004-05	$795 million	Substantially Achieved	Achieved	81%
2005-06	$825 million	Substantially Achieved	Achieved	92%
2006-07	$829 million	Substantially Achieved	Substantially Achieved	63%
2007-08	$815 million			



Output 2.5 Afloat Support (Navy Capabilities)

Force Structure & Role:

HMAS Sirius: South Korean-built 46,017 tonne full displacement commercial vessel, that was refitted to Navy specifications as an Auxiliary Tanker (AO), and

HMAS Success: 1980s French-designed, Australian-built 17,900 tonnes full displacement Auxiliary Replenishment Tanker (AOR).

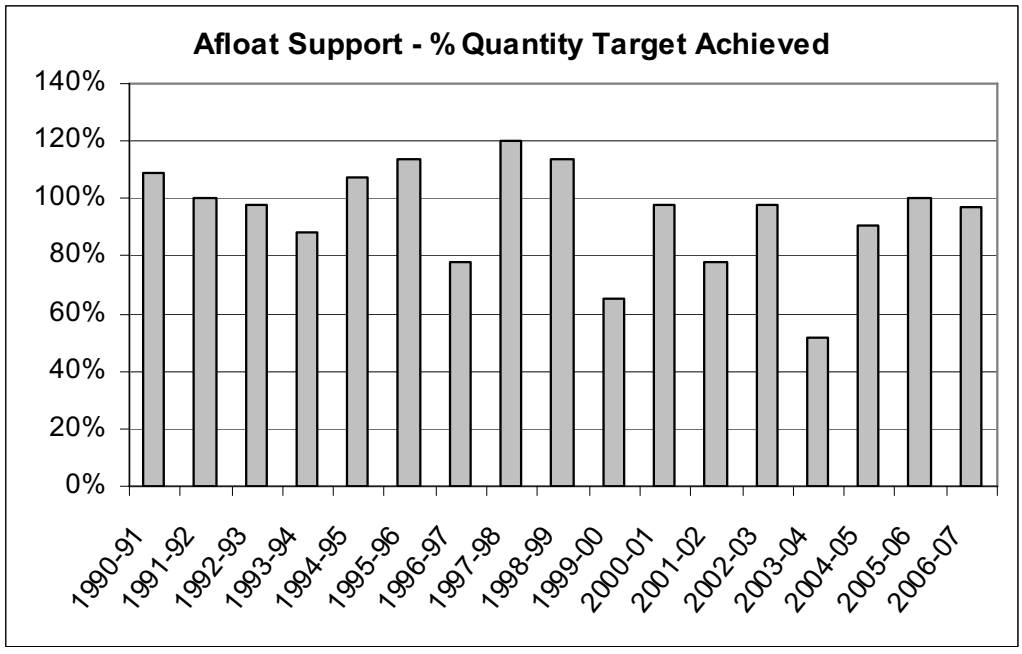
The role of the afloat support force is to refuel and re-supply Navy vessels and embarked helicopters at sea, and provide logistics support to land operations.

Issues:

- ***HMAS Westralia*** was replaced by ***HMAS Sirius*** in September 2006 on schedule.
- ***HMAS Success*** is scheduled to undergo a refit in 2007-08.
- The target for *Westralia/Sirius* in 2007-08 is 366 URD and for 2008-09 is 280 URD. The target for *Success* in 2007-08 is 227 URD and for 2008-09 is 365 URD.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Achieved Quantity
2000-01	-	Substantially Achieved	Substantially Achieved	Replenishment Ship: 98% Oiler-Tanker Ship: 97%
2001-02	**-**	Achieved	Achieved	Replenishment Ship: 30% Oiler-Tanker Ship: 100%
2002-03	$200 million (estimate only)	Substantially Achieved	Achieved	Replenishment Ship 109% Oiler-Tanker Ship 89%
2003-04	$197 million	Substantially Achieved	Achieved	Replenishment Ship 105% Oiler-Tanker Ship 0%
2004-05	$215 million	Achieved	Achieved	Replenishment Ship 85% Oiler-Tanker Ship 91%
2005-06	$252 million	Achieved	Achieved	Replenishment Ship 100% Oiler-Tanker Ship 100%
2006-07	$268 million	Achieved	Achieved	Replenishment Ship 101% Oiler-Tanker Ship 93%
2007-08	$264 million			



Note: Differing and incompatible quantity measures used over time have been converted to percentages.

Output 2.6 Mine Warfare (Navy Capabilities)

Force Structure & Role:

6 Huon Class Coastal Mine Hunters (MHC) – 720 tonnes displacement, plastic hulled, Italian-designed and built in Australia in the late 1990's. The ships employ sonar to search for mines which can then be destroyed using a remote controlled mine disposal vehicle or otherwise.

2 Auxiliary Mine Sweepers – 1980's converted tugs that physically sweep for mines.

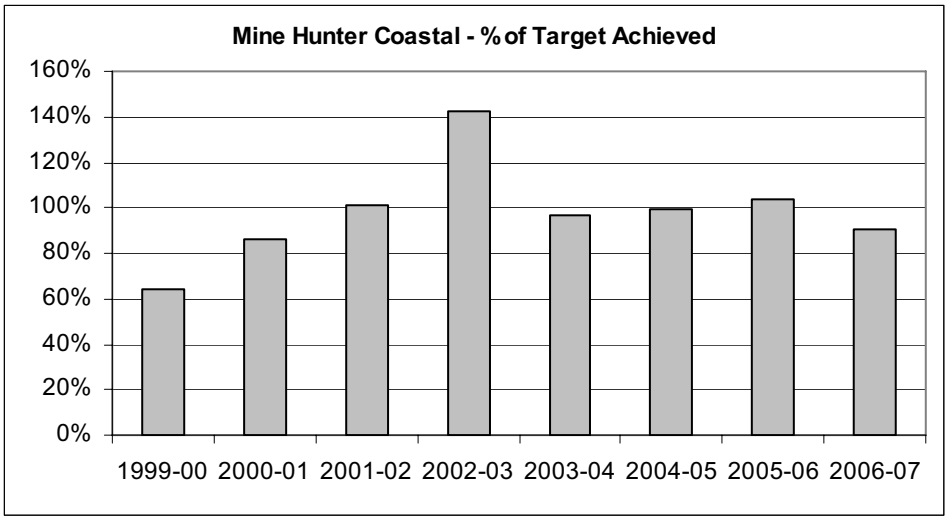
2 Clearance Diving Teams – one on each coast at Sydney and Perth capable of clearing mines and other ordinance, clandestine survey and obstacle clearance, and submerged battle damage repairs.

Issues:

- Due to resource constraints, 2 of the Coastal Mine Hunters were to be taken out of service and placed in 'extended readiness' in January and April 2006. This was countermanded in the 2006-07 budget and the 2 vessels were reactivated for border protection duties.
- The targets for 2007-08 are Coastal Mine Hunters 2,085 URD, Auxiliary Minehunters 732 URD, and Clearance Diving Teams 732 URD. The targets for 2008-09 are Coastal Mine Hunters 2,088 URD, Auxiliary Minehunters 730 URD, and Clearance Diving Teams 730 URD.

Past Performance (Mine Hunter Coastal):

	Net Cost	Preparedness	Core Skills	Achieved Quantity
2000-01	-	Partially Achieved	Substantially Achieved	Achieved: 86% 543 MLOC days 2 vessels
2001-02	**-**	Substantially Achieved	Achieved	Achieved: 101% 392 FMC days 4 vessels
2002-03	$308 million (estimate only)	Achieved	Achieved	Achieved: 142% 997 FMC days 6 vessels
2003-04	$386 million	Achieved	Substantially Achieved	Achieved: 97% 1,669 FMC days 6 vessels
2004-05	$439 million	Substantially Achieved	Achieved	Achieved: 99% 1,890 URD days 6 vessels
2005-06	$354 million	Achieved	Achieved	Achieved: 104% 2,016 URD days 6 vessels
2006-07	$361 million	Achieved	Achieved	Achieved: 91% 1639 URD days 6 vessels
2007-08	$388 million			



Note: Differing and incompatible quantity measures used over time have been converted to percentages.

Output 2.7 Amphibious Lift (Navy Capabilities)

Force Structure & Role:

2 Kanimbla Class Landing Platforms Amphibious (LPA), HMAS Manoora and HMAS Kanimbla: refurbished in the mid-to-late 1990's from 2 second-hand 1970's US Newport Class Landing Ship Tank vessels. They displace 8,450 tonnes and can carry 450 troops along with vehicles and landing craft. In addition, they have been fitted with medical and command & control facilities, and have the ability to house up to four troop lift helicopters.

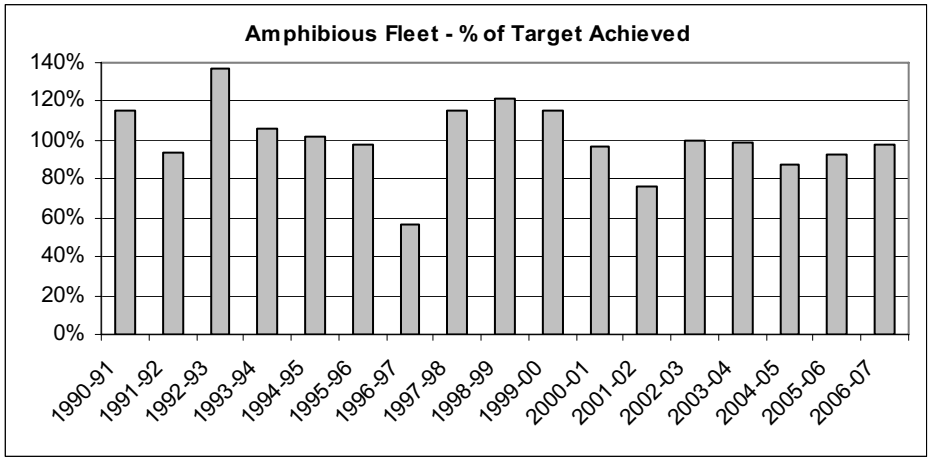
1 Heavy Landing Ship (HLS), HMAS Tobruk: a 1980's UK-designed and Australian built vessel capable of carrying 315 soldiers, 18 tanks and 40 armoured personnel carriers. She displaces 5,800 tonnes and can operate any ADF helicopter from her deck.

6 Landing Craft Heavy (LCH): a fleet of 1970's craft that can carry a load of up to 180 tonnes a distance of over 1,200 nautical mines. Each vessel can carry three tanks, twenty-three quarter-tonne trucks or thirteen armoured personnel carriers. The LCH completed a life-of-type extension in 2003.

Targets for 2007-08 (2008-09) are LPA 366 (642) Unit Ready Days, Tobruk 365 (365) Unit Ready Days and LCH 2,066 (1,958) Unit Ready Days.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity
2000-01	-	Achieved	Achieved	LPA: 95% 424 MLOC days HLS: 98% 256 MLOC days LCH: 97% 1678 MLOC days
2001-02	**-**	Achieved	Partially Achieved	LPA: 96% 485 FMC days HLS: 49% 126 FMC days LCH: 73% 1019 FMC days
2002-03	$338 million (estimate only)	Achieved	Partially Achieved	LPA: 106% 601 FMC days HLS: 93% 247 FMC days LCH: 99% 1159 FMC days
2003-04	$372 million	Achieved	Substantially Achieved	LPA: 91% 518 URD HLS: 114% 336 URD LCH: 98% 2029 URD
2004-05	$406 million	Achieved	Substantially Achieved	LPA: 67% 408 URD HLS: 100% 365 URD LCH: 91% 1743 URD
2005-06	$439 million	Achieved	Achieved	LPA: 99% 551 URD HLS: 126% 277 URD LCH: 87% 1769 URD
2006-07	$447 million	Achieved	Achieved	LPA: 98% 719 URD HLS: 96% 351 URD LCH: 97% 1873 URD
2007-08	$425 million			



Note: Differing and incompatible quantity measures used over time have been converted to percentages.

Output 2.8 Hydrographic, Metrological & Oceanographic Ops (Navy Capabilities)

Force Structure & Role:

Hydrographic, meteorological and oceanographic operations for the production of maritime military geospatial information for the ADF. This output is also responsible for national hydrographic surveying and charting. The hydrographic component is supported by the Australian Hydrographic Office in Wollongong, NSW, and also comprises the Hydrographic Office deployable survey unit. Meteorological and Oceanographic support is conducted by mobile teams, the operational Meteorological and Oceanographic Centre in Sydney, NSW, and the Naval Air Station Weather and Oceanographic Centre in Nowra, NSW.

2 Leeuwin Class Hydrographic Ships (AGHS): 2,250 tonne Australian-built hydrographic ships.

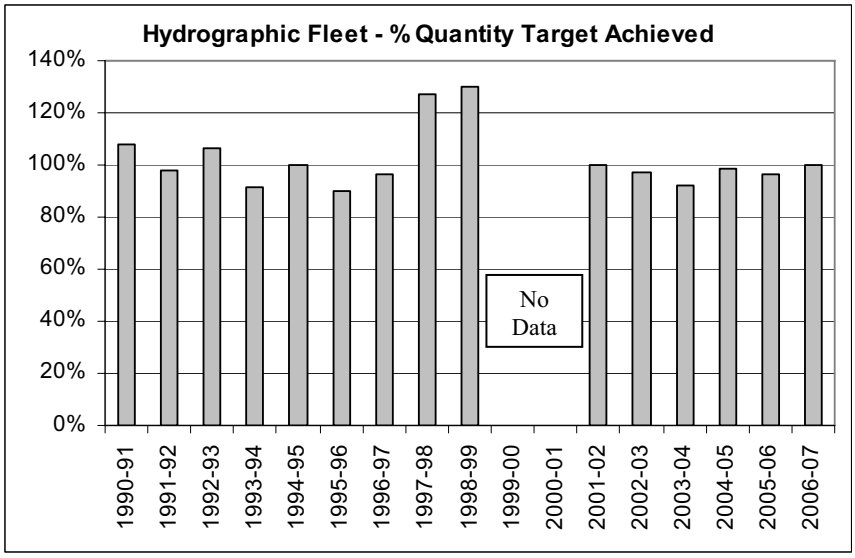
4 Paluma Class Survey Motor Launches (SML): 320 tonne Australian-built survey launches.

1 Laser Airborne Depth Sounder (LADS) aircraft: an airborne depth sounder capability used in shallow water.

Issues: In 2007-08 (2008-09) the targets are: Hydrographic Ships 732 (730) Unit Ready Days and SM Launches 1,184 (1,148) Unit Ready Days.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity
2000-01	-	Partially Achieved	Not Applied	Partially Achieved (nil data on MLOC days)
2001-02	**-**	Substantially Achieved	Partially Achieved	Hydrographic Ships: 105% 627 FMC days SM Launches 97% 1012 FMC days
2002-03	$165 million (estimate only)	Substantially Achieved	Partially Achieved	Hydrographic Ships: 94% 498 FMC days SM Launches: 99% 913 FMC days
2003-04	$225 million	Substantially Achieved	Achieved	Hydrographic Ships: 81% 592 URD SM Launches: 98% 1,432 URD
2004-05	$255 million	Substantially Achieved	Achieved	Hydrographic Ships: 97% 691 URD SM Launches: 100% 1,324 URD
2005-06	$230 million	Achieved	Achieved	Hydrographic Ships: 100% 730 URD SM Launches: 94% 1,105 URD
2006-07	$258 million	Achieved	Achieved	Hydrographic Ships: 100% 730 URD SM Launches: 94% 1,105 URD
2007-08	$300 million			



Note: Differing and incompatible quantity measures used over time have been converted percentages.

Output 3.1 Special Operations (Army Capabilities)

Force Structure & Role (previously called *Special Forces Operations*):

One **Special Air Services Regiment (SASR)** in Western Australia. Roles include special recovery (including domestic and overseas counter terrorism by the west coast Tactical Assault Group - TAG), long-range reconnaissance and offensive operations.

One full time **Commando Battalion - 4 RAR (Cdo)** in Sydney including the east coast TAG.

One **reserve Commando Regiment 1 Cdo Regt** split between Sydney and Melbourne. Roles include land, sea- and air-borne offensive commando raids.

126 Signals Squadron in Sydney provides a reserve Special Forces signals capability and **152 Signals Squadron** in Perth provides a similar full time capability.

There is also an **Incident Response Regiment** based in Sydney that is capable of dealing with nuclear, chemical and biological incidents, plus a **Special Forces Logistics Squadron** in Sydney and a Special Forces Training Centre.

The 2004-05 budget established the **Special Operations Command** in Sydney as well as an additional company for 4RAR (Cdo) plus support elements.

Issues:

- A very high operational tempo has been maintained by the SASR over the last five years. The 2001-02 Annual Report said that there had been a significant drop in preparedness and core skills as a result. However, and despite a continuing high operational tempo in 2002-03 including deployment to Iraq, there were marked improvements in the areas of preparedness and core skills that year. The failure to fully achieve core skills in 2002-03 was due to a number of training activities and exercises being foregone due to operations or the development of new capabilities. However, from 2003-04 onwards the Output achieved all its targets for preparedness, core skills and quantity.
- The 2006-07 Defence Annual Report says that the 4 RAR Commando had reached operational maturity and will be at full operational capability by mid-2009.
- A 300 person Special Operations Task Group is currently deployed in Afghanistan.

Performance Target:

Achieve levels of preparedness directed by the Chief of the Defence Force for military response options with a warning time of less than 12 months and achieve a level of training that maintains core skills and professional standards across all warfare areas.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Achieved	Achieved	Achieved
2001-02		Partially Achieved	Partially Achieved	Achieved
2002-03	$458 million (estimate only)	Achieved	Substantially Achieved	Achieved
2003-04	$423 million	Achieved	Achieved	Achieved
2004-05	$454 million	Achieved	Achieved	Achieved
2005-06	$490 million	Achieved	Achieved	Achieved
2006-07	$652 million	Achieved	Achieved	Achieved
2007-08	$581 million			

Output 3.2 Medium Combined Arms Operations (Army Capabilities)

Force Structure & Role (previously called *Mechanised Operations*)**:**

Based around the Darwin's **1st Brigade (1 Bde)** which includes:

The **1st Armoured Regiment** equipped with reconditioned US-made MIAI Abrams tanks.

The **2nd Cavalry Regiment** (reconnaissance) equipped with 1990s North American-designed but Australian modified ASLAV light armoured vehicles.

5th and 7th Battalions Royal Australian Regiment - mechanised infantry battalions equipped with 1960s US-made M113 armoured personnel carriers (presently being upgraded) and Australian-made Bushmaster infantry mobility vehicles.

8th/12th Medium Regiment (artillery) equipped with US-made 155mm M198 Medium Howitzers and the British designed 105mm L119 Hamel light gun.

In addition, 1st Brigade includes extensive organic logistics and engineer support including 1 Combat Engineer Regiment, 1 Combat Service Battalion, 1 Combat Service Support Battalion and 1 Communications Support Regiment.

The mechanised force fights in combined arms teams using mobility and firepower.

Issues:

- Abrams Main Battle Tanks have replaced the fleet of Leopards. These entered service between 2007 and 2009 at a cost of around $550 million. Following some delays, the M113 armoured personnel upgrade is progressing.
- In 2006-07, a number of training activities had to be reduced in scope because of high operational commitments. In tandem with ongoing personnel shortages (particularly in key trades) and equipment deficiencies this has compromised the achievement of some core skills.
- Deficiencies in personnel and equipment holdings have prevented the attainment of quantity goals for this output.

Performance Target:

Achieve levels of preparedness directed by the Chief of the Defence Force for military response options with a warning time of less than 12 months, including the provision of a **battalion-sized group within 90 days readiness** and achieve a level of training that maintains core skills and professional standards across all warfare areas.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Partially Achieved	Partially Achieved	Partially Achieved
2001-02		Partially Achieved	Partially Achieved	Partially Achieved
2002-03	$818 million (estimate only)	Partially Achieved	Partially Achieved	Substantially Achieved
2003-04	$847 million	Partially Achieved	Partially Achieved	Substantially Achieved
2004-05	$835 million	Partially Achieved	Partially Achieved	Substantially Achieved
2005-06	$816 million	Partially Achieved	Partially Achieved	Substantially Achieved
2006-07	$906 million	Achieved	Partially Achieved	Substantially Achieved
2007-08	$1,116 million			

Output 3.3 Light Combined Arms Operations (Army Capabilities)

Force Structure & Role (previously called *Light Infantry Operations*)**:**

Based around the Queensland-based **3rd Brigade** which includes:

Two light infantry battalions; **1st Battalion Royal Australian Regiment** (1 RAR) and **2 RAR** (Townsville),

One parachute infantry battalion, **3 RAR** (Sydney),

4th Field Regiment (artillery) equipped with the 105mm L119 Hamel light gun,

B Squadron 3rd/4th Cavalry Regiment with Bushmaster infantry mobility vehicles, and organic engineer and logistics support including 3 Combat Engineer Regiment, 3 Combat Service Battalion and 3 Communications Support Regiment.

The brigade includes a **Parachute Battalion Group** comprising 3 RAR along with airborne medical, artillery and other support elements. However, 3 RAR is being re-rolled as a light infantry battalion.

The role of infantry is to seek out and close with the enemy, to kill or capture him, to seize and hold ground, to repel attack, by day or night, regardless of season, weather, or terrain.

Issues:

- According to the 2003-04, 2004-05, 2005-06 and 2006-07 Defence Annual Reports, most training requirements were met although most airborne and amphibious training was restricted due to reduced availability of aircraft and amphibious vessels, because of operational commitments to Iraq and Solomon Islands.
- Despite personnel deployed to operations in Iraq (including the Baghdad Security Detachment), Solomon Islands, Tonga, waters off Fiji and Timor-Leste, the output achieved its preparedness targets in 2006-07.

Performance Target:

Achieve levels of preparedness directed by the Chief of the Defence Force for military response options with a warning time of less than 12 months, including the provision of a **three battalion-sized group within 90 days** readiness and achieve a level of training that maintains core skills and professional standards across all warfare areas.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Substantially Achieved	Achieved	Substantially Achieved
2001-02		Partially Achieved	Substantially Achieved	Achieved
2002-03	$1,043 million (estimate only)	Achieved	Substantially Achieved	Achieved
2003-04	$900 million	Achieved	Substantially Achieved	Achieved
2004-05	$1,009 million	Achieved	Substantially Achieved	Achieved
2005-06	$964 million	Achieved	Substantially Achieved	Achieved
2006-07	$1,0015 million	Achieved	Substantially Achieved	Achieved
2007-08	$1,049 million			

Output 3.4 Army Aviation (Army Capabilities)

Force Structure & Role:

Army aviation is based around **16 Bde** that commands the **1st and 5th Aviation Regiments**, which have components in Oakey & Townsville in Queensland, Darwin, Northern Territory, and Sydney, New South Wales.

The force structure includes thirty-four 1970s-designed **Black Hawk troop lift helicopters**, 41 1970s-designed **Kiowa light observation & training helicopters** and six 1960s-designed **Chinook medium lift helicopters**. Twenty-five 1960s-designed **Iroquois troop-lift and fire support helicopters** have been withdrawn from service. All these helicopters are of US design. Fourteen of an eventual fleet of twenty-four European-designed **Tiger Armed Reconnaissance Helicopters** (ARH) are now flying, along with two of an eventual forty MRH-90 troop lift helicopters. Three **Super King Air** fixed wing aircraft are used for surveillance and command & control support.

The role of Army Aviation is to provide troop and logistics transport, surveillance, reconnaissance, aerial fire support and command & control support.

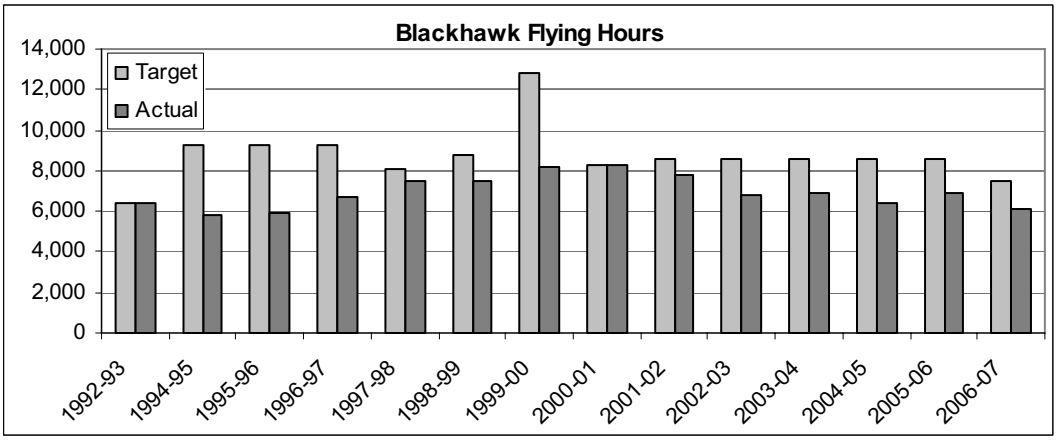
Issues:

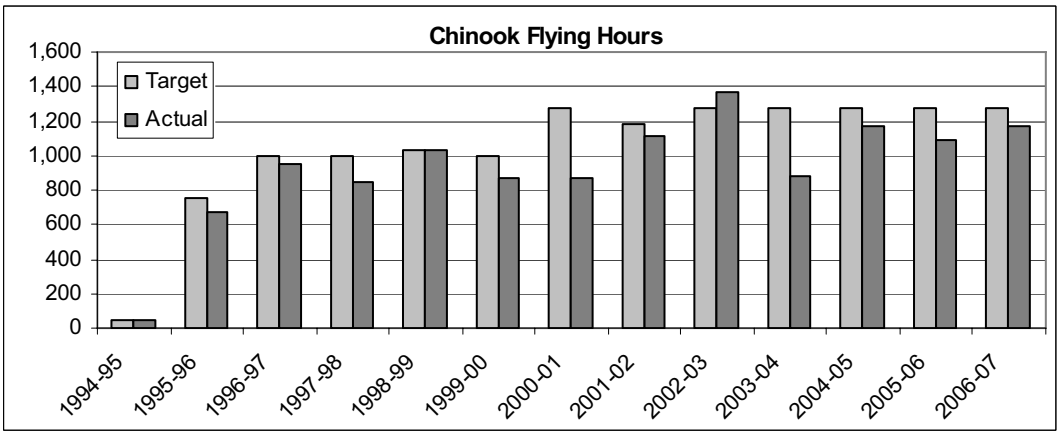
- The ARH entered service in December 2004 in an interim configuration; there are still milestones to be reached before it is an operational capability.
- In 2006-07, the Blackhawks achieved only 82% of their planned flying hours due to the relocation of 171 Squadron to Sydney and the impact of unscheduled maintenance.
- In 2006-07 only 49% of planned flying hours for the new Tiger helicopters were achieved due to delays in the flight testing regime and training program.
- The now-retired Iroquois fleet and Blackhawk aircraft are being replaced by forty MRH-90 troop lift helicopters (from 2011). Although the aircraft have met their planned 'in-service-date' of 2007, an initial operational capability is not expected before 2009. These aircraft will be configured to operate from the Navy's LPA and future LHD vessels.
- The Kiowa fleet will be withdrawn from the reconnaissance role as the ARH enter service.

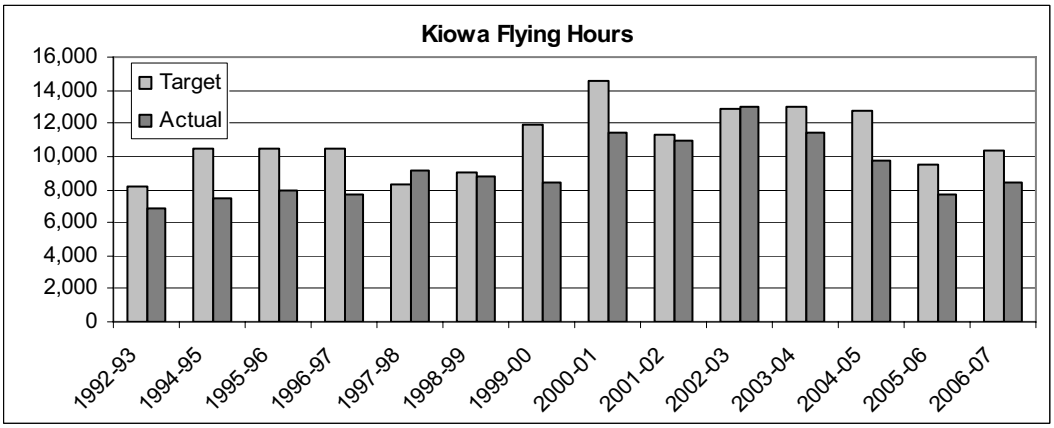
Past Performance: (*% of planned Black Hawk, Chinook, Iroquois & Kiowa flying hours)

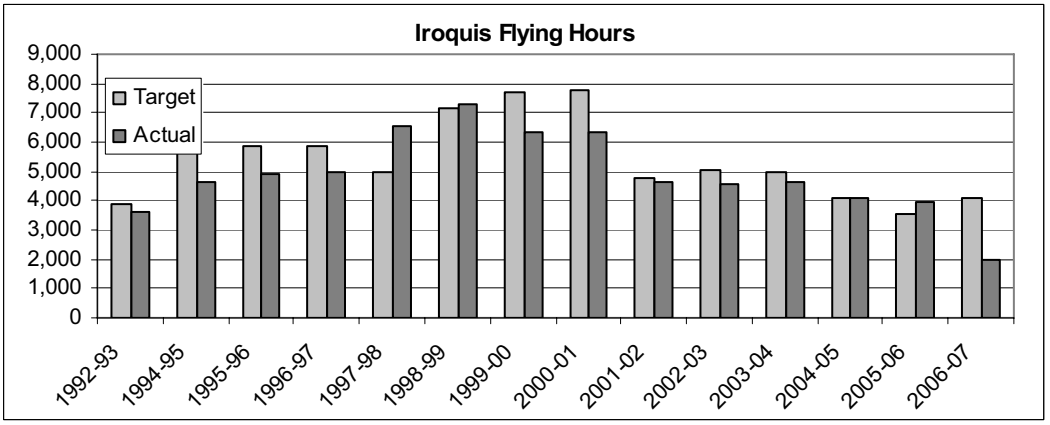
	Net Cost	Preparedness	Core Skills	Quantity*
2000-01		Substantially Achieved	Substantially Achieved	Substantially Achieved (91%)
2001-02		Achieved	Substantially Achieved	Substantially Achieved (95%)
2002-03	$454 million (estimate only)	Achieved	Substantially Achieved	Substantially Achieved (93%)
2003-04	$593 million	Achieved	Substantially Achieved	Substantially Achieved (86%)
2004-05	$564 million	Achieved	Substantially Achieved	Substantially Achieved (80%)
2005-06	$528 million	Achieved	Achieved	Substantially Achieved (86%)
2006-07	$580 million	Achieved	Achieved	Substantially Achieved (76%)
2007-08	$587 million			

Flying hour charts appear overleaf.


Blackhawk Flying Hours
Target
Actual
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
1992-93
1994-95
1995-96
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07


Chinook Flying Hours
Target
Actual
1,600
1,400
1,200
1,000
800
600
400
200
0
1994-95
1995-96
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07


Kiowa Flying Hours
Target
Actual
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
1992-93
1994-95
1995-96
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07


Iroquis Flying Hours
Target
Actual
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1992-93
1994-95
1995-96
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07

Output 3.5 Ground Based Air Defence (Army Capabilities)

Force Structure & Role:

16th Air Defence Regiment in South Australia, equipped with the **Swedish RBS 70** shoulder launched, optically guided, surface-to-air missile. This weapon was first developed in the 1970s and is classed as a short-range system. The towed surface-to-air **Rapier** RF-guided anti-aircraft missile system has now been retired from service.

The role of ground based air defence is to shoot down hostile enemy aircraft.

Issues:

In 2006-07 the Defence Annual Report said that:

- Operational commitments prevented the collective training necessary to achieve professional standards and core skills.
- Equipment upgrades meant that a reduced air defence capability was available in terms of quantity.
- Problems arose due to the introduction into service of upgraded RBS-70 and radar capability, RBS-70 ammunition clearances, and the existing fleet of vehicles.

Performance Target:

Achieve levels of preparedness directed by the Chief of the Defence Force for military response options with a warning time of less than 12 months, and achieve a level of training that maintains core skills and professional standards across all warfare areas.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity*
2000-01		Partially Achieved	Substantially Achieved	Partially Achieved
2001-02		Partially Achieved	Substantially Achieved	Partially Achieved
2002-03	$108 million (estimate only)	Substantially Achieved	Substantially Achieved	Partially Achieved
2003-04	$123 million	Substantially Achieved	Substantially Achieved	Partially Achieved
2004-05	$121 million	Partially Achieved	Substantially Achieved	Partially Achieved
2005-06	$108 million	Partially Achieved	Substantially Achieved	Partially Achieved
2006-07	$105 million	Partially Achieved	Partially Achieved	Partially Achieved
2007-08	$126 million			

Output 3.6 Combat Support Operations (Army Capabilities)

Force Structure & Role:

Combat Support Operations includes all non-logistic support to combat operations that is not embedded within Army's brigades. As such, it does not represent any single capability nor formation, although most of its components report directly to land HQ.

Accordingly, the sub-output includes a diverse collection of units including

HQ 6th Engineer Support Regiment,

21st Construction Regiment (Sydney),

22nd Construction Regiment (Melbourne),

17th Construction Squadron (Sydney),

21st Construction Squadron (Brisbane),

19th Chief Engineer Works (Sydney),

1st Topographical Survey Squadron (Enoggera, QLD),

Combat Training Centre (Townsville),

20th Surveillance and Target Acquisition Regiment (Brisbane),

7th Signals Regiment - Electronic Warfare (Carbalah, Qld),

110th Signals Squadron (Sydney),

1st Military Police Battalion (Sydney), and

1st Intelligence Battalion (Sydney)

Issues:

- Over the past six years this Output has experienced personnel shortages, especially in critical trade areas which are inherent to many of the specialist units. These shortages are being addressed through a 'critical trades remediation plan' and retention initiatives.
- In 2006-07, equipment deficiencies and the introduction into service of new capabilities (like Unmanned Aerial Vehicles) resulted in less than full achievement against targets. This is being addressed through new acquisitions and limited redistribution of assets.
- Some training requirements have not been met since 2002-03 because of operational deployments and shortfalls in personnel in critical trades.

Performance Target:

Achieve levels of preparedness directed by the Chief of the Defence Force for military response options with a warning time of less than 12 months, and achieve a level of training that maintains core skills and professional standards across all warfare areas.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Substantially Achieved	Substantially Achieved	Partially Achieved
2001-02		Substantially Achieved	Substantially Achieved	Partially Achieved
2002-03	$386 million (estimate only)	Substantially Achieved	Substantially Achieved	Substantially Achieved
2003-04	$411 million	Substantially Achieved	Substantially Achieved	Substantially Achieved
2004-05	$504 million	Substantially Achieved	Substantially Achieved	Substantially Achieved
2005-06	$378 million	Substantially Achieved	Substantially Achieved	Substantially Achieved
2006-07	$435 million	Substantially Achieved	Substantially Achieved	Substantially Achieved
2007-08	$457million			

Output 3.7 Regional Surveillance (Army Capabilities)

Force Structure & Role:

This is the smallest of all the Army outputs, being made up of three regional surveillance units that are predominately manned by reserve personnel. These are:

51st Battalion Far North Queensland Regiment (Cairns, Qld.)responsible for conducting reconnaissance and surveillance over 640,000 square km in Far North Queensland and the Gulf country;

The West Australian based ***Pilbara Regiment*** (Karratha WA) with 1.3 million square km to cover from the Kimberley boundary in the north, to Shark Bay in the south, then east to the NT/SA/WA border; and

North West Mobile Force (NORFORCE) (Darwin) which covers the Northern Territory and the Kimberly region of Northern Western Australia, an area of operations covering nearly one quarter of Australia's land mass – 1.8 million square kilometres.

The three regional surveillance units are also responsible for offshore islands and the Pilbara Regiment has specific responsibility for the oil and gas infrastructure on the northwest shelf.

Issues:

- Unique among Army sub-outputs, the three regional surveillance units have achieved their targets for preparedness, core skill and quantity six years in a row.
- During 2006-07 a total of 240 patrol days by Regional Force Surveillance units were delivered against a target of 240.

Performance Target:

Achieve levels of preparedness directed by the Chief of the Defence Force for military response options with a warning time of less than 12 months, and achieve a level of training that maintains core skills and professional standards across all warfare areas.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Not Applied	Not Applied	Not Applied
2001-02		Achieved	Achieved	Achieved
2002-03	$108 million (estimate only)	Achieved	Achieved	Achieved
2003-04	$128 million	Achieved	Achieved	Achieved
2004-05	$132 million	Achieved	Achieved	Achieved
2005-06	$127 million	Achieved	Achieved	Achieved
2006-07	$139 million	Achieved	Achieved	Achieved
2007-08	$164 million			

Output 3.8 Land Operational Logistics Support (Army Capabilities)

Force Structure & Role:

The Logistics Support Force (LSF) is a brigade sized grouping of reserve, integrated and permanent ADF units which can sustain a brigade on operations for extended periods while concurrently maintaining a battalion group elsewhere.

It provides supply, fuel, communications, transport (surface vehicle and small watercraft), repair, health and psychology capabilities. **17th Combat Service Support Brigade HQ (Sydney)**

2nd (Glenorchy, Tas), **9th** (Sydney) & **10th** (Townsville) **Force Support Battalions**,

1st (Sydney), **2nd** (Brisbane) & **3rd** (Adelaide) **Health Support Battalions**,

130th & 145th Signals Squadrons (Sydney),

Deployed Forces Support Unit (Sydney)**,**

Force Support Group HQ (Sydney)**,**

1st Psychology Unit (Sydney),

1st Petroleum Company (Oakley South, Vic), and

3rd Recovery Company (Dandenong, Vic), a logistics support force workshop and **Ships Army Detachments** on HMAS Tobruk and the two LPA vessels.

Issues:

- The high operational tempo over the last several years has seen parts of the Output deploy frequently in support of operations.
- Over the last six years the Output has experienced personnel shortages especially in a number of key trade areas. This has contributed to targets not being met in preparedness, core skills and quantity for the last four years.
- Equipment deficiencies have also adversely impacted the output over the past five years.

Performance Target:

Achieve levels of preparedness directed by the Chief of the Defence Force for military response options with a warning time of less than 12 months, and achieve a level of training that maintains core skills and professional standards across all warfare areas.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Substantially Achieved	Substantially Achieved	Substantially Achieved
2001-02		Substantially Achieved	Substantially Achieved	Partially Achieved
2002-03	$448 million (estimate only)	Substantially Achieved	Substantially Achieved	Substantially Achieved
2003-04	$534 million	Substantially Achieved	Substantially Achieved	Substantially Achieved
2004-05	$542 million	Partially Achieved	Partially Achieved	Partially Achieved
2005-06	$557 million	Partially Achieved	Partially Achieved	Partially Achieved
2006-07	$600 million	Partially Achieved	Partially Achieved	Partially Achieved
2007-08	$604 million			

Output 3.9 Motorised Combined Arms Operations (Army Capabilities)

Force Structure & Role (previously called *Motorised Infantry Operations*)**:**

Motorised Combined Arms Operations are based around the mostly medium readiness 7 Brigade (7 Bde).

It is an integrated integrated-regular formation including a **HQ** in Enoggera, Queensland, and including three motorised and light infantry battalions;

6th Battalion Royal Australian Regiment (Brisbane),

9th Battalion Royal Queensland Regiment (Brisbane),

25th/49th Battalion Royal Queensland Regiment (Brisbane and Darling Downs region), and the

2nd/14th Light Horse Regiment (Queensland Mounted Infantry) (Recon) (Brisbane),

1st Field Regiment (artillery) (Brisbane)

2nd Combat Engineer Regiment,

7th Combat Support Regiment and 7th Combat Services Support Battalion.

Issues:

- For several years now, the Motorised Combined Arms Operations Output has suffered from equipment deficiencies, personnel shortfalls in key trades and sustainability issues. On top of this, operational commitments have contributed to some collective training being foregone.
- In the past this Output has had a significant Reserve component which was under-staffed due to lower than expected recruiting results. However, the Reserve units in this output were transferred to 2nd Division at the end of 2006-07.
- Equipment deficiencies are being addressed through the acquisition of new equipment and the redistribution of existing equipment to priority areas. This includes upgraded ASLAV light armoured vehicles and new Bushmaster infantry mobility vehicles.

Performance Target:

Achieve levels of preparedness directed by the Chief of the Defence Force for military response options with a warning time of less than 12 months, including the provision of a **battalion-sized group within 90 days** readiness and achieve a level of training that maintains core skills and professional standards across all warfare areas.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity*
2000-01		Partially Achieved	Partially Achieved	Substantially Achieved (Regular) Partially Achieved (Reserve)
2001-02		Partially Achieved	Partially Achieved	Substantially Achieved (Regular) Partially Achieved (Reserve)
2002-03	$591 million (estimate only)	Partially Achieved	Partially Achieved	Substantially Achieved (Regular) Partially Achieved (Reserve)
2003-04	$497 million	Partially Achieved	Partially Achieved	Substantially Achieved (Regular) Partially Achieved (Reserve)
2004-05	$518 million	Partially Achieved	Partially Achieved	Substantially Achieved (Regular) Partially Achieved (Reserve)
2005-06	$536 million	Partially Achieved	Partially Achieved	Substantially Achieved (Regular) Partially Achieved (Reserve)
2006-07	$679 million	Partially Achieved	Partially Achieved	Substantially Achieved (Regular) Partially Achieved (Reserve)
2007-08	$620 million			

Output 3.10 Protective Operations (Army Capabilities)

Force Structure & Role:

The protective operations sub-output includes all those reserve units not attributed to other sub-outputs. It is structured around 6 infantry brigades each of which has a HQ, two or three infantry battalions, an armoured reconnaissance unit and combat and logistics support units. These are:

4th Brigade in Melbourne,

5th & **8th Brigades** in Sydney,

9th Brigade in Adelaide and Hobart,

11th Brigade in Townsville, and

13th Brigade in Perth

Issues:

- During 2002-03 a Reserve Response Force was established. It comprises a company sized Response Force in each of the six Reserve Brigades, plus the 1 Commando Regiment in Sydney and Melbourne.
- This 2005-06 budget announced a number of Reserve retention initiatives, including some tailored for the new High Readiness Reserve that will be progressively built up over the remainder of the decade.
- In 2005-06 this output provided troops for the transit security element of border protection operations (OP Acolyte) and since that time has provided personnel for security tasks in the Solomon Islands.
- The output continues to provide personnel to supplement the permanent force.

Performance Target:

Achieve levels of preparedness directed by the Chief of the Defence Force for military response options with a warning time of less than 12 months and achieve a level of training that maintains core skills and professional standards across all warfare areas.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Achieved	Partially Achieved	Partially Achieved
2001-02		Achieved	Partially Achieved	Partially Achieved
2002-03	$569 million (estimate only)	Partially Achieved	Partially Achieved	Partially Achieved
2003-04	$632 million	Partially Achieved	Partially Achieved	Partially Achieved
2004-05	$737 million	Partially Achieved	Partially Achieved	Partially Achieved
2005-06	$673 million	Achieved	Partially Achieved	Partially Achieved
2006-07	$982 million	Achieved	Partially Achieved	Partially Achieved
2007-08	$1,089 million			

Output 4.1 Air Combat (Part 1 - Strike Reconnaissance)

Force Structure & Role:

15 F-111C Strike Aircraft: 1960s design US-made supersonic bombers (plus 12 F-111G in storage and 2 being used for spares). The F-111C aircraft provide a long-range strike capability that can bomb targets in adversary territory or attack vessels using the Harpoon anti-shipping missile. The F-111C is equipped with a precision bombing laser designation capability.

4 RF-111C Strike Reconnaissance Aircraft: aerial photographic reconnaissance and battle damage assessment. (Aircraft are not listed in the 2007-08 PBS, may have left service.)

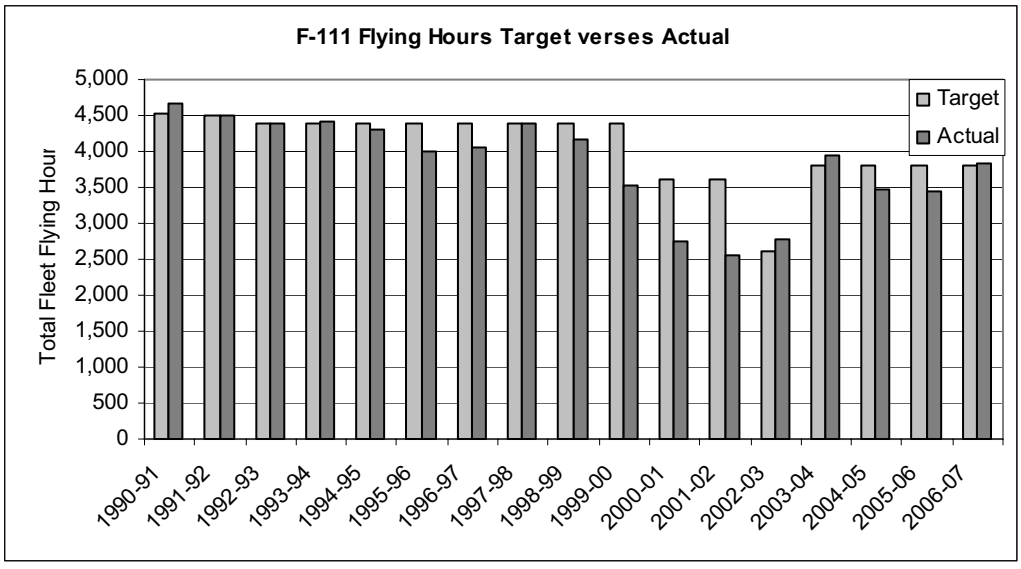
Issues:

- The F-111 fleet has been in service since the early seventies and the RAAF is now the sole operator of the aircraft. Current planning is to retire the aircraft around 2010 when they will be replaced by a fleet of twenty-four 'interim' **F/A-18 F Super Hornets**.
- A project to provide improved electronic warfare self-protection for the fleet is significantly delayed and other projects have been scrapped because of the pending retirement. Fortunately, the AGM-142 long-range stand-off missile capability has now been integrated onto the aircraft (following long delays).

Past Performance of the Strike Reconnaissance part of the Air Combat Output:

	Net Cost*	Preparedness	Core Skills	Quantity
2000-01		Partially Achieved	Partially Achieved	77% 2727 hrs
2001-02		Partially Achieved	Partially Achieved	71% 2559 hrs
2002-03	$1,856 million**	Partially Achieved	Partially Achieved	107% 2779 hrs
2003-04	$1,804 million	Achieved	Achieved	104% 3949 hrs
2004-05	$2,091 million	Achieved	Achieved	91% 3,469 hrs
2005-06	$1,790 million	Achieved	Achieved	91% 3,858 hrs
2006-07	$1,749 million	Achieved	Achieved	101% 3,830 hrs
2007-08	$1,843 million			Target 3,600 hrs

*including both Strike Reconnaissance and Tactical Fighter components. **Estimate only.



Output 4.1 Air Combat (Part 2 - Tactical Fighter)

Force Structure & Role:

71 F/A-18 Fighter Aircraft (*55 F/A-18A and 16 F/A-18B):* these 1980s vintage US designed and Australian assembled aircraft provide a capability for; air-defence using short and medium range air-to-air missiles, tactical air support and land strike using laser guided and unguided bombs, maritime strike using the Harpoon anti-shipping missile, and air reconnaissance.

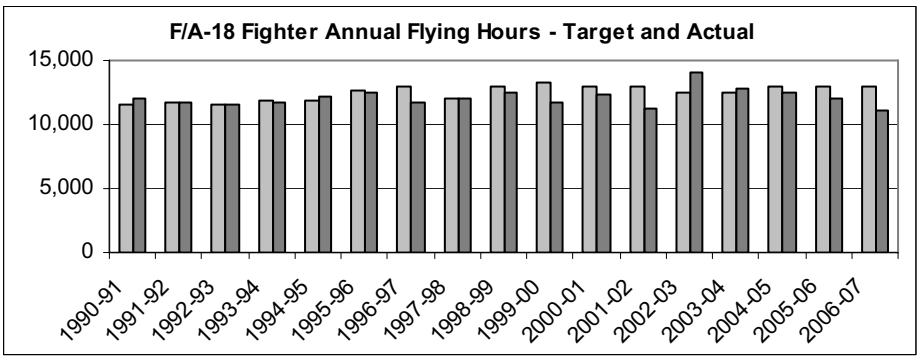
33 Hawk Lead-in-Fighters (LIF): these recently acquired UK-made jet trainers provide a training capability for both the F-111 and F/A-18 aircraft. The Hawks replace the now retired Macchi jet trainers.

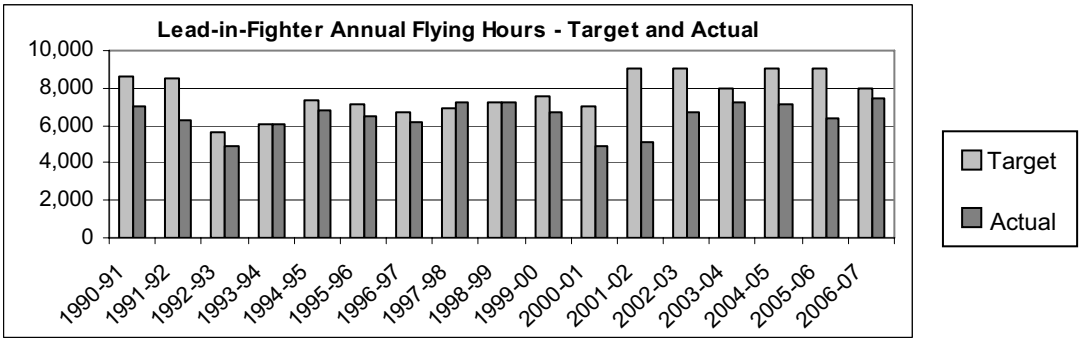
4 PC-9(F) Forward Air Control aircraft: used to designate targets for the F/A-18 aircraft.

Issues: Although LIF serviceability had been improving, the rate of effort fell below the budgeted target again in 2005-06 and 2006-07. The next phase of the F/A-18 Hornet Upgrade (centre barrel replacement) was approved in 2003-04 and is progressing.

Past Performance of the Tactical Fighter part of the Air Combat Output:

	Net Cost $'000	Preparedness	Core Skills	Quantity	
				F/A-18	LIF
2000-01		Achieved	Partially Achieved	95% 12,331 hrs	70% 4917 hrs
2001-02	-	Achieved	Partially Achieved	87% 11,287 hrs	56% 5057 hrs
2002-03	$1,856 m (estimate only)	Achieved	Substantially Achieved	113% 14,007 hrs	74% 6691 hrs
2003-04	$1,804 m	Achieved	Achieved	103% 12,820hours	91% 8,000 hours
2004-05	$2,091 million	Achieved	Achieved	96% 12,467 hours	79% 7,094 hours
2005-06	$1,790 million	Achieved	Achieved	92% 12,015 hours	71% 6,375 hours
2006-07	$1,749 million	Achieved	Achieved	86% 11,127 hours	93% 7,405 hours
2007-08	$1,843 million			Target 12,500 hours	Target 8,000 hours





Output 4.2 Combat Support of Air Operations (Air Force Capabilities)

Force Structure & Role: Details about this Output are difficult to find beyond that it comprises:

2 x Expeditionary Combat Support Wings,

1 x Health Services Wing.

Its role is to provide 'operations support activities required to support expeditionary air bases within Australia and overseas in contingencies, and maintain operating bases day-today in Australia'.

Issues:

- According to the 2006-07 Defence Annual Report: Overseas commitments continued to place significant pressure on training programs. Nonetheless, preparedness levels were achieved as evidenced by ongoing successful overseas deployments including several at short notice.
- The restructure of the two combat support wings has been completed and has resulted in a mix within each wing of fixed airbases and expeditionary units.

Past Performance (Annual Report):

	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Partially Achieved	Partially Achieved	Partially Achieved
2001-02		Partially Achieved	Partially Achieved	Partially Achieved
2002-03	$435 million (estimate only)	Achieved	Substantially Achieved	Partially Achieved
2003-04	$632 million	Achieved	Achieved	Achieved
2004-05	$678 million	Achieved	Partially Achieved	Achieved
2005-06	$742 million	Achieved	Partially Achieved	Substantially Achieved
2006-07	$878 million	Achieved	Partially Achieved	Substantially Achieved
2007-08	$1,023 million			

Output 4.3 Surveillance and Response Operations, Surveillance component (Air Force Capabilities)

Force Structure & Role:

10 x Air Traffic Radar: including 9 fixed radar and one mobile, for the control of ADF air traffic.

4 x Tactical Air Defence Radar: ground based radar to detect hostile and own aircraft.

JORN Over the Horizon Radar network: Operational over-the-horizon radar network including radar sites Laverton WA and Longreach Qld, and seventeen coastal beacons in the north of Australian and Christmas Island.

The network is run from the **Jindalee Operational Radar Network Correlation Centre** in Edinburgh, SA, and can detect both sea and air-borne moving objects. The Jindalee facility Alice Springs serves a research and development function. JORN is operated by No. 1 Radar Surveillance Unit.

6 AEW&C Aircraft based on Boeing 737-700 IGW platforms are being acquired under project Wedgetail, one aircraft to fly 350 hours in 2008-09.

The capability for strategic surveillance provides sensors and battle space management elements as support for wide-area aerospace surveillance, air defence, airspace control, and battle space management.

Issues:

- The four tactical air defence radars have been replaced by project Air 5375 and one unit is deployed to Afghanistan.
- The $1.2 billion JORN network commenced operation in May 2003 and has achieved 100% of directed hours since then.
- The delivery of AEW&C aircraft has been delayed until at least 2009. A total of 690 AEW&C flying hours were planned for 2006-07 but none occurred.

Past Performance of surveillance component of Surveillance and Response Operations

	Net Cost	Preparedness	Core Skills	Quantity
2000-01		Partially Achieved	Partially Achieved	Partially Achieved*
2001-02		Partially Achieved	Partially Achieved	Partially Achieved*
2002-03	$352 million (estimate only)	Substantially Achieved	Substantially Achieved	Substantially Achieved*
2003-04	$592 million	Achieved	Achieved	Substantially Achieved*
2004-05	$1,098 million**	Achieved	Achieved	Substantially Achieved*
2005-06	$1,082 million**	Achieved	Achieved	Substantially Achieved*
2006-07	$1,193 million**	Achieved	Substantially Achieved	Substantially Achieved*
2007-08	$1,295 million**			*Qualitative Assessment by ASPI

** Total net cost of Surveillance and Response Operations Output

Output 4.3 Surveillance and Response Operations, Maritime Patrol Aircraft (Air Force Capabilities)

Force Structure & Role:

19 AP-3C Orion: 1970s vintage US-made maritime patrol aircraft. All 19 aircraft have been upgraded to AP-3C standard through an Australian-unique upgrade program. The AP-3C undertake maritime patrol equipped with the Harpoon anti-shipping missile, the Mk46 Lightweight anti-submarine torpedo, 500lb and 2000lb destructor mines, and expendable sonobuoys used to locate submarines. They undertake maritime surveillance, reconnaissance, offensive air support, surface & sub-surface strike, and search and survivor supply. The ***3 TAP-3B Orion*** training aircraft previously used for operational conversion training were retired in 2003-04.

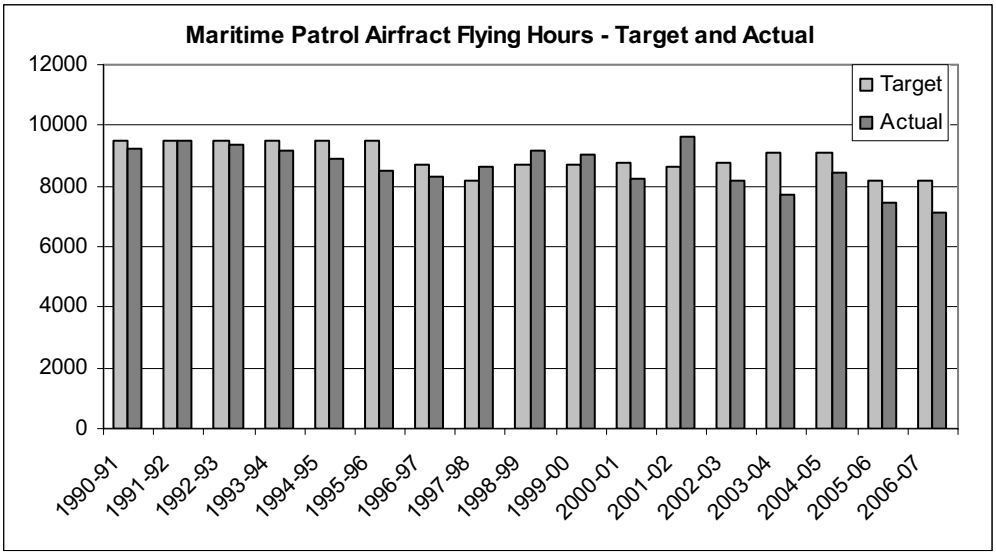
Issues:

- The high operation tempo of the Maritime Patrol Group prevented all training activities from being completed in 2006-07.
- According to the 2006-07 Defence Annual Report, AP-3C flying was curtailed in 2006-07 due to poor serviceability, spares issues, limited maintenance capacity and exercise cancellations.

Past Performance of Maritime Patrol Aircraft component of Surveillance and Response

	Net Cost	Preparedness	Core Skills	Quantity (AP-3C)
2000-01		Achieved	Substantially Achieved	93% 8216 hours
2001-02		Partially Achieved	Substantially Achieved	111% 9624 hours
2002-03	$534 million (estimate only)	Substantially Achieved	Substantially Achieved	85% 8172 hours
2003-04	$641 million	Substantially Achieved	Substantially Achieved	85% 7,702 hours
2004-05	$1,098 million*	Achieved	Achieved	93% 8,431 hours
2005-06	$1,082 million*	Achieved	Achieved	91% 7,418 hours
2006-07	$1,193 million*	Achieved	Substantially Achieved	86% 7,094 hours
2007-08	$1,295 million*			Target 8,200 hours

*Includes the previous Surveillance and Response Operations Outputs



Output 4.4 Airlift (Air Force Capabilities)

Force Structure & Role:

12 x C-130J Hercules & 12 x C-130H Hercules: Troop lift and transport aircraft also capable of being used in parachute operations and medical evacuation.

4 x Boeing C-17 Globemaster III: Responsive global airlift.

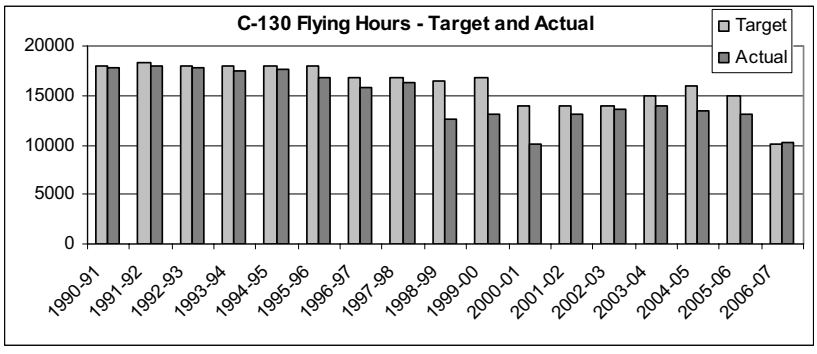
14 x DHC-4 Caribou: Tactical transport aircraft able to operate from short runways.

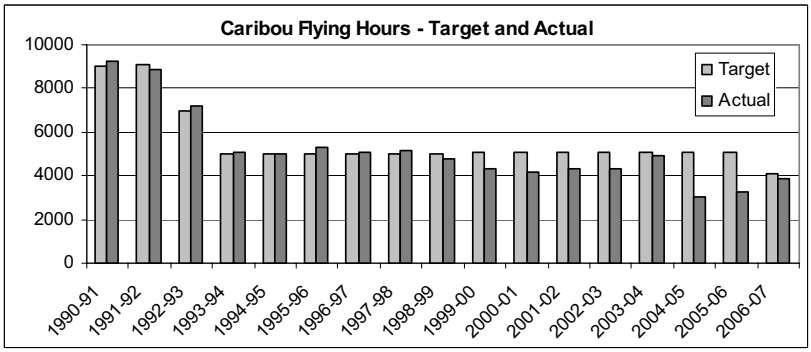
2 x Boeing 737 BBJ and 3 x CL604 Challenger: VIP aircraft.

Issues: The number of C-130 flying hours in 2006-07 and 2007-08 has been reduced to allow for the rapid introduction into service of the initial C-17 Globemaster aircraft which are planned to fly 750 hours and 3,500 hours respectively.(Actual in 2006-07 was only 422 hours.)

Past Performance:

	Net Cost	Preparedness	Core Skills	Quantity	
				C-130H/J	Caribou
2000-01		Partially Achieved	Partially Achieved	78% 10,054 hrs	82% 4,174 hrs
2001-02		Partially Achieved	Partially Achieved	94% 13,102 hrs	84% 4,289 hrs
2002-03	$982 million (estimate only)	Substantially Achieved	Substantially Achieved	97% 13,622 hrs	85% 4332 hrs
2003-04	$831 million	Substantially Achieved	Substantially Achieved	93% 13,992 hrs	97.2% 4,490 hrs
2004-05	$947 million	Substantially Achieved	Substantially Achieved	84% 13,502 hrs	59.8% 3,038 hrs
2005-06	$986 million	Achieved	Achieved	88% 15,000 hrs	65% 4,100 hrs
2006-07	$993 million	Achieved	Achieved	102% 10,182 hrs	94% 3,838 hrs
2007-08	$1,175 million			Target 9,200 hrs	Target 4,100 hrs





Output 5.1 International Policy, Activities and Engagement

Force Structure & Role:

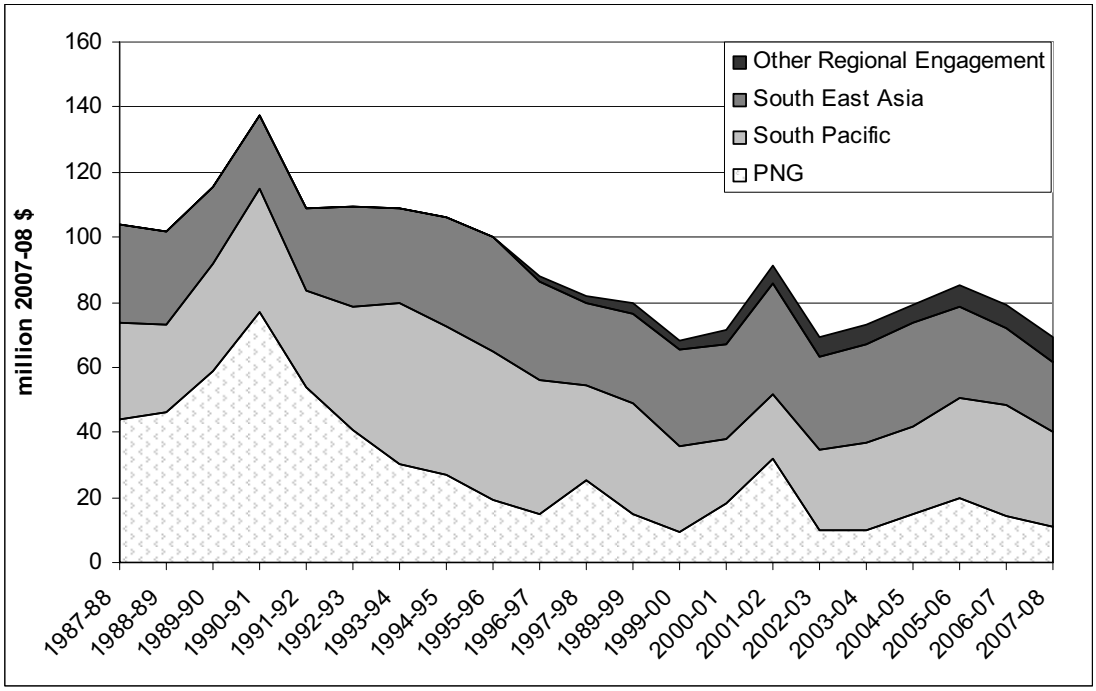
Includes International Policy Division within Russell Offices and Defence attachés in foreign countries. According to the 2005-07 Defence Annual Report this Output 'provides strategic and international policy advice to the government to enable it to make sound judgements on, and develop appropriate response to, changes in Australia's strategic circumstances, and on specific issues as they arise'. It also makes recommendations to government on international engagement activities and initiatives.

Issues: In recent years, this Output has had to balance the demands of recurrent crises with the day-today ongoing management of defence international engagement; including the more than $75 million a year Defence Cooperation Program that funds regional military-to-military activities and cooperation.

Past Performance: In the past two years this Output has achieved all or most of its performance targets, see recent Annual Reports for a very extensive narrative.

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Net Cost	$156 million	$176 million	$210 million	$190 million	$220 million	$223 million

The Defence Cooperation Program: 1987-88 to 2007-08



Output 5.2 Strategy Policy and Military Strategy

Force Structure & Role:

This Output provides input into the development of Defence White Papers and strategic reviews; policy advice on national, defence and military strategy; guidance for the development of long-term defence capability; defence aspects of non-proliferation and arms control; and advice and management of export controls for defence and dual use items.

Performance Targets:

The performance targets include providing the government and Defence with comprehensive and timely strategic policy advice on current and emerging strategic issues in the international, national and domestic environment that affect Defence.

Past Performance: In the past three years this Output has achieved all or most of its performance targets, see recent Annual Reports for a very extensive narrative.

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Net Cost	$ 20 million (estimate)	$30 million	$36 million	$46 million	$56 million	$80 million

Output 6: Intelligence

Force Structure & Role:

Defence Intelligence Organisation (DIO) at Russell Offices in Canberra undertakes analysis of intelligence information from the full range of available resources. They produce reports, briefs and assessments on an ongoing basis as well as in response to emerging areas of concern. Topics range across military, economic, technical, scientific and political areas.

***Defence Imagery and Geospatial Organisation (DIGO*)** includes a HQ at Russell Offices in Canberra and the Geospatial Information Branch in Bendigo. It acquires, processes and distributes imagery and geospatial intelligence including maps and charts. DIGO also sets technical standards for imagery and geospatial products.

Defence Signals Directorate (DSD) collects and distributes foreign signals intelligence (and is prohibited by law from collecting domestic intelligence) and provides information security advice, products and services to the government and ADF. DSD has its HQ in Russell Offices in Canberra and maintains collection facilities elsewhere.

Defence intelligence collection and analysis activities support ADF operations, Defence policy making including force development, and support wider government decision making. For more information see http://www.defence.gov.au/intelligence/.

Security is also the responsibility of the Intelligence and Security Group, which is the organisational element that largely aligns with this Output. A branch is devoted to this task.

Issues: The recent high operation tempo has placed additional pressures on Defence intelligence resources, and the recruiting and retention of skilled personnel remains important, especially when other agencies are undergoing expansion.

Implementation of the Flood inquiry into Australian Intelligence Agencies is ongoing.

Past Performance: See the most recent Annual Report for an extensive narrative – overall assessment is 'achieved'.

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Net Cost	$ 342 million	$413 million	$459 million	$508 million	$488 million	$582 million

Section 2.7: Explanatory Tables and Budgeted Financial Statements
[PBS Chapter Seven: p. 115-142]

The budgeted financial statements for Defence appear in chapter seven of the PBS. A detailed explanation of these is provided in section 9 of this brief.

Section 2.8: Defence Materiel Organisation PBS [PBS Part Two: p. 143-208]

On July 1 2005 DMO became a prescribed agency under the *Financial Management and Accountability Act 1997*. Since then it has had its own independent part in the Defence portfolio PBS.

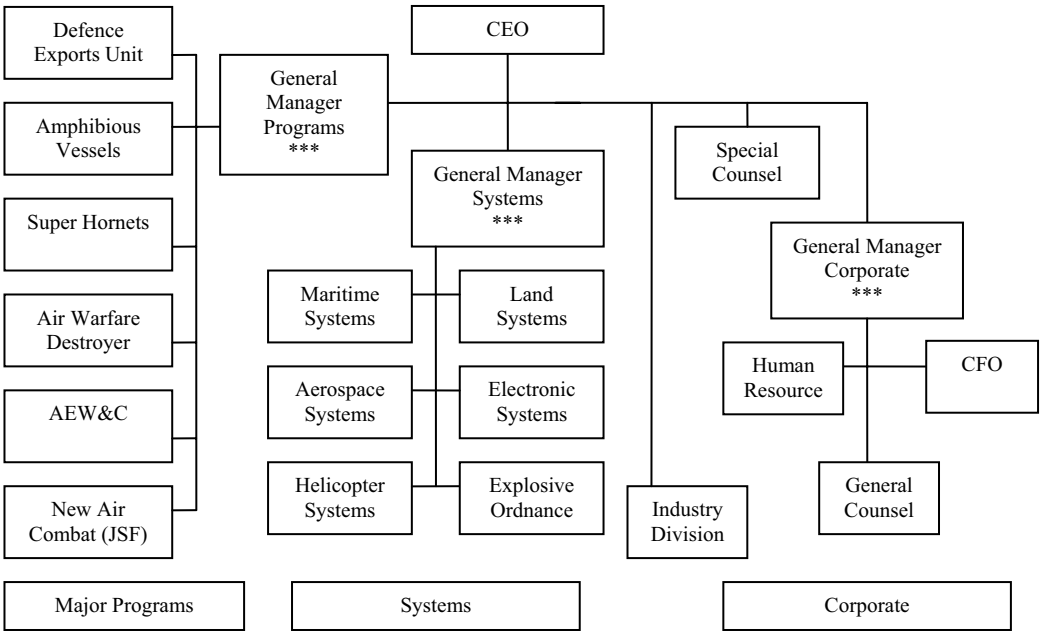
Overview

DMO acquires and supports equipment for Defence on a quasi-commercial basis. It is an independent entity from a financial perspective, but administratively is somewhat of an agency within an agency (hence the PBS within a PBS). The overview of the DMO PBS [pp. 147–150] starts with a description of the organisation and an outline of its priorities. It is first worth quoting the formal Outcome set for DMO:

'Defence capabilities are supported through efficient and effective acquisition and through-life support of materiel.'

Organisational structure
DMO is divided into sixteen divisions, each headed by a band-2 SES civilian or 2-star military officer, as shown in Figure 2.8.1. In 2007-08 two additional deputy secretary level General Manager roles were created to 'assist the CEO to focus on his strategic leadership role'.

Figure 2.8.1 DMO Organisational structure



Source: 2008-09 PBS page 150

The divisions fall into three categories:

'Systems' divisions are set up on the traditional environmental domains of land, sea, and air, plus divisions dealing with electronics/weapons and explosives. They manage and deliver the vast bulk of the 236 major equipment acquisition projects (and more than 180 minor acquisition projects) that DMO is responsible for, and take care of the

materiel support of existing capabilities—some 1,000 major fleet groupings—across all domains.

'Programs' divisions acquire high profile capabilities of strategic significance. That is, if a project is big, important (and politically sensitive) enough it gets it own dedicated division. At the moment there are six such programs: Amphibious Vessels, AEW&C, New Air Combat Capability (Joint Strike Fighter), Super Hornet, Overlander (Army vehicles) and for want of a better home, the Defence Export Unit. The Air Warfare Destroyer is managed through the General Manager Programs directly.

'Corporate' divisions provide the full range of corporate services including those of the Human Resource Management and Corporate Service, Chief Financial Officer and General Counsel (legal). In addition, there is an industry division that manages DMO's relationship with industry.

A prescribed agency

The September 2003 report from the Defence Procurement Review (known usually as the Kinnaird Review) recommended a number of changes to Defence and DMO. Key among them was to establish DMO as a separate executive agency. After consideration, the government decided to take the lesser step of making DMO a 'prescribed agency', which nevertheless still delivers a high degree of autonomy.

As a prescribed agency, the CEO of DMO is accountable directly to the Minister for Defence for financial matters, hence the need for separate financial statements. On other matters, DMO still remains close to Defence from an administrative perspective; the CEO being accountable to the Chief of the Defence Force through the *Defence Act 1903* and to the Secretary through the *Public Service Act 1999*.

Resources for 2008-09 [PBS p. 151]

DMO will incur expenses of $9.6 billion in 2008-09, almost all of which comes from Defence. Because DMO presents its resourcing differently to Defence, we have reconstructed how the expenses are resourced as best as we can in Table 2.8.1, the residual difference is likely an accrual factor we have been unable to track down.

Table 2.8.1: DMO funding 2008-09

Funding from Government		
Departmental Appropriation	94,960	Table 2.2.1
Funding from Government via Defence		
Sustainment	4,542,600	Table 1.2.14 p. 30
Acquisition	4,781,000	Table 1.2.14 p. 30
subtotal	**9,323,600**	
Drawdown of special account from 2007-08	95,281	mentioned on p.151
Drawdown of special account in 2008-09	7,189	Table 2.6.2 p.203
Total funding from Government	**9,521,030**	
Other Sources		
non-appropriation receipts (own-source revenue)	82,507	Table 2.2.1 p.151
Accrual gains	37,521	Table 2.7.1 p. 205
subtotal	**120,028**	
Total	**9,641,058**	
Outcome Price	**9,647,336**	Table 2.5.2 p. 164
Difference	**6,278**	

Source: 2008-09 PBS

Sources of funding for DMO include:

Departmental Appropriation from government to pay for policy advice and management services. In 2008-09, this will be $94.960 million.

Revenues from Defence in payment for acquisition and sustainment services from Defence. In 2008-09 this totals $9,323 million.

Previous years' appropriation: $95.3 million of unspent funds from 2007-08 will be spent in 2008-09.

Non-appropriation receipts including things like the disposal of commercial vehicles and payments from foreign forces for materiel services provided. In 2008-09 this will amount to $82.5 million, this would be called own-source revenues in Defence.

Drawdown of special account: The DMO special account will decrease by $7.2 million in 2008-09 thereby providing funds that DMO can spend.

Accrual gains: revenues from accrual factors.

In terms of the DMO contribution to *ASPI Net Defence Spending* in 2008-09 we have: $94.96 million from departmental appropriations, $95.281 from deferred 2007-08 spending and $7.189 million from shifts in the special account, a total of $197.43 million.

DMO Special Account

As a result of accumulating unspent cash, DMO is projected to have a special account balance of $978.5 million dollars at the ends of 2007-08.

Purchaser-provider arrangements

Central to the resourcing framework for DMO are purchaser-provider arrangements with Defence for acquisition and sustainment services. In 2008-09, DMO will receive $4,781 million through *Materiel Acquisition Agreements* with Defence, and another $4,543 million through *Materiel Sustainment Agreements*. In addition, there are several *Shared Services Agreements* (for which no payment is made) that cover such services things as payroll, accommodation, and banking services provided by Defence, and contracting policy and advice provided by the DMO.

A useful breakdown of the payments to DMO appears on pages 30 and 31 of the PBS. It includes the amount of money to be spent on various categories of acquisitions and sustainment support.

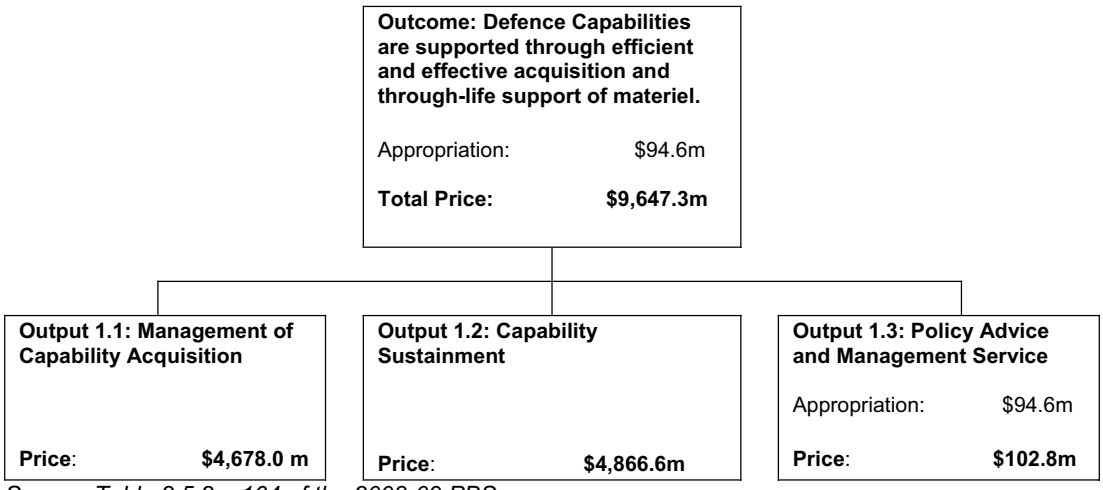
DMO also expects to make use of some 1,759 military personnel whose salaries and other personnel expenses are counted in Defence's financial statements. DMO pays Defence for the services provided by these personnel, as a suppliers expense (rather like payments made to companies for contractor staff).

We know that at least $166 million is paid for the services provided by military personnel to DMO. However, Table 2.2.2 p. 152 of the PBS would seem to imply that the total payment is somewhat larger at $318 million. We do not know what this covers.

Planned Outcome Performance [p. 250]
As a prescribed agency DMO has its own Outcome/Outputs structure as detailed in Figure 2.8.2.

The first two Outputs are predominantly funded through the Materiel Acquisition and Sustainment Agreements with Defence, while the third is mainly funded through the Departmental Appropriation. Note that DMO refers to the 'price' of outputs rather than 'net cost' as in Defence.

Figure 2.8.2 DMO Output prices 2008-09



Source: Table 2.5.2 p.164 of the 2008-09 PBS

Performance Information for Outputs [p. 253]

The PBS sets performance targets for the three DMO outputs and outlines how they will be evaluated in Table 2.5.3 [PBS p. 165]. We have reproduced this in Table 2.8.2 below.

Table 2.8.2 DMO performance targets and planned evaluation

Output	Performance Target	Planned evaluation of performance
Output 1.1 **Management of Capability Acquisition**	Project scope, schedule and budget criteria, as agreed between the CEO DMO and the Defence 'customer', and expressed in the Materiel Acquisition Agreements.	Delivery of major and minor capital equipment projects against the Materiel Acquisition Agreement scope, schedule and budget criteria.
Output 1.2 **Capability Sustainment**	Performance targets agreed between the DMO and Capability Managers will be consistent with enabling the ADF to deliver its operations and capability preparedness requirements as directed by the Government.	Deliver quality, timely and cost effective maintenance, repair, and supply services to the levels and standards agreed by Defence including support to on-going operations.
Output 1.3 **Policy Advice and Management Services**	Deliver quality policy advice and management services	Delivery of quality advice and services to drive reform

Management of Capability Acquisition – Output 1.1
Each of the 236 major acquisition projects undertaken by DMO has a Materiel Acquisition Agreement with Defence that specifies scope, schedule and budget. The PBS summarises the top-30 acquisition projects by expenditure in 2008-09 (see top-30 projects below). Agreements also exist to cover the minor acquisition projects DMO manages. Last year, for the first time, the variation to project cost approvals for the top-30 projects was provided [PBS Table 2.5.5 & 2.5.6, p. 168-9]. This increased transparency is to be commended.

Capability Sustainment – Output 1.2
On pages 190 to 199, the PBS details the goals and challenges for 2008-09 in the area of capability sustainment. Such detail, which was first provided in the 2005-06 PBS, gives a useful insight into the range of activities undertaken. In general, capability sustainment include repair and maintenance, engineering, supply, configuration management and disposal, as well as the provision of spares, technical data, support and test equipment, training equipment and explosive ordnance. For the second year in a row, the top-20 sustainment products by weapons system has been given [PBS Table 3.5.8 p. 191], we discuss this new information below.

Policy Advice and Management Service – Output 1.3
This includes contracting and procurement policy advice for Defence and the DMO, industry policy and advice to Defence and the government, and corporate reporting requirements. Key performance targets for this output are given on page 199 of the PBS and relate primarily to advice to government and effective corporate governance and reporting.

The 'Top Twenty' sustainment products

The top 20 sustainment activities for DMO by forecast expenditure from Table 2.5.8 in the PBS are listed in Table 2.8.3 below and Table 2.8.4 overleaf along with some interesting derived figures based on planned rates of effort.

Table 2.8.3: Top 20 sustainment products – aerospace and helicopters

		2007-08				2008-09			
	Fleet	Cost (m)	Hours	Per platform $'000s	Per hour	Cost (m)	Hours	Per platform $'000s	Per hour
Aerospace									
F-111	21/18	$146	3,600	6,952	$40,556	$120	3200	6,667	$37,500
AP-3C Orion	19	$121	8,200	6,368	$14,756	$135	7900	7,105	$17,089
F/A-18 Hornet	71	$119	12,500	1,676	$9,520	$133	11500	1,873	$11,565
Hawk LIF 127	33	$95	8000	2,879	$11,875	$88	7600	2,667	$11,579
C-130J	12	$65	4600	5,416	$14,130	$127	7000	10,583	$18,143
C-130 H	12					$68	3200	5,667	$21,250
C-17	4	$55	3500		$15,714	$86	5000	21,500	$17,200
Helicopters									
MRH-90	2					$87	600	43,500	$145,000
Seahawk	16	$79	2800	4,937	$28,214				
Black Hawk	34	$67	7500	1,970	$8,933	$73	7500	2,147	$9,733
Super Seasprite	11	$55	200	5,000	$275,000				

The above figures need to be treated with caution. Various fleets enjoy different amounts of contracted support (the cost of which is included) and manpower support from Defence's own workforce (which is not included). More generally, there are usually other costs (like fuel) that are not included separately for each platform. Also, one-off costs can heavily influence the results. For these reason we refrain from commenting on the results except in the exception case of helicopters.

The relatively high cost of $87 million for sustaining two MRH-90 helicopters ($145,000 per hour) reflects one-off costs associated with bringing the helicopters into service. For this reason, operating costs for the MRH-90 are expected to moderate significantly in the longer term.

Table 2.8.4: Top 20 sustainment products – maritime, land and electronics

		2007-08				2008-09			
	Fleet	Cost (m)	Days	Per platform $'000s	Per day	Cost (m)	Days	Per platform $'000s	Per day
Maritime									
Fuel and lubricants		$430				$442			
Collins- subs	6	$322	1004	53,667	$320,717	$296	684	49,333	$432,749
Anzac frigate	8	$238	2344	29,750	$101,536	$255	2091	31,875	$121,951
FFG Frigate	5/4	$126	1028	25,200	$122,568	$112	857	28,000	$150,240
Mine Hunter Coastal	6	$61	2085	10,166	$29,257	$61	2088	10,167	$29,215
Land Systems									
ADF Clothing and Equipment		$101				$76			
ADO Commercial Fleet		$81				$94			
B Vehicles		$85				$117			
Explosive ordnance		$266				$373			
Wide Area Surveillance		$74				$76			
Battlespace Communications		$63				$70			

People

The DMO workforce is a mixture of military personnel, civilians and contractors as detailed on p. 310 of the PBS. The key information is collected in Table 2.8.5 overleaf.

The civilian and military personnel in DMO are held under slightly different arrangements. Civilians in DMO are Defence employees and the CEO of DMO has delegations from the Secretary of the Department that he exercises in this regard. The expenses associated with DMO's civilian workforce appear in their financial statements as employee expenses.

In contrast, the military personnel in DMO are provided through a purchaser provider arrangement with Defence. This does not cover the full per-capita cost of the military personnel, but rather represents a payment for their services roughly corresponding to their costs exclusive of allowances and overheads specific to their military role (and

this is broadly commensurate with what would be needed to secure similar skills in the labour market). Thus, if the military fail to deliver sufficient personnel (due, for example, to operational demands or shortages) DMO has the money to hire people from outside.

Table 2.8.5: Workforce summary for DMO (average funded strength)

	2004–05 Actual	2005-06 Budget	2005–06 Actual	2006–07 Budget	2006–07 Actual	2007–08 Projected	2008-09 Budget
Navy	306	353	277	352	281	352	353
Army	461	501	411	484	389	482	471
Air Force	770	830	762	841	763	868	935
subtotal	**1,537**	**1,684**	**1,450**	**1,677**	**1,433**	**1,702**	**1,759**
Civilian	4,363	4,448	4,502	4,620	4,951	5,567	5,375
Reserve	125	169	191	158	249	235	245
PSP	388	338	393	374	298	253	255
Total	**6,413**	**6,639**	**6,536**	**6,829**	**6,931**	**7,757**	**7,634**

Source: DAR, 2006-07 PBS and 2007-08 PBS.

The 'Top Thirty' projects

The PBS lists the top 30 major capital equipment projects by 2008–09 expenditure [PBS Table 2.5.4 page 166] and provides a description of each. We reproduce the top-30 projects in Table 2.8.6 overleaf. This year, ASPI has again commissioned a team of defence specialist journalists to prepare reports on what we thought the top 20 projects for 2008–09 would be (see Section 8 of this brief). The PBS also includes a listing of previously approved top-30 projects that is useful (Tables 2.5.7, p. 186).

Budgeted Financial Statements

The budgeted financial statements for DMO appear on pages 203 to 208 of the PBS.

Table 2.8.6: Top 30 Defence Major Capital Equipment Projects (million $)

Project	Project Number	Approved Project Expenditure	Spend to 30 June 2008	2008-09 Budget Estimate
Aerospace				
AP-3C Electronic Support Measure Upgrade	AIR 5276	117	16	30
F/A-18 Hornet Upgrade	AIR 5376 Ph2	1,875	1,277	125
F/A-18 Hornet Upgrade - Structural Refurbishment	AIR 5376	874	157	100
ADF Air to Air Refuelling Capability	AIR 5402	1,750	682	260
Maritime Patrol and Response Aircraft System	AIR 7000 Ph2	134	2	51
Airborne Surveillance for Land Operations	JP129 Ph2	126	7	25
C-17 Globemaster III	AIR 8000 Ph3	1,838	1,298	23
Airborne Early Warning and Control Program – Project Wedgetail				
Airborne Early Warning and Control Aircraft	AIR 5077 Ph3	3,472	2,526	68
Air Warfare Destroyer Program				
Air Warfare Destroyer – Build	SEA 4000	7,197	320	600
Bridging Air Combat Capability – Super Hornet				
Bridging Air Combat Capability Super Hornet	AIR 5349 Ph1	3,156	215	564
Electronic Systems Division				
New Air Defence Command and Control Systems	AIR 5333	263	116	27
EWSP for Selected ADF Aircraft - Echidna	AIR 5416 Ph2	307	178	67
Next Generation Satellite Program	JP 2008 Ph4	790	17	79
High Frequency Modernisation (HFMOD)	JP 2043	637	364	28
Explosive Ordnance Division				
Follow-on Standoff Weapon	AIR 5418 Ph1	373	99	50
Lightweight Torpedo Replacement	JP 2070 Ph3	287	91	52
Explosive Ordnance Reserve Stock	JP 2085	202	140	33
Mulwala Redevelopment Program	JP 2086 Ph1	348	56	171
Helicopter Systems Division				
Armed Reconnaissance Helicopter	AIR 87 Ph2	2,026	1,270	172
Multi Role Helicopter	AIR 9000 Ph2	3,557	814	273
Land Systems Division				
Upgrade of M-113 Armoured Vehicles	LAND 106	624	297	100
Bushmaster Infantry Mobility Vehicle	LAND 116	893	383	82
Maritime Systems Division				
Guided Missile Frigate Upgrade	SEA 1390	1,504	1,165	118
Standard Missile Replacement (SM-1)	SEA 1390	575	168	79
New Heavyweight Torpedo	SEA 1429	432	213	26
Collins – Reliability and Sustainability	SEA 1439	396	253	42
Amphibious Deployment and Sustainability	JP 2048	2,949	240	132
Military Integrated Logistics Information System				
Improvements to the Logistics Information Systems	JP 2077	126	82	30
ADF Deployable Logistics System	JP 2077	90	4	27
New Air Combat Capability				
Detailed Analysis and Acquisition Planning	AIR 6000	95	33	40
TOTAL TOP 30 APPROVED PROJECTS		**37,013**	**12,483**	**3,474**
Other Approved Project Estimate		36,606	32,321	825
Management Margin				-338
Estimated Outturn from existing Major Capital				3,961
Projects Planned for Government Approval				278
Total Funds Available				**4,239**

SECTION 3 – DEFENCE EFFICIENCY

There's an apocryphal tale about a senior Defence official who cautioned his juniors, "You have got to be careful; spend a hundred million dollars here and a hundred million dollars there, and pretty soon you're talking real money." Funny or not, the fact is; amounts of money that would make or break other portfolios literally fall into the noise of the Defence budget. The recently announced billion dollars per year Defence efficiency dividend, however, is something different—a billion dollars is real money in anyone's books.

The purpose of this chapter is two-fold; first, to assess the efficiency with which Defence goes about its business and, second, to identify opportunities for improving that efficiency. Our conclusion is simple; there is almost certainly room to improve Defence efficiency but significant improvement will require significant changes to the way Defence operates.

To be clear before we start, efficiency refers to the quantity of output delivered per dollar spent. For Defence, the output is principally military capability. The all too-frequent cry that Defence should focus on effectiveness, rather then efficiency, is wrong-headed. For a given budget, greater efficiency delivers greater output and therefore greater military capability and effectiveness. And this is precisely the circumstance that Defence is faced with today—the government has said that any money from improved efficiency will be redirected to generate more capability than would have otherwise been the case.

Just as it is important not to see efficiency and effectiveness as incompatible, it is equally important not to confuse efficiency and savings through reduced output. It is always possible to save money by, for example, delaying equipment procurement or reducing preparedness, but these sorts of actions reduce the amount of capability delivered as much as they reduce costs—hence effectiveness falls and, all other things being equal, efficiency stays where it was.

The long drive for efficiency

To put the present goal of freeing up a billion dollars through improved efficiency in context, it's worth recalling how we got to where we are today.

Serious efforts to improve efficiency within Defence began with the 1990 report by Alan Wrigley entitled *The Defence Force and the Community*. It laid out a scheme whereby support roles traditionally performed in-house by Defence personnel (uniformed and civilian) would be transferred to the private sector. Through the 1990s, and in tandem with the sale of government-owned naval shipyards, aircraft factories and munitions plants, activities in Defence that were deemed unnecessary to retain 'in uniform' and which could be delivered more efficiently by the private sector were outsourced.

Until the latter part of the 1990s, the outsourcing occurred under the auspices of the *Commercial Support Program* (CSP) which systematically applied cost-benefit analysis to activities. The original goal of the Program was to accrue $200 million in recurrent savings by 1998 from within a Defence budget of around $8 billion per year. As a result of the CSP and direct cuts to the force structure made in the 1991 *Force*

Structure Review (which removed more than 6,570 positions from the permanent ADF) the size of the full-time uniformed force fell from 68,700 to 57,000 between 1990 and 1997. Over the same period civilian numbers fell from 24,000 to 18,000.

When the new government arrived in 1996, Defence was initially quarantined from the widespread cuts to the Public Service that occurred. Apart from a $125 million administrative savings measure which was redirected to military capability, it was untouched. But in October of that year, the government commissioned an external *Defence Efficiency Review* to look for ways to improve efficiency. As with the present initiative, the aim was not to take money from Defence but to redirect funds to the sharp end. There was good reason to do so; the CSP had been delivering savings much more slowly than cost pressures emerged. As a result, a growing gap between means and ends was having an increasingly deleterious effect on the preparedness of the ADF and the state of its equipment. In retrospect, this is hardly surprising given that the Defence budget was effectively held constant in real terms over the period at the same time as the cost of personnel, equipment and support comfortably outpaced inflation.

The *Defence Efficiency Review* led to the *Defence Reform Program* (DRP). The DRP was nothing if not ambitious. From an annual Defence budget of around $10 billion, the DRP sought to generate $941 million in recurrent savings and $675 million in one-off savings—all without any reduction in military capability. In comparison, prior to the DRP the CSP had only delivered $155 million in savings.

To free up what amounted to almost 10% of the Defence budget, the DRP proposed:

- accelerating and deepening the contracting-out of activities to the private sector
- consolidating duplicated administrative and support activities
- reducing the Defence property portfolio through consolidation and sale of surplus assets.

In consequence, a total of 12,201 military and 8,303 civilian positions were to be removed through efficiency measures or examined for market testing.

Of course, planning to save money and actually doing so are different things. And, while the sale of properties did eventually deliver $1.5 billion in one-off savings, it is frustratingly difficult to judge the extent to which the DRP achieved its goals for recurrent savings. There are two reasons for this.

First, Defence made few attempts to monitor individual initiatives and measure the near-term, let alone long-term, impact on the cost of delivering capability or the quanta of capability delivered. As a general comment, Defence's coordination of the program was poor and reporting was lax. In many cases, efficiencies were deemed to have occurred by simply reducing sub-organisational budgets. Given that significant budget pressures re-emerged well before the end of the decade, it is likely that a good share of claimed efficiencies were an illusion. And, in any case, the claimed efficiencies fell well below target. According to a 2001-02 Audit Office Report, of the $941 million of planned savings only $644 million was claimed as achieved or *in*

progress as of 2001. No subsequent accounting or reporting of overall results occurred.

Second, rather than redirect the savings to meet shortfalls in capital investment or logistics, the decision was taken to use the savings to 'buy back' ADF personnel and increase the planned long-term (post-DRP) strength of the permanent force from around 45,000 to 50,000. In theory, this meant continuing to outsource non-core military positions and re-employing those personnel to deliver additional combat capability. However, despite the claim that additional capability resulted from the 'buy-back', no new battalions were raised, not a single additional vessel set to sea and no extra aircraft took to the air.

Whether the DRP delivered efficiency in the long-term is hard to say. Despite a singular fixation with financial accounting (at great cost and no tangible benefit), Defence has proven itself to be largely indifferent to understanding or planning its business. It may be that in some cases the DRP simply transferred activities from inefficient public hands to monopoly rent-seekers in the private sector. This risk is particularly high where services are so Defence-specific that set-up costs restrict the entry of new suppliers. Moreover, it may be that the initial justification for some out-sourcing was skewed by the one-off availability of already trained ex-Defence personnel—resulting in rising costs once suppliers had to take on the burden of training personnel.

In any case, the overall perception of the DRP among Defence personnel—particularly military personnel—is negative. Defence folk-law holds that the DRP cut costs by reducing the quality and responsiveness of services while at the same time undermining the sustainability of military career paths in many areas. It is unlikely that these perceptions are without at least some justification. The only way to tell would be to compare the cost and output of individual activities from 1996 through to the present. As a general rule, Defence has not bothered to collect the data to allow such a comparison.

Beyond the opacity and confusion of the DRP, the next milestone in the drive for efficiency was the 2000 White Paper, *Defence 2000*. In what was a serious attempt to baseline the cost of delivering military capability, *Defence 2000* set out what was believed to be a fully funded ten-year program for the ADF. Apart from specific additional funds to acquire, man and operate planned new equipment, it injected approximately an extra $400 million in baseline costs from 2001-02 onwards (through the retention of 1999 'force generation' funds) plus $150 million in baseline operating costs from 2004-05 onwards. Against this was levied a medium-term $200 million per year White Paper savings target.

As it turned out, *Defence 2000* failed to properly anticipate—by an appreciable margin— the full cost of developing and maintaining the capabilities it planned for the ADF (in part due to *ab initio* underestimation and at least in equal measure due to escalating capability goals). So from 2003-04 onward, Defence received a series of additional funding injections to cover rising baseline costs in personnel, logistics and estate. Table 3.1 lists the approximate increases to baseline costs that have occurred including and since 2000. Note that these figures do *not* include the additional personnel and operating costs made available for new capability within White Paper

funding.

Table 3.1: Approximate additional baseline funding 2000-2008 (nominal $)

	Personnel	Estate	Logistics	Total
East Timor	-	-	-	400
White Paper	-	-	-	150
2002-03	-	-	-	-
2003-04	0	0	260	260
2004-05	163	94	153	409
2005-06	0	0	0	0
2006-07	140	0	7	147
2007-08	300	0	250	550
			Total	**1,916**

Source: Various Defence Budget Papers

It is important to note that Table 3.1 does not show the additional funds released by the dramatic cuts to capability wrought by the 2003 Defence Capability Review. These grow across the decade and, for example, are estimated at $286 million for 2007-08. If these are taken into account, the effective increase to baseline funding comfortably exceeds $2 billion a year.

Curiously, at the same time as additional funds have been flowing into Defence, a series of new efficiency savings programs have been imposed on Defence, Table 3.2. We have not included the savings planned for 2008-09 which are detailed on page 42 of this brief. Compared with the wholesale changes wrought by the DRP, the efficiency measures of the current decade have been more routine and administratively focused, though substantial in value nonetheless.

Table 3.2: Efficiency measures and savings targets for Defence 2000-1 to 2007-08 ($m)

$m	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	after
White Paper Savings Initiatives	50	200	200	200	200	200	200	200	200	200	200
Administrative Savings Targets[2]			50 (61)	100 (126)	150 (169)	153 (175)	200 (202)	200	200	200	200
Extra Administrative Savings						70	60	12			
Progressive Efficiency Dividend[1]					3	16	36	59	85	109	+ $30 p.a.
Absorbed Budget Measures 2005/06					65	78	46	28	?		?
Rationalisation of Command/Control						6	13	21	31	31	31
2007-08 Efficiency Dividends							11	51.2	56.7	57.8	57.8
Total	50	200	261	326	437	545	557	571.2	572.7	597.8	630+

[1] *After 2009-10 the efficiency dividend will continue to grow by roughly $30 million per annum.*
[2] *Achieved administrative savings are shown in brackets*

The initiatives have taken two forms. The first two items, the *White Paper Savings Initiatives* and *Administrative Savings Targets*, are redirected back into Defence to offset costs in other areas. The last four items (which are small) have effectively been sliced off Defence's bottom line. Adding up the various initiatives, a somewhat forbidding figure of more than half a billion dollars per annum emerges. So how are these various savings being achieved?

White Paper Savings Initiatives

In the case of the White *Paper Savings Initiatives*, the money was mainly recovered by 'rebaselining' the individual internal group budgets in one hit. Where the impact was felt, or how the savings were achieved, remains unclear. Roughly speaking, the *White Paper Savings Initiative* negated the $150 million boost to baseline funding promised by the White Paper.

Administrative Savings Initiatives

Unlike previous years, the 2008-09 PBS does not detail the status of this program. Last year the PBS listed 28 separate initiatives that have or will deliver savings as part of the administrative savings program. It showed Defence actually doing better than required, with an excess of $39 million at that point.

Unfortunately, we cannot put most of the administrative savings measures in context because we lack a detailed breakdown of how Defence spends its money. Indeed, the last year for which actual expenses and claimed savings were reported is 2005-06, albeit incompletely. Beginning in 2006-07 Defence ceased disclosing actual expenses by item in the 2006-07Annual Report. Table 3.3 lists the administrative savings initiatives worth more than $5 million from 2005-06.

Table 3.3: Administrative Savings Initiatives, 2005-06, value > $5 million in value

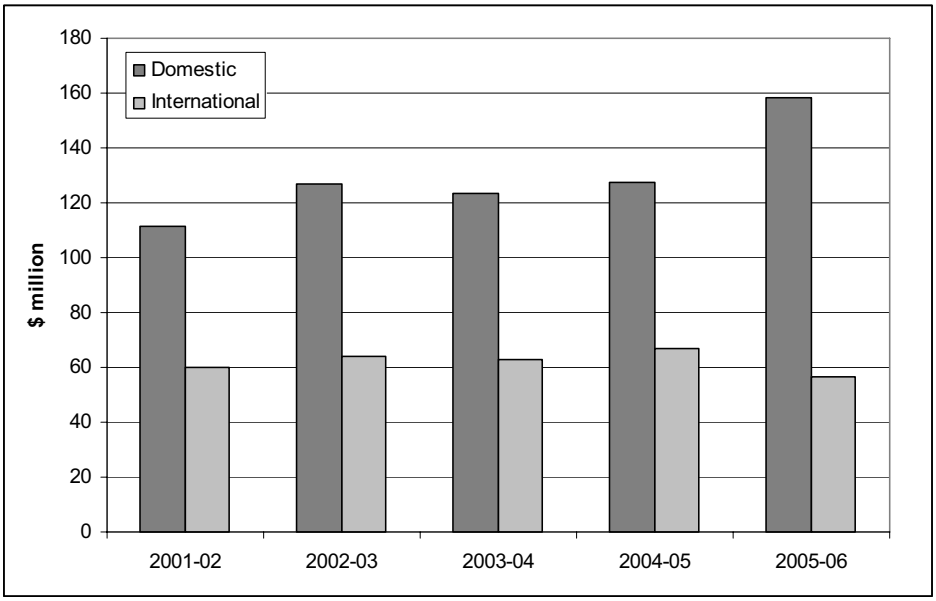
Initiative	Value ($ million)	Comment
Reductions in civilian workforce*	46.5	Actual civilian numbers grew
Non-capability suppliers expenses (inc.PSP)	41.7	
Reductions in non-operational overseas postings	19.2	
Reduction in *Comcover* premium	20.8	
Reductions in domestic travel*	11.5	Costs increased
Reductions in international travel*	7.4	Costs increased
Defence travel card	7.0	
Removal of P-3C Orion training aircraft	5.5	Not an administrative saving

*areas where increased, rather than reduced, total expenses have been recorded

Note that of the eight claimed savings listed in Table 3.3, at least three are in areas where costs have increased rather than decreased. For example, consider the planned annual savings in domestic ($11.5 million) and international ($7.4 million) travel expenses.

Figure 3.1 charts international and domestic travel expenses for the last five years. The data goes back two years before the program of savings measures commenced in 2003-04. In the first year of savings measures (2003-04) there was a reduction of $4.3 million against a target of $18.9 million. Worse still, in 2004-05 and 2005-06 travel expenses increased by $3.6 million and $24 million respectively compared with the 2002-03 baselines. The best we can hope is that the savings have been delivered against the baseline for administrative travel, but that this has been obscured by an operational increase.

Figure 3.1: International and domestic travel, Defence plus DMO ($ million)



Source: Various Defence Annual Reports.

Finally, it's worth pausing to see where the money is going. Table 1.16 in the 2005-06 DAR details the redirection of funds. While a lot of the money has gone directly to capability in the form of military pay and allowances, a significant amount is being ploughed back to cover new administrative expenses as Table 3.4 shows.

Table 3.4: Administrative Savings Initiative, 2007-08; redirected funds

Initiative	Value ($ million)	Comment
Contracts including Defence warehousing and recruitment	100.0	capability/administrative
ADF pay and allowances	50.0	capability
Comcare premium increases and charges	16.6	administrative
Defence Service Call Centre	9.5	administrative
Civilian superannuation costs	15.0	administrative
Establish Chief Information Officer	4.9	administrative
Legal and compensation costs	4.0	administrative
P-3C logistics shortfall	4.0	capability
Overseas lease costs	2.3	capability/administrative

It is difficult to escape the conclusion that a good share of the cost reduction claimed within the *Administrative Savings Initiative* is questionable. Moreover, to the extent that there have been savings, funds have sometimes simply gone back to other administrative areas.

Rationalisation of ADF Command and Control Infrastructure

This is a genuine efficiency dividend; same output, less input. Defence undertook a review of its network of headquarters and found that they could get by with 241 fewer personnel. Credit is due for this self-generated efficiency.

Other Savings Measures

It remains unclear how Defence will deliver the future *Extra Administrative Savings*, *Progressive Efficiency Dividend*, *Absorbed Budget Measures* and *2007-08 Efficiency Dividends*. Nor is it clear whether these initiatives will become part of the $10 billion savings program, or if they will be delivered in addition to it.

To conclude our survey of efficiency in Defence, Table 3.4 brings together the various post-1990 efficiency measures (in 2008-09 dollars) and compares them with the planned $1 billion initiative. We have omitted the anomalous adjustments that have been made for 2008-09 due to high indexation and a sizable 2007-08 hand back of funds.

Table 3.5: Efficiency programs 1990-present

Period	Program	Mechanism	Claimed savings ($m)	Approximate percentage of the Defence Budget at that time
1990-1997	Commercial Support Program	Outsourcing	155	1.6%
1997	Administrative Savings Program	Administrative	125	1.3%
1997-2000*	Defence Reform Program	Outsourcing, structural change and administrative	644	6.7%
2000-2008	Post-2000 Efficiencies	Mainly administrative	550	2.5%
		Total	-	12.1%
2008-onwards	$1 billion Defence Efficiency	To be determined	1,000	4.5%
		Cumulative total	-	16.6%

*Actually DRP savings trickled on past 2000.

Because most of the savings claimed for the period 1990 to 2000 came about through large-scale consolidation and outsourcing of Defence activities, they represent one-time opportunities that cannot be repeated. With this in mind, the billion dollar efficiency target looks to be—on the surface at least—a sizable challenge; it asks for savings more than twice as large as that claimed over the past seven years. So how much fiscal fat did Defence put on during the post-2000 period of generous funding?

Although there have been more than $550 million per year in claimed efficiencies since 2000, only $150 million actually came off the budget bottom line, while at the same time more than $1.9 billion of additional annual baseline funding was granted (not including the funds released by the 2003 Defence Capability Review cuts). With so much money flowing into Defence, the danger is that a ‘magic pudding’ has been created where successive efficiency measures do little more than feed off accumulating administrative overheads and inefficiencies.

The question that must be answered is: has the net increase in the cost of delivering capability been matched by a commensurate increase in the delivery of capability, noting that Defence entered this decade with inadequate funds in a number of areas? To try and answer this question, we turn now to explore the efficiency with which Defence delivers combat capability today.

Are we getting value for money today?

In the absence of external benchmarks for the cost of delivering military capability, the best we can do is measure the shift in Defence efficiency over time. Although this

will not tell us whether we are getting best-practice value for money, it will at least reveal whether efficiency is improving or eroding. Unfortunately, even this modest goal turns out to be ambitious given the difficulties with measuring military capability and its cost.

At the best of times it is difficult to measure defence efficiency because of the inherent difficulty of measuring military capability. Not only does military capability depend upon a myriad of factors like the reliability and technical performance of equipment, but it often hinges on intangibles like morale and discipline. Working, as we are, with what limited information is made public, the best we can do is trust in Defence's reporting of output delivery and employ imperfect surrogates like activity rates and platform numbers where we can.

The measurement of defence efficiency is further complicated by Defence's opaque financial reporting. Although, in principle, it is possible to track the changing cost of Defence's twenty-eight capability Outputs from 1999-00 onwards, the figures are of no practical use; multiple changed attribution rules and the inclusion of depreciation and other accrual artifacts makes sure of that. It is only at the level of the six Defence Outcomes that adequate detail exists over sufficiently long periods to extract meaningful financial trends.

Given the limited and imperfect data available on capability delivery and cost, the analysis that follows is relatively high-level and necessarily imprecise. Because Defence's output structure has changed, we have only been able to use output costs up to and including the 2007-08 PBS. For consistency, the remainder of this chapter uses data from that date including deflators, expenses and personnel numbers. Although this does not allow us to take into account the impact of the 2007-08 underspend, that will hopefully only make a small difference to the long-term trends we are examining.

Outcomes expenses

It's not easy to extract useful information from the confused tangle of accrual reporting employed by Defence. Nonetheless, a reasonable approximation to the recurrent cost of delivering the Defence Outcomes can be made by ignoring depreciation and other accrual contaminations in reported expenses. This leaves two items; employee expenses and suppliers expenses. Employee expenses are the expenses associated with Defence's own military and civilian workforce, while suppliers expenses covers payments to external parties for goods and services consumed in-year plus the value of inventory consumed. Importantly, suppliers expenses do not include the purchase of major or minor capital assets, land or property. In this way, suppliers expenses represent the non-personnel component of recurrent spending (except for the cost of contractors who supplement Defence's workforce).

Between 2000-01 and 2007-08, the total of employee plus suppliers expenses grew by 44.3% above inflation, equivalent to average compounding annual real growth of 5.4%. Within this increase, personnel expenses grew by 21.6% (2.8% per annum compounding) while suppliers expenses grew by a whopping 75.1% (8.3% per annum compounding). These increases are expressed in real terms so they come *in addition to* the above-CPI price indexation Defence receives, which for the period in question

was a hefty 27.7% (3.2% per annum compounding) compared with CPI at 21.6% (2.4% per annum compounding).

Because Outcome expenses include attributed expenses associated with all the activities in Defence including training, administration and policy, increased expenses could equally arise from rising overheads as from the growing direct cost of delivering combat capability.

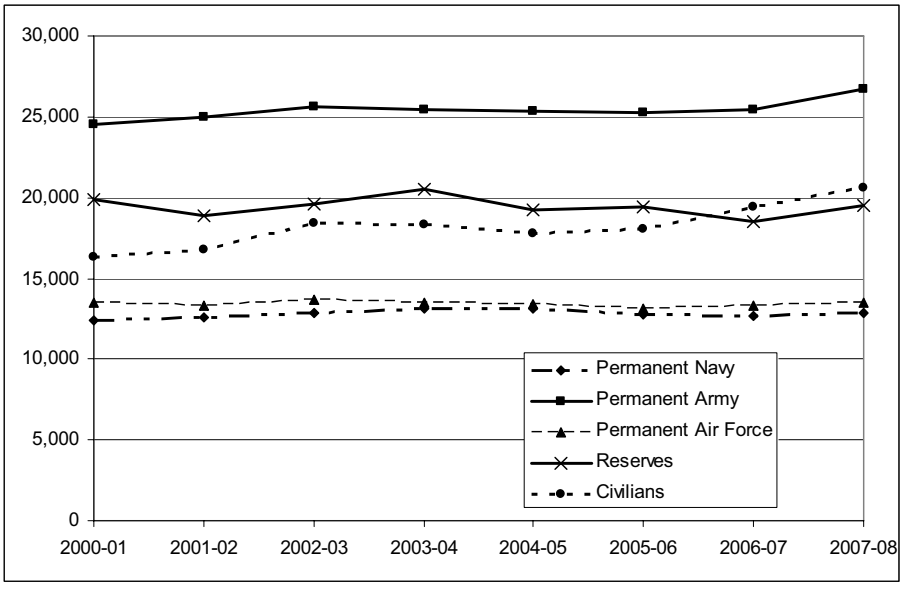
We now turn to look more closely at how Defence personnel numbers and expenses have changed over the period—remembering that, depending on context, personnel can either be viewed as an element of capability or a cost.

People and dollars

In terms of permanent uniformed personnel, the gains of the past seven years have been decidedly modest, Figure 3.2. A mere 2,754 additional full-time uniformed personnel (representing a gain of only 5.5%) have been added to the ADF. This includes 2,205 new positions in Army (9.0%), 503 in Navy (4.1%) and 46 positions in Air Force (0.3%). In contrast, since 2000 the number of full-time civilians has grown by 4,322 positions, representing an increase of 26.5%. Over the same period, the number of part-time reserve personnel has fallen by 285 positions (-1.4%).

The extent to which these figures represent increased capability is hard to gauge; both civilian and uniformed personnel can be used either efficiently or inefficiently. Deferring an examination of that issue to later, let us optimistically assume that the increased size of the permanent military force is a reasonable surrogate of additional capability. This implies that capability has only grown by 5.5% in the past seven years. Even if we, even more optimistically, assume that additional civilian personnel contribute equally to the delivery of capability, the corresponding figure for the total permanent military plus civilian workforce is still only 10.6%. To the extent that raw personnel numbers represent capability, the gains since 2000-01 have been decidedly modest.

Figure 3.2: Personnel numbers 2000-01 to 2007-08



Source: Defence Annual Reports and Budget Papers

Broadly speaking, personnel expenses have increased in line with personnel numbers and the well understood (and funded) above-inflation trend. In particular, and as explained in Section 2.5, the per-capita cost of uniformed personnel has been contained within the 'inflation + 2.5%' margin that Defence funding covers. In this sense, we are paying no more per military head than is reasonable. For civilians, however, the rate of per-capita increase is faster than supplementation, probably reflecting substantial level enrichment within the civilian workforce.

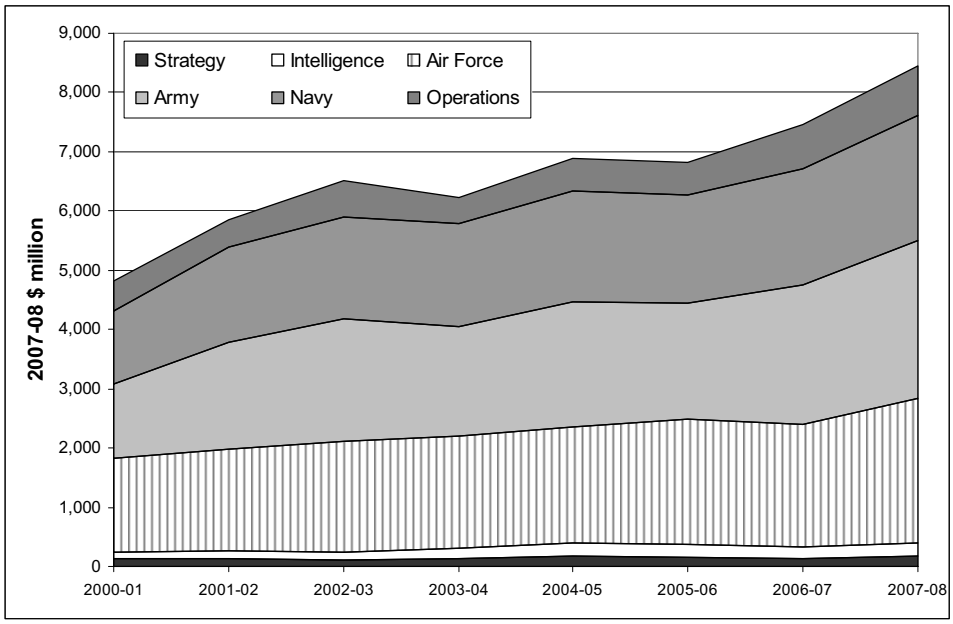
Assets and activity

Figure 3.3 plots suppliers expenses for the past eight years as measured in 2007-08 dollars adjusted using the Defence deflator. The total real increase in seven years has been 75% or 8.3% per annum compounding. If the CPI is used as the deflator, the corresponding total and annual increases are 84% and 9.1% respectively. [Note that the figures for 2005-06 to 2007-08 have been adjusted to take account of DMO employee expenses being counted as Defence suppliers expenses in the financial statements.]

The question is: has there been an increase in capability output commensurate with the growth in suppliers expenses for each of the outcomes? In what follows, we attempt to answer this question for the four principal capability Outcomes.

For reference, the changes to suppliers and personnel expenses for the Defence Outcomes are detailed in Table 3.6. Because Outcome 1 (Defence Operations) is directly dependent on highly variable operational tempo we make no attempt to analyse it further, and similarly for Outcome 6 (Strategic Policy) given its slight size, lack of metrics for performance and variable composition over time.

Figure 3.3: Real suppliers expenses 2000-01 to 2007-08



Source: Defence Annual Reports and Budget Papers

Table 3.6: Real increases in Outcome expenses 2000-01 to 2007-08

	Suppliers Expenses		Personnel Expenses	
	7 year	annual	7 year	annual
Strategy	34.2%	4.3%	-56.0%	-11.1%
Intelligence	90.2%	9.6%	30.6%	3.9%
Air Force	54.9%	6.5%	32.8%	4.1%
Army	111.4%	11.3%	21.7%	2.8%
Navy	72.5%	8.1%	25.5%	3.3%
Operations	61.8%	7.1%	16.5%	2.2%
Total	**75.1%**	**8.3%**	**21.6%**	**2.8%**

Source: Defence Annual Reports and Budget Papers

How have the Outcomes changed?

The reported performance of the Navy, Army and Air Force Outcomes from the Defence Annual Report is set out in Figure 3.4. (For obvious reasons, public reporting on Intelligence is too sparse to be of any use.)

It is clear from Figure 3.4 that the additional funding received by Defence has translated into improved performance against targets for the three Services; clearly for Navy, moderately for Army and substantially for Air Force. Improved performance is also clear for the specific performance measures (military preparedness, maintenance of core skills and quantity of capability delivered) as detailed in Section 2.6 of this Brief. What we do not know, however, is how the target may have changed over time.

When looking at reported Outcome performance, it's important to remember that the results are not a measure of absolute performance but only of performance relative to planned targets. Nonetheless, the gains over the past seven years are a significant achievement given the operational tempo of the period. But performance against planned targets is but one aspect of capability delivery, equally important is the scale and sophistication of the capabilities held by the ADF.

Despite the ambitious plans set forth in the 2000 White Paper, little of the new capability envisaged has actually been delivered—in part because of the time taken to develop new capabilities but equally due to mounting delays. (This, in itself, is a reflection of efficiency in delivering capability development outcomes.) Nonetheless, significant changes have occurred through the delivery of projects dating back to the 1990s.

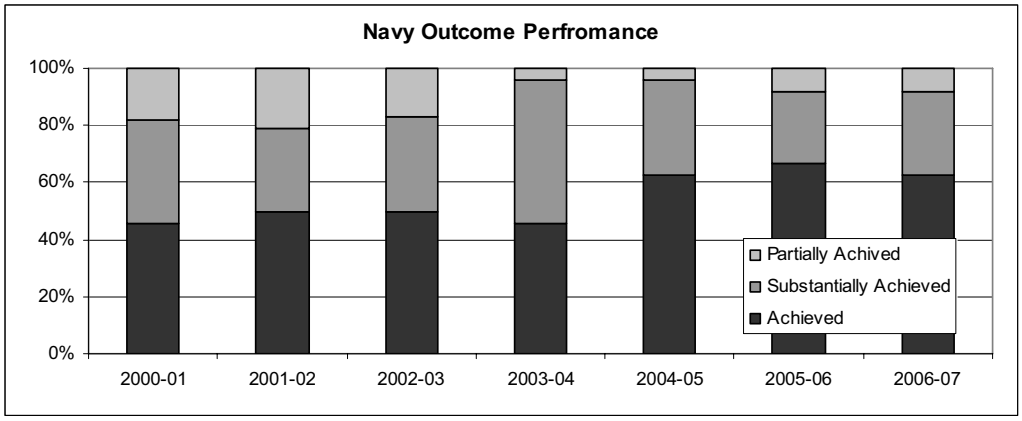
Navy (personnel numbers up 4.6%, suppliers expenses up 72.5%)

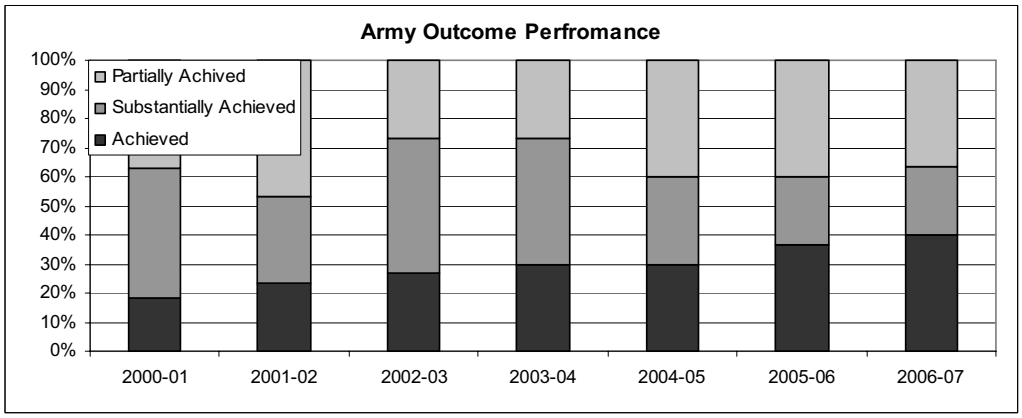
Of all the Services, Navy is arguably the one that has changed the most over the past seven years. Key developments include;

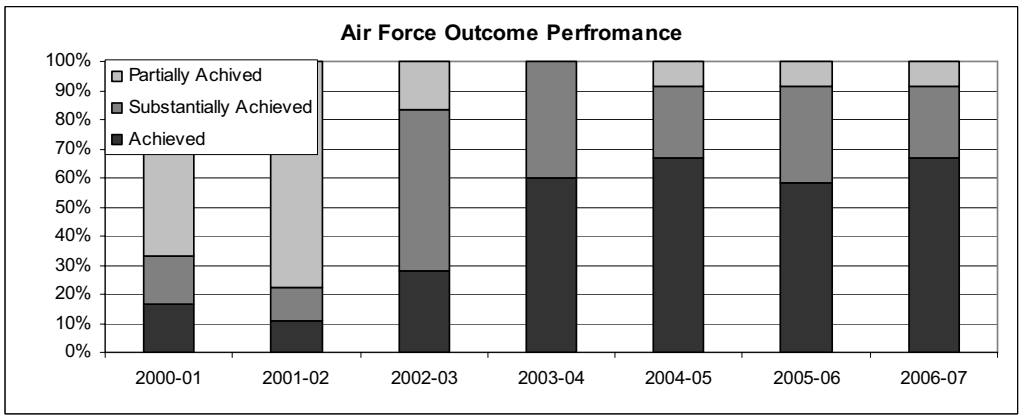
- From a nine vessel surface combatant force (6 x FFG, 2 x ANZAC, 1 x DDG) the Navy has expanded to a thirteen vessel fleet (5 x FFG, 8 x ANZAC) at the same time as upgrades have been made to both the FFG and ANZAC. All up, a more than 44% increase in capability.
- A doubling of the Collins class submarine fleet from three to six boats offset by the retirement of one Oberon class boat at the end of 2000. Like the FFG and ANZAC, the Collins class is also the subject of an upgrade program.

- The aging Fremantle class patrol boats have been replaced by an equal number of more capable Armidale class vessels. Similarly, the oiler HMAS Westralia has been replaced by a new double hulled vessel HMAS Sirius.
- Navy's principal mine-hunting capability has been increased three-fold with the increase from 2 to 6 Huon class coastal minehunters.

Figure 3.4: Reported Outcome performance 2000-2007







Source: Defence Annual Reports

In terms of force structure, the remainder of Navy is largely unchanged. Remembering, however, that force structure and capability are not the same thing, it must be noted that naval aviation continues to decline as a credible capability and the preparedness of some of the present fleet is well below par. In particular, the troubled upgrade to the FFG frigates has left the vessels with less than full operational

capability and two of the Collins class submarines are lying idle due to crew shortages. Unfortunately, while these problems with the FFG and Collins fleets substantially reduce available combat capability, they only marginally alleviate the need to fund the expanded force.

Army (personnel numbers up 9.0%, suppliers expenses up 111.4%)

Because the Army does not focus as much on platforms as the other two Services, it is easy to miss changes when they occur. Changes there have been nonetheless including;

- An increase in strength of 2,205 personnel (9%) which, along with the internal redeployment of personnel, has delivered two additional infantry battalions (up from four) plus somewhat increased supporting elements. This must be tempered by the observation that many of today's battalions are manned at less than historical strength levels and even the increased level of support remains below balance. Work is already underway to expand to seven and eventually eight battalions.
- Special Operations command was raised and a regular Commando battalion was formed from an existing infantry unit.
- A total of 299 Bushmaster infantry mobility vehicles were delivered and entered service (with a further order for additional vehicles now placed).
- The ASLAV fleet was expanded at the same time as an upgrade has occurred to the existing fleet.
- The long-troubled M113 upgrade project is finally, though only just now, handing upgraded vehicles back to the Army.
- Although the Armed Reconnaissance Helicopter project has yet to field an operational capability, 14 airframes have been delivered to the Army offset by the retirement of 25 Iroquois helicopters. At an even earlier stage of development is the new troop lift helicopter fleet where Army has taken delivery of 2 airframes.

Aside from force structure, it is clear that the Army has greatly increased its preparedness. After scraping through the East Timor deployment in 1999, the Army is now sustaining the bulk of the ADF personnel numbers in three medium (East Timor, Iraq and Afghanistan) and one small (Solomon Islands) deployments offshore.

Air Force (personnel numbers up 0.34%, suppliers expenses up 54.9%)

Changes have been least visible in the case of Air Force where the force structure has evolved more than grown. Key developments include:

- Ongoing upgrades of the F/A-18 fighter fleet.
- Final delivery of upgraded AP-3C maritime patrol aircraft offset by the retirement of 3 TAP-3 Orion training aircraft.
- Replacement of the Macchi lead-in-fighter by the Hawk.
- Retirement of one B-707 aircraft and the replacement of 6 aging HS-748 navigation training aircraft by leased platforms.
- Bedding down of the 12 C-130J transport aircraft that replaced the aging C-130E fleet in the late 1990s.
- Entry into service in 2007 of the C-17 strategic air lifter.

- Development of an agile expeditionary combat support capability.

Despite the seemingly modest changes to the Air Force, at least some of the additional expenses can be traced back to the substantial increases to the cost of operating new platforms like the C-130J and Hawk lead-in-fighter. While more modern platforms are invariably promised to be cheaper to run and easier to maintain than their predecessors, this is rarely the case.

Curiously, despite rising spending and a high operational tempo, the rate of flying in the RAAF (and the other two Services) has declined significantly since the 1990s as Figure 3.5 clearly shows. We have not bothered to include planned flying rates because the tendency is for actual results to fall below planned levels. Unfortunately, the Navy no longer reports steaming days so we are unable to say anything about Navy's activity rate apart from aviation.

Intelligence (personnel numbers up 30.6%, suppliers expenses up 90.2%)

Usually the secrecy surrounding intelligence makes it difficult to know what's happening, but the recent emphasis on timely intelligence (post-9/11, post-Bali bombing and post-Iraq WMD) would make it surprising if spending on intelligence had not grown. Beyond that, it is not possible to form a judgment about the increased cost of the intelligence Outcome.

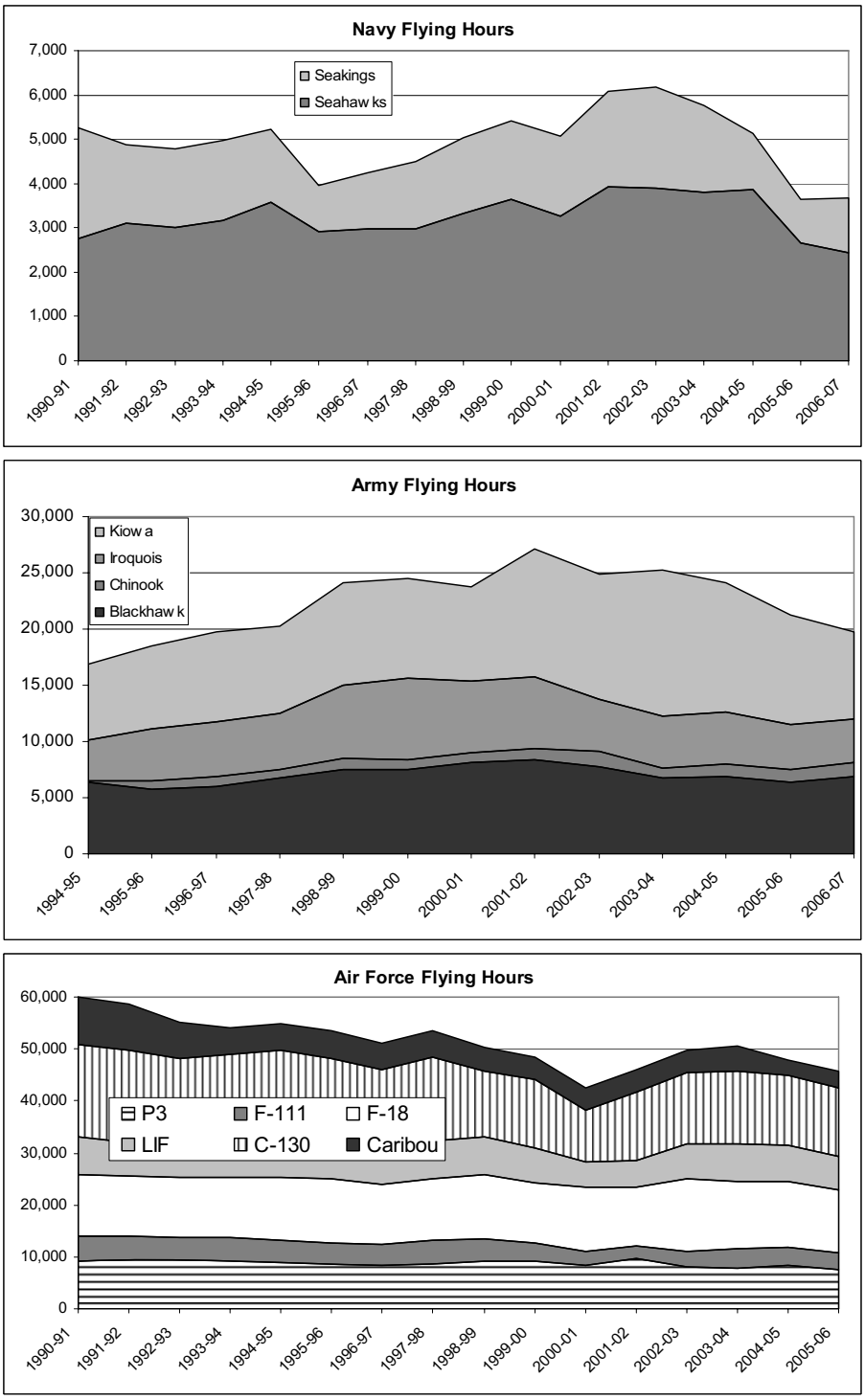
What does it all mean?

Any reader who has persevered through the jumble of charts and tables to this point will be wondering what conclusion to draw. They have the author's sympathy; the situation is complicated.

Most of the evidence suggests that the ADF is delivering a lot more capability today than at the start of the decade. Equally, we know for certain that the cost of maintaining the ADF is a lot more than it was at the start of the decade. But without a quantified measure of capability delivered, it's hard to be definitive about changes to efficiency over time. Even at a qualitative level, forming a clear judgment is hard.

One way to approach the problem is to ask whether the quantified increase in suppliers expenses (which is where most of the cost growth has been) is commensurate with qualitative increase to capability delivered. Although one might, just might, be able to reconcile the 72.5% increase in Navy attributed suppliers expenses to the expansion of the fleet, it is much harder to do so in Army where a 111.4% increase occurred. Similarly for Air Force, where the 54.9% increase has been accompanied by only a slight increase in the scale of forces available. Adding to these judgments the recorded fall in flying rates for all three Services relative to historical levels, the tentative conclusion must be that the rise in costs has outpaced the increase in capability delivered—though by how much is hard to say. A good share, though not all, of the increased expenses can reasonably be attributed to rising preparedness, redress of systemic logistic shortfalls, an expanded force structure and the increased cost of operating new capability.

Figure 3.5: Achieved Flying Hours 2000-01 to 2006-07



Source: Defence Annual Reports

The preceding analysis of costs and capability is but one way to gauge defence efficiency. Other signs also point to Defence not spending taxpayers' money as well as it might. To start with there is the question of civilian personnel numbers, which have grown by 26.5% since 2000. There is little doubt (and indeed some evidence) that many of these new positions are in administrative and non-combat support areas. Equally, it is far from clear that the military bureaucracy is as lean as it could be.

Then there are the bottlenecks to capability delivery, like delayed projects and critical personnel shortages that leave multi-million dollar aircraft without pilots and multi-billion dollar submarines without crews. As a newspaper columnists recently observed "A well run defence force would make sure that it had enough crews to operate all six boats". He might well have added that the submarines require a crew of only 42 and the Navy has, today, 12,900 full time personnel. And if he really wanted to drive the point home he should have mentioned that despite an Air Force of 13,500 there is less than one operational pilot for every two combat aircraft (of which we have only around 100). These examples clearly demonstrate that the largest single contribution to Defence inefficiency is the failure to properly manage the delivery of capability. We return to this point later.

Finally, there is the fact that Defence lacks any mechanism to measure, manage or reward efficiency. If Defence is somehow efficient, it is a remarkable coincident. As detailed in an earlier ASPI publication, *Improving Defence Management*, Defence is effectively run as a command economy where goods and services are provided through third parties to the Services who are at best only notionally responsible for delivering capability. Given the manifest disconnect between accountability and control of resources, it is little wonder that the external *Defence Management Review* of 2006-07 observed that Defence exhibits 'apparent indifference to efficiency'.

Hey buddy, can you spare a billion dollars?

Having established that there is, at least, *prima facie* evidence that Defence is less efficient than it might be, we now return to the question of how to save a billion dollars a year. We do so by examining, in no particular order, various areas and options that might be open to the government. The exposition is less than ideal because it is driven mainly by the availability (more the non-availability) of data. A systematic approach that looked separately at the efficiency of each and every Defence output, and the efficiency of each and every Defence Group, would be preferable—but this is not possible with the sparse data at hand.

Before commencing and at the risk of stating the obvious; to free up a billion dollars from within the Defence budget, simple arithmetic demands some combination of;

- reduced personnel expenses
- reduced purchases of goods and services.

The challenge is to find a billion dollars worth of spending in these areas that makes a negligible contribution to the delivery of combat capability and Defence outputs more generally. Since Defence does not publish a list of its nugatory activities, we shall have to judge as best we can where efficiency savings might be found. In doing so, it's worth remembering that it might be necessary to initially invest some money to save money in the longer term, for example through improved business systems or rationalisation of facilities.

Workforce efficiency

Perhaps it's a sign. There are 2,500 military and 7,357 civilians ensconced on Russell Hill and its satellite posts around Canberra[1]—just about the right number to save a

[1] FADT SLC, Question W46 Additional Estimates 2006/07.

billion dollars if they were all invited to pursue career options elsewhere. Of course there would be an impact. No one would get paid across the ADF or remaining civilian workforce, acquisition would grind to a halt as would most IT systems, the government would be bereft of policy advice and intelligence, the deployed ADF would have to make do without strategic level direction and, eventually, the vast range of services provided to Defence by the private sector would cease because bills would not be paid.

This shows two things. First, you have to get rid of an awful lot of people to save strategically significant sums of money; a thousand military personnel costs around $114 million a year while a thousand civilians cost around $84 million. Second, ill-judged cuts to personnel numbers risk impacting the business of defence and, ultimately, the delivery of capability. In practice, personnel reductions are likely to be but only one component of a billion dollar efficiency program and care is needed when making reductions. With these cautions made, let us explore where cuts might sensibly be made.

As with so many things, Defence is secretive about how its personnel are employed (no doubt to prevent the sort of analysis that follows) but the report of the Defence Management Review of 2007 provided a valuable peek into how civilian and military personnel are employed. Much of what follows has been suggested by comparing this rare glimpse with the last available historical data[2] from 1999-00.

Command and administration

The number of personnel directly involved in higher policy, command and governance, exclusive of the three Services, has grown by 41% since 1999-00 (from 1,581 to 2,228 people). Assuming that Defence could get by with the level of higher direction that it had during the East Timor crisis of late 1999, a saving of $56 million could be made by cutting the additional 237 military and 410 civilian personnel that have accumulated over the past eight years.

Below the strategic level there are an even larger number of personnel engaged in administrative and lower headquarter functions. As of last year, there were a total of 9,805 civilians and 4,253 uniformed personnel in office accommodation or assigned to headquarters, exclusive of the 1,581 military and 2,228 civilians already mentioned. If just 15% of this number, amounting to 638 military and 1,471 civilian positions were to be cut—a modest reduction given the growth observed at the higher level—a further $181 million would be freed up.

Reducing the number of personnel in command, governance and administration by 857 military and 1,181 civilian positions would have to be accompanied by a deliberate program of streamlined management. This, in itself, is long overdue.

It's sobering to compare the number of middle and senior managers in Defence from 1998-99—just after the Defence Reform Program (DRP)—to the latest available figures. Civilian senior executive numbers have grown by 59% and star-ranked military officer numbers have increased by 57%. Most startling has been the increase at deputy secretary level from 4 to 11 after the DRP suggested a reduction to 3, at the

[2] Cost of Defence 2007-08, Table 3.2 and 3.3 p. 105-6.

same time the number of military three-star officers has grown from 4 to 6. A telling comparison is that there are 171 star-ranked offers in the ADF today overseeing a force of 52,000. In the war of 1914-18, the number of star-ranked officers who *served* at any time in the 300,000 strong AIF was only 68.

At the middle manager level the situation is no better. Military middle ranks (Colonel and Lt Colonel) have grown by 30% while civilian middle managers have grown in number by 59%.

If all that was at stake was the direct cost of these additional middle and senior managers and their attendant administrative fiefdoms, this would be a pressing enough issue. But equally serious is the bureaucratic gridlock caused by so many administrators. More managers do not necessarily translate into better management. Arguably, Defence management long ago slipped into the realm of not just diminishing but declining returns, so that a streamlining of management would not only save money but may actually improve performance.

Some readers will no doubt object to the lumping together of departmental administration and military command. Surely, it might be argued, the command of the ADF is a capability in its own right that needs to be protected from the ravages of penny pinching accountants. Well, no.

In addition to Defence's large administrative bureaucracy, the ADF maintains an extensive system of cascading operational and routine headquarters. The following list covers only the upper echelons of command and excludes the many lower HQ at the Brigade and Force Element level; Navy Headquarters in Canberra, Army Headquarters in Canberra, Air Force Headquarters in Canberra, Joint Operations Command in Sydney/Bungendore, Military Strategic Plans division in Canberra, Land Command in Sydney, Joint Logistics Command in Melbourne, Fleet Command in Sydney, Special Forces Command in Sydney, Air Command in Glenbrook In general, personnel numbers are undisclosed. But we do know, for example, that there are at least 100 uniformed officers in each of the Service headquarters and 131 military and 105 civilians in Air Command.

Not only are there a lot of headquarters and commands for our small force, but they are all headed at relatively exalted levels. The first four on the list are headed up by Lieutenant Generals or equivalent (including the three Services) while the remaining five are headed up by more junior Major-Generals or equivalent. To put this in context, a Major-General would have historically commanded a division of around 20,000 men and a Lieutenant General a corps of up to ten times that size. If departmental administration is to be streamlined, command and military administration also needs to be scaled back to align with the size of the ADF.

Non-combat support

The substantial increase in civilian numbers—26% over the past seven years—has not just occurred in Canberra. The number of civilians employed by the Services, for example, has grown by 57% since 1999-00[2]. This explains, in part, why there are around 5,193 civilians[1] based with military units quite apart from administrative centres, headquarters and training establishments. If just 10% of these 5,193 civilians

were removed, a further $45 million would be saved assuming that a little belt-tightening was undertaken.

Just as there are civilians collocated with military units, around 4,286 uniformed positions are embedded within civilian non-Service groups. These are usually justified on the basis of requiring specialist military expertise to perform the job – especially within DMO. In other cases the positions represent opportunities for respite posting. These positions also provide a surge capacity at times of high operational tempo. Maintaining this component of the overhead is one way to structure the uniformed workforce – but not the only way.

To begin with, the argument for specialist expertise has limitations – especially in the case of the Personnel Executive and Corporate Services. Even in DMO it is unclear how much uniformed participation can be justified – especially when it means that Service personnel end up running projects in place of career procurement professionals. The logistics function in DMO is probably an important exception to this.

The notion of respite posting is a difficult one since it is increasingly the case that the ADF requires a lot from its personnel and their families. But there are ways around it. Mining and oil companies operate in harsh remote conditions, and merchant marine operations require long periods at sea, both without providing multi-year respite periods. Their approach is to intersperse work with time at home using fly-in fly-out strategies. And commercial airlines manage to get high output from their crews and support personnel on a continuous basis.

In any case, if just 10% of the military personnel embedded in non-Service groups were replaced by civilians a saving of $12 million would occur. While the savings is modest, the freeing up of close to half a battalion of uniformed personnel for redeployment to combat units is a bonus, assuming sufficient savings can be found elsewhere to re-employ them.

If the priority is on delivery of combat capability, the time must be close to remove some of the heritage adornments that the ADF has dragged with it into the 21st century. These include the 159 strong rifle-twirling Tri Service Federation Guard, the six regular Army bands, seven Army Reserve bands, two Navy bands, one Air Force band and the ADF School of Music located in the historic Meares House. Assuming that each regular band has 20 personnel, and the school of music has another 30, a saving of 210 positions is possible. Between the bands and Federation Guard there are of the order of 369 positions costing $42 million a year. The fact that Defence offered up the early retirement of two FFG frigates and the entire F-111 strike aircraft fleet to save money in the 2003 Defence Capability Review, but left the bands untouched, is a worry.

In specific areas further personnel reductions are possible including:

- Scaling back the size of the Defence Science and Technology Organisation to the size it was in 1999 by removing 309 positions would deliver another $27 million in savings. In the longer term, the outsourcing of DSTO should be

considered based on the model employed in the United Kingdom.

- Reducing the number of ADF personnel on non-operational overseas postings of greater than six months duration (as at 21 June 2007 there were 843) by 25% would save a further $26 million[3]. As a point of reference, the Department of Foreign Affairs and Trade only has 548 Australian based personnel posted overseas.

The reductions outlined in the preceding paragraphs would reduce the uniformed workforce by 1,884 and the civilian workforce by 2,280, yet still leave the combat and combat support force untouched. This is not so drastic, it would still leave Defence with 2,031 more civilians than it had back in 2000-01. And the 1,884 military positions would not have to be lost; they could be redirected back into the sharp end of the ADF.

Efficient use of suppliers

In February of this year the CEO of DMO stunned an industry audience by announcing that he intended saving 5% from Defence's $4.5 billion annual materiel sustainment budget. The resulting saving of $255 million per annum will be achieved by working with industry and the Services to more efficiently operate and support ADF equipment fleets. The intent is not to cut capability but to find ways to deliver it more cheaply.

There is good reason to believe that this is achievable. Defence's 'command economy' and opaque accountabilities provides no incentive and few mechanisms to make these sorts of adjustments as part of routine business. Consequently unexploited opportunities for more efficient material support exist especially given the recent rapid rise in sustainment costs.

But precisely the same statement is true of all the goods and services that Defence buys from the private sector. If it is realistic to think that there are more efficient ways to maintain cutting-edge military equipment like Collins-class submarines and F/A-18 fighters, there must be better ways to make use of routine goods and services like rented office accommodation, catering and building maintenance. Put simply; if DMO can save 5% of the cost of maintaining ADF equipment without eroding capability, the rest of the organisation can at least do likewise. Exclusive of transfer payments to DMO for personnel, Defence's total supplier expenses are $7.4 billion per annum. A 5% saving would free up $370 million of which DMO would be responsible for $225 million and Defence $145 million.

Not a bad start

Adding the various proposal yields a total possible saving of $787 million a year. Not a bad start, though the pain and difficulty of achieving these savings should not be underestimated. It is important that any reductions on this scale be focused on reducing overheads and superfluous management—an undirected salami-slicing across the organisation will simply produce a less costly but equally inefficient organisation. To go further, and reach a billion dollars in recurrent savings, will

[3] FADT, SLC Question 6, Budget Estimates 2007-08.

require some even tougher decisions. We explore options for further longer-term efficiencies below, some of which would require up front investments to proceed.

Table 3.7 Near-term savings options

Initiative	Personnel Reductions		Savings ($m)
	Military	Civilian	
Return higher-level HQ and governance staffing to pre-2000 levels	237	410	61
Cut 15% all other HQ and administration positions	638	1,471	196
Cut 10% of civilian personnel on airfields and army/navy bases		519	44
Replace 10% of military positions in support groups with civilians	429	-429	13
Cut bands, school of music and ceremonial guard	369		42
Return DSTO staffing to pre-2000 levels		309	26
Reduce OS military non-operational postings by 25%	211		24
Personnel Savings	**1,884**	**2,280**	**417**
Cut sustainment expenses by 5%			225
Cut other suppler expenses by 5%			145
Suppliers Savings			**370**
		Total	**787**

Long-term efficiency—outsourcing support

After almost twenty years of market testing there is a sentiment that Defence has contracted most of what can sensibly be done. This proposition needs to be strongly tested. It must be ensured that the current limitations on contractor support are appropriate. Other militaries make more extensive use of contractor support in operational areas than we do.

There are, of course, risks involved with deepening the level of contracted support—especially when it comes to the support of operations—and these need to be balanced against the prospective savings. Rather than explore this issue further here, the interested reader is referred to the ASPI report *Doing Business on the Battlefield* which explores the possibilities for the ADF at length.

Leaving aside the problem of operational support, there are a number of activities currently undertaken by ADF personnel that are sufficiently removed from the sharp end as to allow the tasks to be contracted out at savings to the taxpayer. These include:

- ***Hydrographic Survey.*** With the exception of some possible beach survey work during operations, the bulk of the hydrographic output undertakes a civil survey task that could be done by civilian contractors.

- ***JORN.*** The JORN network employs around 200 RAAF personnel as radar operators (in South Australia). This could be done by either civilians or contractors thereby delivering savings through cheaper salaries and greater workforce continuity. This would not be unprecedented; many aspects of surveillance and intelligence collection are undertaken by civilian contractor staff in the US, and the UK.

- ***VIP Transport.*** The pilots and crew could be provided by a commercial airline thereby taking advantage of their economies of scale and freeing up precious RAAF pilots for combat capabilities.

Long-term efficiency—Workforce management

The skills and performance of the Defence workforce are essential to the delivery of capability. For this reason, initiatives are already underway to boost the retention of skilled military personnel in critical areas and further develop the expertise of the civilian workforce—particularly within DMO. While this is to be commended, there is a limit to the efficiency that can be expected from a civilian workforce managed along the lines of a 20th century public utility. To allow real productivity gains to be achieved, managers must be given the sorts of flexibilities and tools available to the private sector for recruitment, performance management and retrenchment.

Long-term efficiency—Infrastructure

Defence maintains around 25,000 buildings/facilities located on 400 properties spread around the country. The estate is valued at around $16 billion and annual upkeep costs are in the vicinity of $500 million a year. In 2007-08 a further $643 million will be spent on capital facilities projects. As a general rule, Defence benefits from active competition in the civil sector for the construction and maintenance of its facilities. Moreover, it manages the development and maintenance of the estate with a relatively small staff of around 200. Consequently, and despite the significant funds expended, the day-to-day management of the estate is not an obvious area for improved efficiency. That said; the geographical disposition of the force is worth a close look.

The location of Defence facilities around the country reflects equal parts historical legacy, strategic positioning and political expediency. It has long been held that much could be gained by consolidating the ADF into a reduced number of locations so that economies of scale and collocation of personnel could be exploited. The Defence Reform Program took some steps in this direction resulting in a degree of consolidation and the disposal of in excess of a billion dollars worth of estate rendered surplus to requirement.

There is no doubt that additional long-term savings are possible by further consolidating the Defence estate. Unfortunately, there are two obstacles to this occurring;

- consolidation of ADF elements and facilities requires large initial capital investments that are only recouped slowly through ongoing savings in operating and personnel expenses
- the potential for adverse impacts on regional economies often dissuades governments from closing Defence sites.

Long-term efficiency—Make Better use of the Reserves

The question is; can the preparedness posture of the ADF be maintained, and savings delivered, via a changed demarcation between the Reserve and permanent ADF? In recent years, progress has been made in improving the legislative basis for Reserve employment and adapting the Reserves to help meet the demands of a defence force with a high operational tempo. It is certainly worth looking closely at what more might be possible.

Managing the efficiency program

In the past, many defence efficiency programs have been poorly managed and inadequately reported. We do not know, for example, what the long term benefit of either the CSP or DRP program really was. This must not be allowed to recur. The $10 billion savings program should be rigorously and transparently monitored and reported—both in terms of what has been saved and where the money has been redirected to. The 1997 Administrative Efficiency Program is an example of how this can be done.

To avoid the magic pudding effect, baseline costs need to be made transparent. For example a reduction in travel expenses can only be taken seriously if we can see how much was spent on travel before and after.

Finally, it is important that the program be focused on delivering increased efficiency rather than delays or cuts to capability. A repeat of the 2003 Defence Capability Review needs to be avoided. The savings scheduled for 2008-09 are not a great start. Of the $477 million dollars of reduced spending; $90 million represents a cut to capability, $191 million delayed capability and only $196 million can be called improved efficiency. The only consolation is that the cuts are almost certainly an adjustment to over funding—which can hardly be called a saving nor counted against the $10 billion target.

Conclusion

By building on the $787 million base already identified, there is no reason why average savings of (or even in excess of) a billion are year cannot be delivered provided that the courage can be found to pursue efficiencies in these difficult longer-term areas. But it will all be a waste of time without accompanying fundamental change to the way that Defence is managed.

The reason why Defence is being asked to save a billion dollars today, is the same reason it was asked to save a billion dollars a decade ago; because there is no effective mechanism to deliver productivity through the day-to-day management of the Defence leviathan. Unless this is changed, we will be right back here in a decade's time in exactly the same situation.

The sorts of changes needed are detailed in the ASPI publication *Improving Defence Management*[4] and need not be recounted in detail here. Briefly though, the management of defence needs to be rebuilt to deliver simpler governance, increased delegation, alignment of accountability with control of resources and, most importantly, the systematic measurement, benchmarking and public reporting of costs and performance.

It is only by doing so that Defence will—of its own accord—deliver more operational submarines than bands and more fighter pilots than ceremonial marionettes.

[4] Available for free download at www.aspi.org.au

SECTION 4 – DEFENCE FUNDING

The purpose of this chapter is to:

- survey defence funding since 2000
- analyse in detail the funding for 2008-09
- propose a new regime of indexation for Defence funding
- assess the affordability of current plans.

Funding—how we got to where we are today

The 2000 White Paper set out a decade-long program of capability development—the Defence Capability Plan (DCP)—backed up with a commitment to 3% *average* annual real growth in Defence spending for ten years. In the 2006-07 budget the then government extended its commitment to long-term defence spending by promising to boost spending by 3% real growth *compounding* from 2010-11 to 2015-16. In this year's budget, the government extended the 3% real growth trajectory out to 2017-18.

White Paper Funding

The 2000 White Paper provided $30.2 billion in additional funding to Defence (as measured in 2008-09 prices). This funding formed the basis of 3% average real growth across the decade. Since then, the schedule of spending has undergone multiple revisions. The PBS details the changes [Table 1.2.10, page 24] between the original funding and ongoing revisions. Importantly, the changes since 2000 represent a rearrangement of *when* money is spent, rather than *how much* is available. Moreover, the changes have not arisen due to budget pressures. Instead, it is Defence's and Industry's ability (or rather inability) to deliver equipment that's driven changes to the original schedule.

What's in the White Paper money?

The White Paper provided money in two broad categories (all figures are in 2008-09 prices):

- $20.9 billion for the purchase of major capital equipment
- $3.2 billion to cover the through-life support costs of new capabilities planned to enter service as a result of the DCP
- $5.0 billion to cover an expected annual 2% growth (above inflation) in personnel costs. In the 2004-05 budget additional funding was provided to cover a 2.5% per annum real increase in military personnel expenses
- $1.5 billion to adjust the operating cost baseline in the Defence budget. This includes offsetting shortfalls in Defence Reform Program (DRP) savings, and partially fixing the logistics shortfall caused by redirecting DRP savings in 1999 to increase the target strength of the ADF from 42,500 to 50,000.

So what's changed?

The original White Paper's funding profile appears in Figure 4.1 and the latest profile appears in Figure 4.2. The difference comes about because of the delays to major capital equipment investment and the flow on effect to personnel and operating costs. In the last eighteen months alone, $5.6 billion worth of delays have arisen against only $101 million of projects brought forward in time. Because of the delays, the next couple of years will demand a steep increase in the rate at which equipment is delivered as deferred spending catches up, Figure 4.3. Note that this is not all the capital investment that Defence has planned. There is also a pre-existing component of investment in the pre-White Paper baseline and several recent additional investments like the C-17 and Super Hornet.

3% real growth out to 2017-18

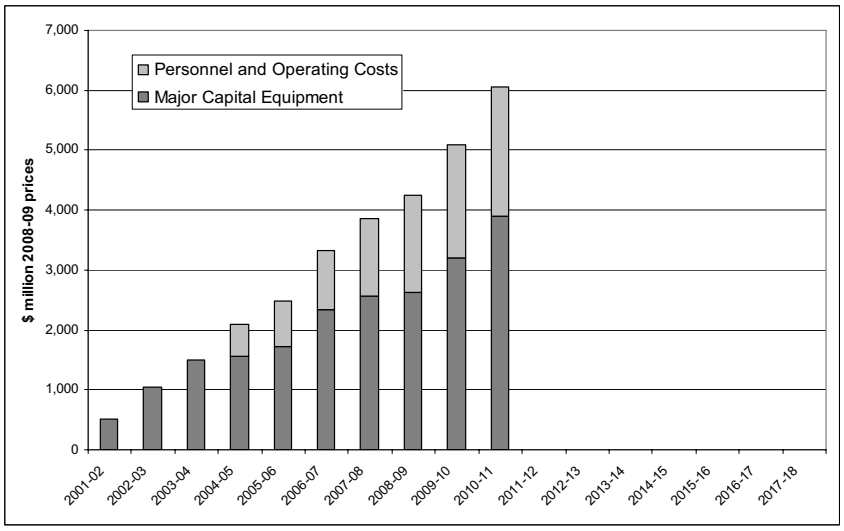
The 2000 White Paper envisaged a ten-year rolling program of defence planning. Built around a new ten-year 'Defence Financial Management Plan', the clear intent was to ensure that financial and capability planning extended out a full decade so that an affordable program of defence capability could be planned and delivered. The White Paper recognised that it was difficult to do 'without a clear understanding of funding levels a decade ahead, and even beyond', hence the original commitment to 3% real growth this decade. Nonetheless, it took until the 2005-06 Budget for the previous government to make a decision on spending post-2010. When they did, it was at a cost of $11.2 billion (approximate 2008-09 prices) to cover the five year period from 2011-12 to 2016-16. This year, the new government lost no time extending the funding a further two years out to 2017-18 at a cost of $2.8 billion.

How big will the budget be next decade?

Good question. Unfortunately, the PBS does not contain the answer. For reasons that are difficult to understand, neither the present nor previous governments have been willing to disclose the cumulative impact of successive announcements of long-term funding. Why defence funding past the forward estimates is keep secret remains a mystery. What is the point of announcing what's been added to the budget out to 2017-18 without knowing what it's been added to? At the additional estimates hearings last year, Senator Chris Evans asked Defence for the 'cost of planned Defence expenditure for each financial year from 2006-07 to 2017-18 inclusive' but was declined an answer. It is ironic that this elementary information remains secret now that the government has changed hands.

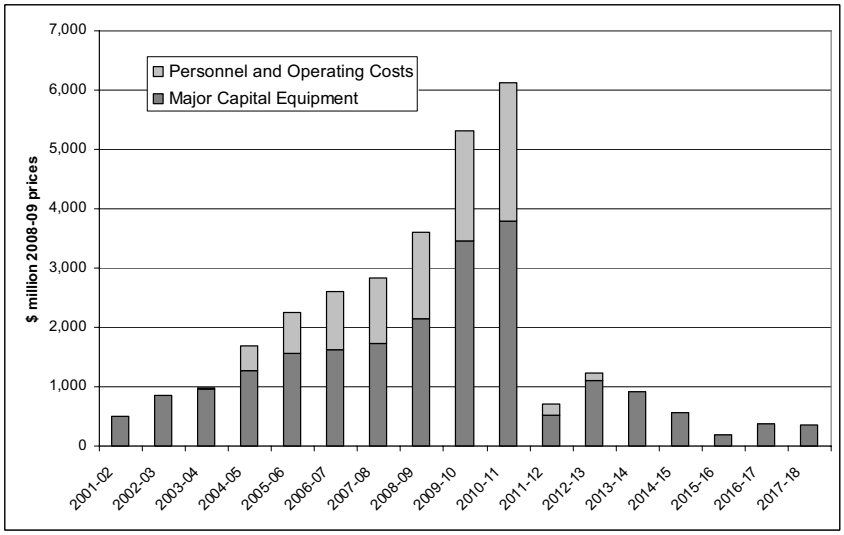
Fortunately, an estimate of government appropriations to Defence out to 2017-18 can be generated using the price indexation in the PBS and a little arithmetic. For the year 2015-16 the answer agrees to within 0.45% with that derived independently from the 3% growth measure. By adding to this an estimate for net capital receipts and the DMO appropriation (which are both small) we can estimate Net Defence Spending across the decade. Remembering to add in the extra money for 3% growth we get the figures in Table 4.1. For those who prefer the traditional approach, we have included our best estimate of Total Defence Funding.

Figure 4.1: White Paper funding as originally planned.



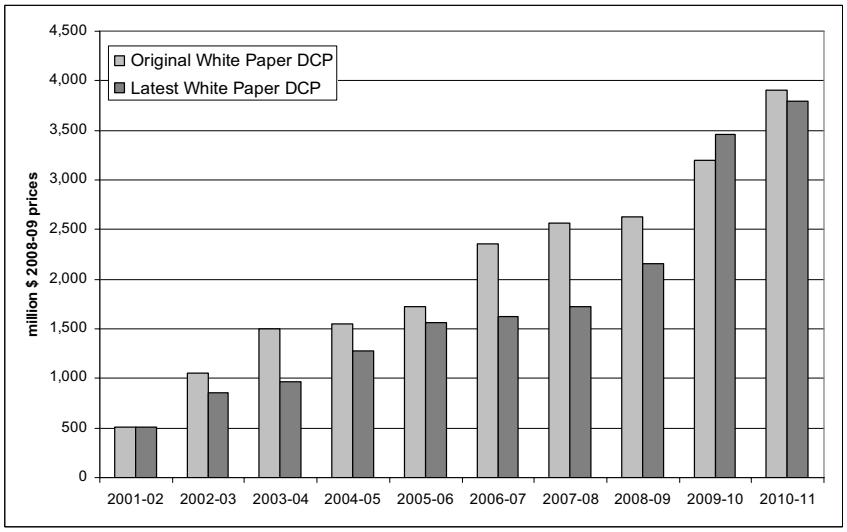
Source: Table 1.2.10, 2008-09 PBS

Figure 4.2: Revised White Paper funding 2007-08 Budget



Source: Table 1.2.10, 2008-09 PBS

Figure 4.3: Original and Revised White Paper investment program



Source: Table 1.2.10, 2008-09 PBS

Table 4.1: Estimated Net Defence Spending and Total Defence Funding (08 prices)

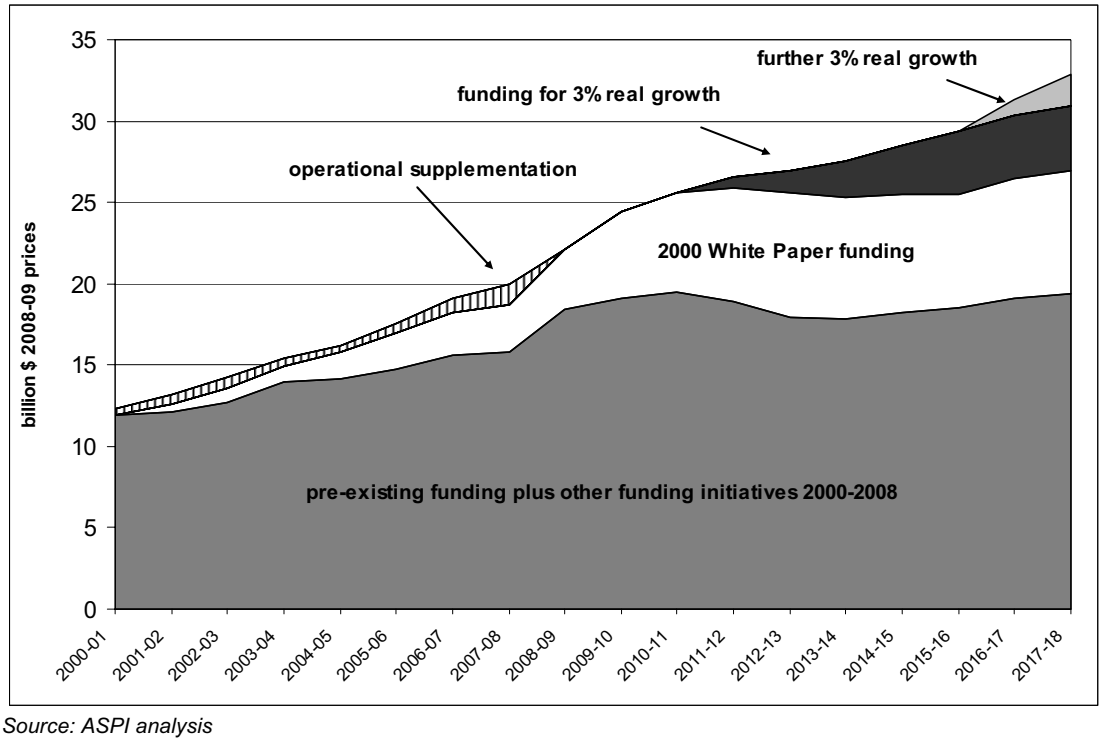
	estimated actual	budget estimate	forward estimate	forward estimate	ASPI projection	ASPI projection	ASPI projection	ASPI projection	ASPI projection	ASPI projection	ASPI projection
Year	**07-08**	**08-09**	**09-10**	**10-11**	**11-12**	**12-13**	**13-14**	**14-15**	**15-16**	**16-17**	**17-18**
Appropriation from govt.	20,282	21,758	24,238	25,375	26,405	26,989	27,545	28,485	29,413	30,393	30,960
Net Cap Receipts	54	66	66	76	52	54	55	56	57	59	60
Appropriation draw down	-14	55	60	65	32	0	0	0	0	0	0
DMO Appropriation	93	95	95	92	94	96	98	101	103	105	107
DMO Special Account	-414	102									
3% real growth										906	1,879
Net Defence Spending	20,001	22,076	24,459	25,608	26,584	27,139	27,698	28,641	29,573	31,462	33,007
Own Source Revenue	858	811	833	844	874	893	913	933	953	974	996
Total Def Funding	21,179	22,690	25,197	26,360	27,364	27,936	28,512	29,474	30,424	32,332	33,895

Source: ASPI estimates and 2008-09 PBS

Sources of funding

Figure 4.4 sets out our best estimate of where defence spending is headed and the key sources of funding that go into it. The original White Paper funding wedge still dominates the additional funding that Defence has received, but the two 3% wedges post 2010-11 make an important contribution. The sizable hump lurking in the base is made up of the many recent additional funding initiatives like the C-17, Super Hornet and Enhanced Land Force initiatives.

Figure 4.4: Best estimate of Net Defence Spending 2000-01 to 2017-18



Source: ASPI analysis

The funding for 2008-09 in detail

Next financial year, Defence has been told to absorb a billion dollars worth of operational deployment costs, deliver $77 million worth of unfunded budget initiatives, and defer $191 million worth of previously planned spending.

In what follows, we attempt to understand why such seemingly draconian measures have been taken and estimate the risks and likely consequences of doing so.

In the months leading up to the 2008-09 budget, things weren't looking good for Defence. Despite the halcyon years of generous funding under the previous government, or perhaps because of them, Defence's plans had become unaffordable in the medium to longer term. So serious was the problem, that a decade-long $10 billion internal savings program was launched with the aim of redirecting money to meet the shortfall.

Then two extraordinary and unexpected things happened;

- Defence received very generous indexation of its budget, including $939 million for 2008-09

- Around $812 million of unspent Defence funds emerged this year.

Not only was there going to be a lot more money for the future, but the justification for Defence's budget baseline looked shaky. It was at this point that the government directed defence to absorb more than a billion dollars of new spending.

The proposition is simple enough. The three big numbers—$939 million in indexation, $812 million in unspent money and $1,077 million in absorbed costs—somehow compensate for one another. Let's see if that's the case.

Since 2000, the buying power of the Defence budget has been maintained by indexing against the implicit non-farm GDP deflator (*nfgdpd*). As near as we can tell—estimates of the *nfgdpd* are kept secret—the price adjustments in the 2008-09 PBS resulted from an increase in the 2007-08 nfgdpd from 2.75% to 4% and in the 2008-09 *nfgdpd* from 3% to 6.25%. The net result is that indexation increased by 1.25% + 3.25% = 4.5% compared with earlier levels. In consequence, Defence received an extra 4.5% to its budget, not just for 2008-09 but for every year from 2008-09 to 2017-18, a total of $11.6 billion. Indexation is a gift that keeps on giving.

There is no reason to believe that the *nfgdp* reflects the underlying cost of Defence capability; it is driven by externalities like commodity demand and price which have nothing to do with paying and equipping a modern military.

In a few pages time we examine what a sensible deflator might be. To a first approximation the CPI looks about right in the current regime where Defence is compensated for foreign exchange movements and has separately received supplementation for personnel expenses 2–2.5% above indexation. Given that CPI was 4% this year and is projected to moderate to 3.5% next year, the 'surplus' indexation amounts to (4% – 4%) + (6.25% – 3.5%) = 2.75%. In dollar terms, this

translates to a windfall gain of $574 million in 2008-09 and $7.1 billion over the decade.

So what about the $812 million in unspent funds for 2007-08? Does this represent an over generous funding base or was it a one-off 'perfect storm' of fluctuations in the colossal $22 billion defence budget?

We do know several things. To begin with, the underspend was largely unrelated to personnel expenses, which only came in $6 million below the revised estimate. We also know that $141 million of planned capital investment did not occur, and that this arose due to, among other things, $165 million of unachieved Major Capital Investment (MCI). (Remember that the MCI program includes a non-capital operating component.) This is not surprising; the receding tide of capital investment is business as usual.

Another $147 million was related to lower than forecast Net Personnel and Operating Cost (NPOC) for new equipment. This is a surprise. It is difficult to see how, in the closing months of the financial year, it was only just realised that new equipment with operating costs of $147 million was not going to arrive. Rather, this looks like excess operating costs that Defence did not need. However, this money will not be available next year because a similar amount was also re-programmed out of 2008-09 at the same time.

The remaining $500 million shortfall represents a grab bag of items, details of which Defence was kind enough to make available. Some of the items represent delays while others represent 'savings' from over estimation of costs (our presumption) or more efficient use of resources. Around $227 million was related to delays, including $115 planned for the Enhanced Land Force (most of this money will be needed next year given the planned $100 million increased spending on that initiative in 2008-09). Another $263 million appears to have come from more efficient delivery of capability or overfunding of activities.

The various figures that we have for the supplementation and underspend are collected in Table 4.2.

Table 4.2: Ability to absorb additional costs in 2008-09

	$ (million)	Implications for 2008-09
a. Major Capital Investment delay	165	Nil – reprogramming of investment has already occurred
b. Other delays	227	Implies no respite for 2008-09 spending. In fact, the delays will generate extra demand for money in 2008-09 if they are not compensated for by similar delays during the year. We assume they will be.
c. Reprogrammed NPOC	147	Nil – similar amount already programmed out of 2008-09.
d. 'Savings'	263	Implies money in the funding base that will be available to cover other costs in 2008-09
e. Surplus indexation	574	Extra money available to cover other costs in 2008-09
(d + e) Fund available to absorb costs	**837**	

Source: ASPI analysis

As shown, we estimate that Defence should be able to absorb costs of around $837 million in 2008-09. This has to be compared with the figure of $826.5 million that defence is being asked to absorb (nominally from the $939 million they will receive for price indexation) after identified efficiencies, reductions and delays are taken into account, as explained in Section 2 on p. 26 of this brief.

Thus, to the level of estimation possible with the data we have, it looks as though Defence funding for 2008-09 should be adequate. The only risk is that the shortfall in 2007-08 was more of a one-off fluctuation than our estimate assumes. If so, then Defence will have added incentive to get to work on the decade long $10 billion efficiency program they have ahead.

In fact, the only thing that's disappointing about the budget for 2008-09 is that Defence has been allowed to meet the gap, in part, through delays and cuts to capability. This corrosive practice must not be allowed to set the course for the $10 billion efficiency program.

Fixing Defence indexation

If there was ever any doubt that the *nfgdpd* is a blunt and inappropriate tool for indexing the defence budget, this year's budget settled the matter. Having built a defence funding trajectory based, in the public eye at least, on continuing 3% real growth, the government had no choice this year but to negate the underlying 3% increment by withholding operational supplementation worth about 4%, or face the prospect of a massive underspend next year.

Working out how to properly index the Defence budget is simple once you recognise what the goal is; to adjust defence funding to reflect the changing cost of inputs used by Defence to deliver its outputs. Because Defence employs a range of inputs to deliver military capability, a set of indices is needed—one for each separate category of input. There is nothing radical about this. Defence used to employ a basket of deflators last decade, other government departments still do, and the United States Department of Defense has been using a basket of separate deflators since 1965, the average results for recent years which appear in Table 4.3 along with the US CPI.

Table 4.3: Average US Defense Deflators 2000-2007

Military Personnel	3.57%
Operations and Maintenance	3.23%
Procurement	2.00%
Research and Development	2.10%
Facilities Construction	2.18%
Family Housing	2.00%
Weighted Total	2.90%
US CPI	2.70%

Source: US Department of Defense Budget Papers 2008
www.defenselink.mil/comptroller/defbudget/fy2008/fy2008_**greenbook**.pdf

Note that the weighted average of the indices comes out just above the US CPI, hence our earlier estimate of Defence's true needs based on the Australian CPI.

We are not proposing that Australia unthinkingly adopt the US system. Rather we should take their example and identify areas where robust and useful indices can be employed. Our indices, like those of the United States, need to reflect our budget categories. To start the ball rolling, here's our initial proposal for what a sensible basket of deflators might look like for Defence, Table 4.4. With only a couple of tricky areas it's relatively easy to identify the obvious candidates for the basket and what they should be.

Table 4.3: Proposed Australian Defence deflators

Category	Proposal	Indicative value 2008
Military Personnel	Average ordinary time weekly earnings	**4.25%**
Civilian Personnel	Average ordinary time weekly earnings	**4.25%**
Non-military suppliers	CPI	**3.5%**
Military sustainment	On the basis of US experience: CPI + 0.5%	**4.0%**
Military procurement	CPI to Average ordinary time weekly earnings	**3.5% to 4.25%**
Medical	CPI(Health/medical/hospital index component)	**5%**
Facilities Construction		**?**
Defence Housing	CPI (regional housing index component)	**5%**
Australian CPI		**3.5%**

**Because military personnel are often as much of an output as an input (especially in Army) only half of labour productivity has been subtracted.*

Three areas require further analysis. First, it is unclear how to index the cost of facilities construction, though it need not represent anything more than what the commercial construction market is experiencing. Second, the cost of military sustainment—essentially the DMO sustainment budget—is difficult to relate to broader economic indices. It may be necessary to benchmark individual activities like aircraft and vessel maintenance to produce a robust index. In the meantime, we've followed trends in the US 'operations and maintenance' index (though the categories are somewhat different) and used CPI + 0.5% as a place holder.

The proposal to use weekly earnings or CPI for military procurement—essentially the DMO acquisition budget—might seem to contradict the well known trend that the unit cost of military equipment grows at a rate of 3–4% over the long-term. But both these things can be true at the same time. For long-term *planning purposes* Defence needs to take into account the seemingly inexorable rise in equipment costs above inflation, but once a properly costed procurement program has been set out in the Defence Capability Plan the estimates should only change via the changing cost of labour and materials (offset by productivity gains we hope) which should be similar to CPI and no larger than weekly earnings.

As an aside, and quite apart from price adjustments, Defence also needs to have its exposure to foreign exchange movements properly taken account of. The present arrangement is an honest attempt to do so, but every effort needs to be expended to ensure that the no-loss no-win scheme delivers.

All this numerology might seem arcane accounting pedantry, but without a robust system of deflators and exchange rate adjustments, there is no way to hold Defence to account for delivering capability efficiently.

Are present plans for the ADF affordable?

Every three to five years Defence has a funding crisis. And each and every time the drill is the same; after the initial alarm subsides, a Review or White Paper is undertaken, which in turn leads to some combination of additional funding, efficiency measures or revised goals for the defence force. You might have thought there is a better way to plan a nation's defence, but this is how we do it in Australia.

After the careful analysis and planning that led to the *1987 White Paper*, it only took until the end of the decade for the money to run out, and so it was that the 1991 *Force Structure Review* cut the ADF back to what could be afforded. By the mid-1990s, funding pressures led to the 1996 *Defence Efficiency Review* that restructured ADF support arrangements to try and create an affordable defence force. Its success was so limited that, by decade's end, affordability concerns led to the *2000 White Paper* which delivered the much lauded 3% real growth to defence spending. It was as though the Holy Grail had been found. Yet it took only three years for another funding crisis to emerge and it was left to the 2003 *Defence Capability Review* to cut capability in order to, once again, try to align means with ends. Five years on and the next crisis has arrived right on schedule. Fortunately, things are not as grave as they were prior to the budget; $6,526 million (= $7,100 – $574 million) less grave over the decade to put a figure on it. Nonetheless, a significant gap remains between means and ends.

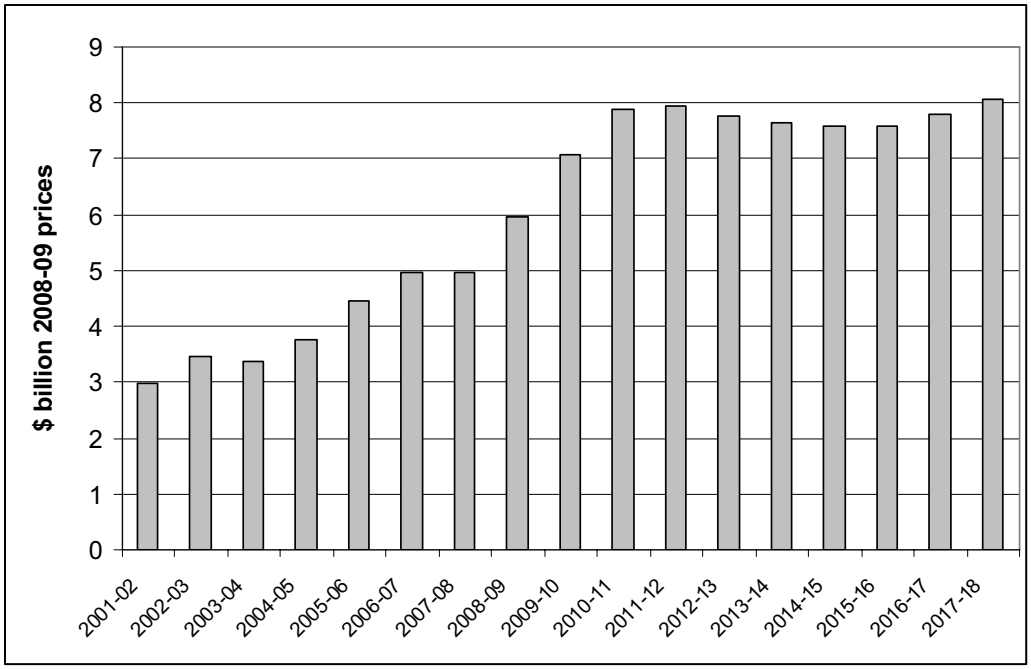
To understand the affordability of current plans, we explore the trends and pressures in the three canonical chunks of defence expenditure: capital investment, personnel and operating costs (= budget – capital – personnel).

Capital investment
After three years of providing a graph of capital investment across the decade, the PBS has gone back to only reporting capital across the forward estimates. To estimate what will be spent on investment we've gone back to last year's chart [2007-08 PBS Chart 3.1 p. 69] and updated the total taking account of reprogramming, price updates and foreign exchange (specifically, we have assumed that 75% of exchange corrections hit the capital program). The results appear in Figure 4.5 overleaf.

While the broad shape of the investment program is unchanged from last year, the peak around 2009-10 has been lowered and the dip around 2013-14 has been reduced somewhat. This is a direct result of the reprogramming that has occurred in the last twelve months. What has not changed (in the Groundhog Day sense) is that we are once again anticipating rapid growth over the next several years.

The question is: will the $75 billion programmed across the decade be adequate? In terms of capital facilities and other capital, we have no reason to believe not. For the projects set out in the 2006-2016 Defence Capability Plan (the last public disclosure of the government's plans for the development of the ADF) we have to be more pessimistic. If the past is any guide, the answer is an unequivocal no. As detailed in Section 7, the systematic pattern is for project costs at approval to be substantially above initial estimates, on average by around 76%. Even the much-lauded 2006-2016 DCP that was developed after the Kinnaird reforms to Defence procurement has seen some extraordinary cost increases.

Figure 4.5: Estimated capital investment – 2001-02 to 2017-18



Source: 2008-09 PBS and ASPI estimates (does not include DMO reprogrammed spending)

Between 2006 and 2007 when final approval was given, the Air Warfare Destroyer project increased in cost from a range of $4.5 to $6 billion out to $8.1 billion, while the Amphibious Assault Ships increased in cost from a range of $1.5 to $2.0 billion to $3 billion. The real increase for the two projects was $2.4 billion—or around 30% above the price estimates made only twelve months earlier. Straight away, before anything else is taken into account, another $2.4 billion is needed if the remaining projects in the DCP are to be delivered on time. Unless the Air Warfare Destroyer and Amphibious Assault Ships projects are exceptional, the overall situation is likely to be much worse.

Fortunately, much of the capital investment program is nowhere near as volatile as the unapproved major capital equipment component. Accordingly, we make the following conservative assumptions:

- The capital facilities and other capital programs can be delivered within budget.

- The *approved* capital investment program managed by DMO can be delivered with only 5% more money than it has available. Although most projects are delivered within budget, others demand additional funding after approval, like the Collins Submarine, which required more than a billion dollars of work through follow-on projects. Other projects, like the Bushmaster vehicle, only maintain their original budget by cutting numbers substantially—a *de facto* cost increase for our purposes. Based on the value of approved projects within the decade last year (which was undisclosed this year) 5% translates to around $1.1 billion across the decade.

- The *unapproved* capital investment program will require an additional 20% funding to deliver the projects it contains. This amounts to an extra $8.0 billion across the decade (again based on last year's figures).

As alarming as this last figure might appear, it would not be hard to justify a larger number. As this author pointed out back at the release of the 2006 DCP, there are projects—like the Collins submarine replacement—that should have been included and given initial funding within the plan at that time. The additional cost of projects like this has not been included. Nor has the $1 billion or so of investment that will be needed to purchase naval helicopters now that the Super Seasprites have been scrapped. The requirement for embarked helicopters on the Anzac Frigates has not gone away.

Of course, the affordability of the capital investment program might be a moot point. As we have already seen, the failure in recent years to deliver planned new equipment will make it even more difficult to deliver new equipment in the future. It may be that inability to estimate and contain the cost of military equipment will be compensated for by the inability to deliver the equipment. If so, we are twice damned; the ADF will have to wait longer to get less.

Personnel

Under current plans the ADF is funded to grow to 58,282 personnel by 2016-17 (including 922 additional troops for Stage 2 of the Enhanced Land Force initiative that will bring Army's strength to 30,515). Thus, over the next ten years, the defence force is funded to rise by around 5,100 extra permanent members. At the same time, personnel expenses are anticipated to rise 2-2.5% faster than inflation. Consequently, the budget will be hit by two factors in the coming years: rising personnel costs and, hopefully, rising personnel numbers.

Assuming that the growth in numbers occurs at a steady rate past the last official estimate for 2010-11 to deliver a total of 58,282 in 2017-18, it's possible to project the cost of personnel out to that point. Doing so yields a bill of just on $12.2 billion in a decade's time (remembering to include the DMO civilian workforce that appears as a suppliers expense on Defence's accounts).

But this is just the bill for currently planned personnel numbers. Army successfully put their case to the last government for increased numbers. Now both Navy and Air Force have aspirations of their own. Navy needs to gain adequate numbers to implement their innovative 'Seachange' program which includes the over-crewing of vessels to allow for a better work-life balance for personnel, this will probably require another 700 personnel. Then there are the crews for the new AWD that will be in the water before any of the present fleet is decommissioned. Assuming a ship-shore ratio of 2 to 1; an additional 2 x 3 x 180 = 1,080 personnel will be required. Air Force, on the other hand, is understood to want more people to properly operate the several new platforms being acquired. Although no official numbers are available, Air Force is thought to want around another 1,000 personnel.

In terms of the overall funding of Defence, the bill is not enormous. Assuming that 1,700 additional personnel are added gradually over five years between 2009 and

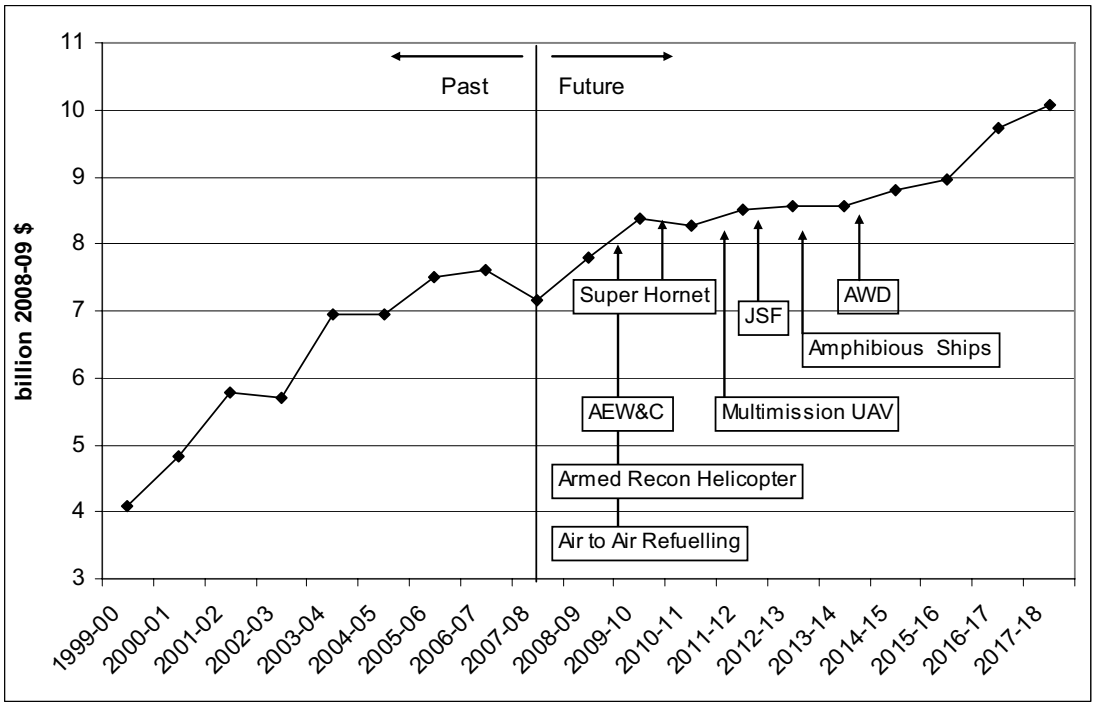
2014, and another 1,080 between 2015 and 2018, the total additional cost comes to $2.5 billion across the decade.

Allowing optimism to take precedence over experience, we shall assume that civilian numbers will not grow by a single position or suffer further level enrichment in the years ahead.

Operating costs

With estimates of personnel costs and capital investment spending we can use our estimates from Table 4.2 to find the money left to cover operating costs. The results of this calculation are graphed in Figure 4.6 (in 2008-09 dollars). In doing so, we have assumed no additional personnel beyond that presently planned and budgeted for, nor any rise in capital spending. In addition, we have subtracted 70% of operational supplementation (assuming the other 30% goes to capital and personnel) to try and recover the baseline budget.

Figure 4.6: Historical, budgeted/estimated and projected operating costs



Source: 2008-09 PBS and DAR

In previous years when we have performed the same exercise, the chart has risen rapidly until around 2010 and then precipitously flattened out—clearly indicating a looming shortfall in operating funds. But with the recorded drop in 2007-08 spending, and the subsequent jump in 2008-09 and 2009-10, it is hard to paint a picture of operating costs being inadequate over the next several years. Not surprising really, given the bounty delivered by the *nfgdp* in the budget. (Note, there is some uncertainty about the results for the past three years because we cannot know how to treat the money lying unspent in the DMO special account.)

Nonetheless, the relatively modest rate of growth from 2009-10 to 2014-15 seems slight when compared with the many platforms planned to enter service over the

period. In the absence of a bottom up calculation it is difficult to know if any more money will be needed, let alone be precise about how much.

Where does this leave us?

Before the budget, the Minister was quoted as saying that the net personnel and operating costs for new equipment left a hole of something like $6 billion over the decade. Our analysis of projected operating costs last year was consistent with this. But the $11.6 billion provided by rampant growth in the *nfgdpd* appears—from the perspective of our macroscopic analysis at least—to have put Defence's operating costs on a somewhat more sustainable basis. At the very least, any problem has been shifted out a couple of years. That said; there are still the lurking personnel bids to be dealt with. And if the government is serious about delivering all the capability presently planned, further investment funds will be needed. Hopefully, the $10 billion efficiency program will make up the difference that remains between plans and money (the potential for further Defence efficiency is explored in Section 4 of this brief).

In case it doesn't, the government will have two choices; cut planned (or existing) capability or spend more money. Space prohibits a proper discussion of whether it would be prudent to step back from current plans for the ADF. Instead, we now examine the feasibility of spending more on Defence.

Could we spend more?

The escalation in Defence plans and spending over the past seven years has the feel of a frog being boiled. Step by step, the long-term cost of the force ratcheted upwards as the planned size and capability of the ADF did likewise. To some extent, the growing long-term cost of the ADF was concealed by overly optimistic and inadequate financial planning. And to the extent that the costs were visible, the impact was cushioned by buoyant economic conditions.

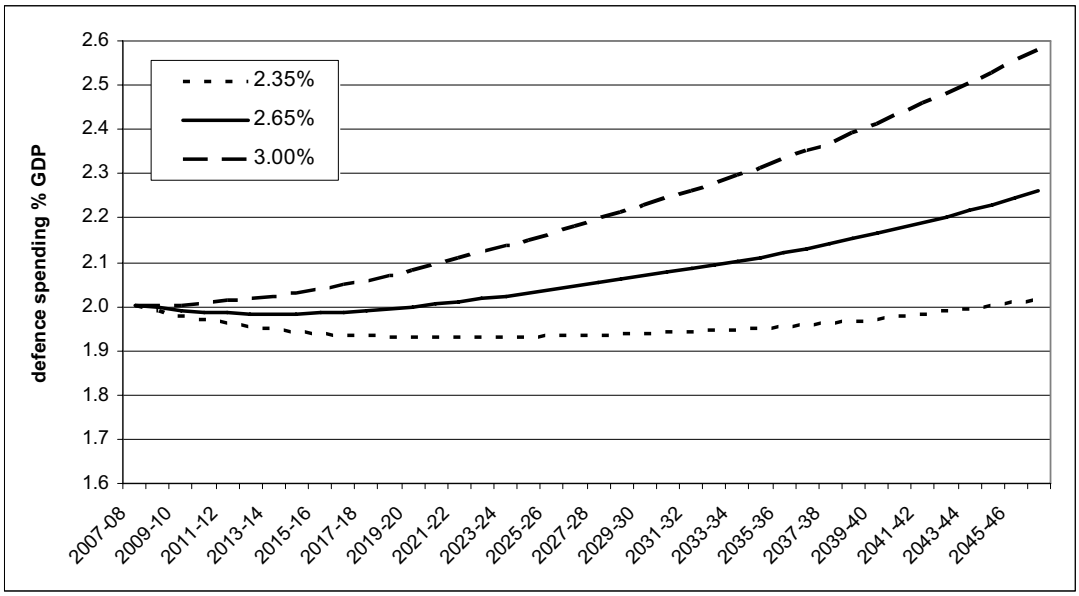
Circumstances have now changed, and any decision to spend more on Defence should be done with an eye to the future. The first thing to do is to examine the long-term cost of maintaining that defence force at the size and shape we have today. This can be done by projecting out trends in personnel, operating and capital costs[1]. Using reasonable estimates of how these components will increase, the effect is to grow the entire budget at somewhere around 2.5% per annum (remember the 3% real growth of the 2000 White Paper added new capability). In 2003 ASPI estimated the 'steady as she goes' growth rate at around 2.65% while the 2007 Treasury Intergeneration Report used a figure of around 2.35%.

Figure 4.12 shows how various rates of real growth in the Defence budget translate into GDP share based on Australia's projected economic performance out to 2050 as projected at the time of the 2007 Intergenerational Report. We have set Defence's GDP share at the round figure of 2%, close to where it has been for the last several

[1] See the 2007 Intergenerational Report p.116 and the 2003 ASPI report 'A Trillion Dollars and Counting'

years rather than at the lower level it now sits due to unanticipated strong economic growth.

Figure 4.12: The cost of maintaining the ADF we have today



Broadly speaking this looks like good news. According to both the ASPI and Treasury projections, it will be possible to maintain an ADF like the one we have today without consuming a greatly appreciable share of GDP than at present. This statement is true regardless of whether we have a larger or smaller force; whatever share of GDP we have, we will need a similar amount in 50 years time to maintain it. There is no magic to this; the projected long-term growth of GDP is around 2.5%. Even if the ADF continues to expand slightly and the long-term cost grows at 3%, the resulting GDP share mid-century is still only about a quarter larger than today.

It has been argued by Treasury Secretary, Ken Henry, that the looming challenge of an aging workforce coupled with rising health costs will place ever greater pressure on the government's fiscal position[2]. While this is certainly true, it must be balanced by the observation that Australia is much better placed than most other OECD nations to handle the cost of aging due to its early adoption of self-funded retirement savings and, critically, a relatively low level of taxation at present—8th lowest out of 30 OECD countries. A fuller discussion of these matters appeared in Section 7 of last year's ASPI budget brief.

The bottom line is that there is no structural economic reason why Australia cannot spend 2% or even 2.6% of GDP on defence now or in the future. It is, instead, a question of opportunity cost. Every dollar spent on Defence prevents a dollar's worth of alternative public goods or private consumption. Or to put it more starkly, every dollar spent on Defence is a dollar that cannot be spent cutting hospital waiting lists, improving educational outcomes, building capacity in Pacific island counties, reducing personal tax, or reducing infant mortality in indigenous communities. It is

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[2] *Australia's defence to 2025: The macro-economic outlook*. Ken Henry, Defender Vol XXII, No. 3, p. 19.

the job of governments to make judgements—indeed decisions—on how the nation's wealth is divided between these and many other alternatives, of which Defence is but one possibility.

Putting Defence planning in order

Before a single extra cent is committed to Defence, the taxpayer deserves an assurance that Defence has its planning in order. The vagaries of the *nfgdpd* have greatly improved a parlous situation that Defence brought on itself though inadequate planning. But it's not out of the woods yet, and there are still a billion dollars a year of efficiencies to be found.

If the cycle of recurring financial crises is to be broken, Defence planning must be improved. Irrespective of the size and shape of the ADF, it needs to be a force that can be sustained within the resources the government is willing to devote to it. This means aligning capability with financial planning.

This is not a new idea. It was around in 1987, 1991, 1996, 2000 and 2003 but in each case it only took a little while for the gap between means and ends to reopen. Creating a planning capacity within Defence that can provide accurate estimates of the total cost of future capability should not be so hard. There are a great many things to be estimated, so on average the underestimates and overestimates should cancel and the estimate should converge on the correct answer[3]. But they don't. Instead, Defence systematically underestimates the total cost of future capability. Such an error reflects, by definition, a systematic bias which has nothing to do with uncertainty (other than as a spurious excuse).

Irrespective of whether the bias is borne of irrational optimism or something less wholesome, there are at least two ways to combat it. First, you can set up an adversarial process of contesting each and every estimate. At present the Department of Finance and Deregulation performs this role. And, as we have argued in Section 7 of this brief, there are further opportunities in the specific area of capability planning for more active contestability. Given the complexity and specialised nature of defence materiel this will only get you so far. Second, and more simply, you can remove any incentive for Defence to underestimate costs by forcing them to live within their estimates.

So here is the proposal. As an outcome of the forthcoming White Paper process, Defence should be held to the *cost and performance* estimates they produce for the next five years apart from operational supplementation, price and exchange indexation and government initiated changes. Then, in five year's time, another ten year plan can be developed for which Defence will be held strictly to for the next five years. And so on. After all, if the goal is for Defence to plan and live within a budget, at some point they need to be told to do so. Now seems as good a time as any.

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[3] Try the experiment for yourself. Next time you are at the supermarket checkout, keep a running total in your head of the cost of your groceries by estimating the cost of each item as it goes through. Unless you are relatively alien to your local supermarket, you should get close to actual answer—the more so the more items you purchase.

SECTION 5 – AUSTRALIAN DEFENCE ECONOMICS

This section examines Australia's defence effort from international and historical perspectives. In the process, many of the underlying factors and trends in national and international defence economics will be introduced.

Australia's defence effort in an international context

According to the International Monetary Fund, in 2006 Australia had the fifteenth largest economy on earth measured at market exchange rates (and seventeenth using Purchasing Power Parity—PPP). From this annual bounty of more than 1.2 trillion dollars, Australia finds the money to fund its defence. Table 5.1 displays Australia's 2006 defence spending along with that of a selection of countries including allies, regional neighbours and other developed industrial economies around the globe. Note, the Australian figures in Table 5.1 represent local data rather than overseas reporting.

Table 5.1: Defence Spending and Burden 2006

2006 GDP		2006 Defence Expenditure		% GDP	
Country	$US billion	Country	$US billion	Country	%
USA	13,200	USA	535.9	Israel	7.9
Japan	4,340	China	121.9	Vietnam	5.6
Germany	2,880	Russian Fed	70.0	Singapore	4.8
China	2,620	France	54.0	Russian Fed	4.1
France	2,240	United Kingdom	55.4	USA	4.0
United Kingdom	2,230	Japan	41.1	Pakistan	3.2
Italy	1,840	Germany	37.8	Turkey	2.9
Russian Fed	1,700	Italy	30.6	South Korea	2.8
Canada	1,273	South Korea	24.6	India	2.5
Spain	1,220	India	22.4	France	2.4
India	911	Australia	15.0	United Kingdom	2.3
South Korea	888	Canada	14.9	Taiwan	2.2
Australia	731	Spain	14.4	Malaysia	2.1
Netherlands	659	Turkey	11.6	Australia	1.9
Turkey	406	Israel	11.0	Italy	1.7
Sweden	384	Netherlands	9.9	Netherlands	1.5
Indonesia	364	Taiwan	7.7	Sweden	1.5
Taiwan	351	Singapore	6.3	New Zealand	1.5
Thailand	207	Sweden	5.7	Germany	1.3
Malaysia	149	Pakistan	4.1	China	1.3
Israel	140	Indonesia	3.6	Spain	1.2
Singapore	131	Vietnam	3.4	Canada	1.2
Pakistan	128	Malaysia	3.2	Thailand	1.1
Philippines	118	Thailand	2.3	Indonesia	1.0
New Zealand	103	New Zealand	1.5	Japan	0.9
Vietnam	61.1	Philippines	0.9	Philippines	0.8
PNG	4.6	PNG	0.03	PNG	0.6

Source: International Institute for Strategic Studies: 'The Military Balance', 2008.

Table 5.1 mainly uses GDP expressed in US$ calculated at prevailing market exchange rates, rather than at PPP. Exceptions are made, as in the case of China and The Russian Federation, where PPP is judged by the source to be a more accurate representation.

Our level of defence spending gives us a budget broadly comparable with Canada and Spain, but far below the heavy hitters like Italy, Germany, UK, Japan, France and China. The US remains in a class of its own. Importantly, we out-spend all our Southeast Asian neighbours by a reasonable margin.

In terms of defence spending as a percentage of GDP, we devote significantly more than the Netherlands (1.5%), Germany (1.3%), Spain (1.2%), Canada (1.2%) and Japan (0.9%). According to the data, the only fully developed Western countries to allocate a larger share of GDP than us are the United States (4.0%), France (2.4%) and the United Kingdom (2.3%).

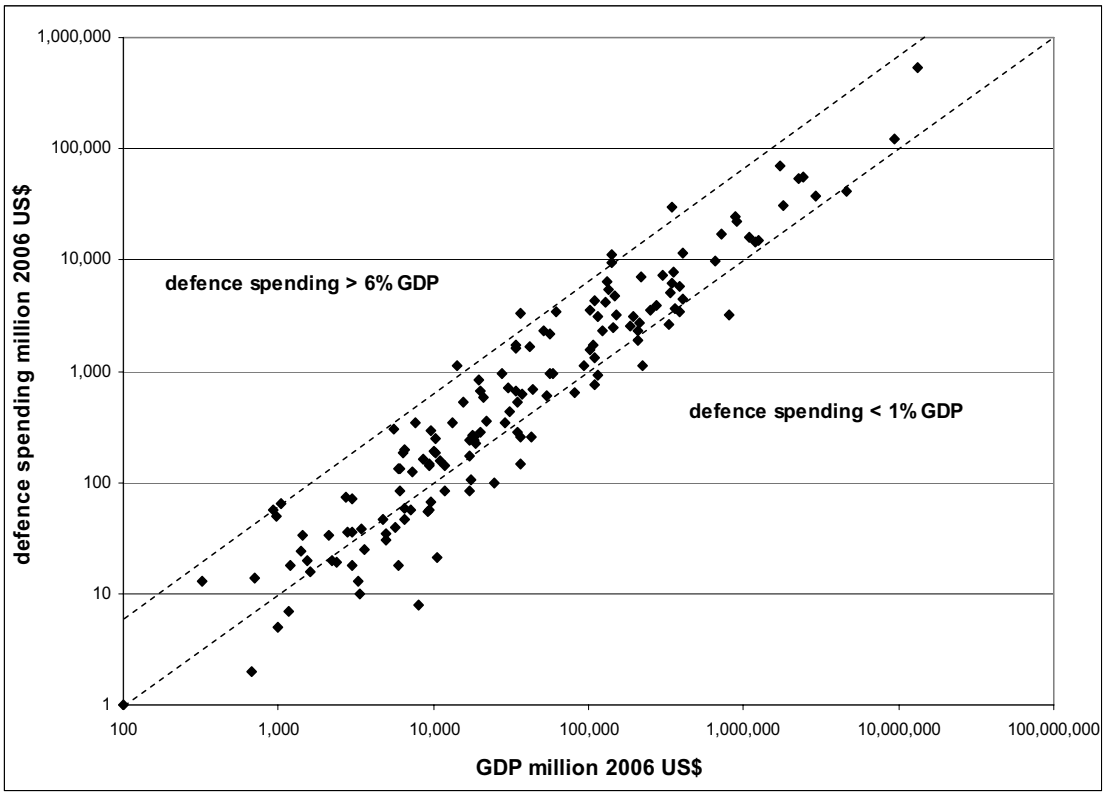
Closer to home, we devote a smaller share of GDP than Vietnam (5.6%), India (2.5%), South Korea (2.8%), and Singapore (4.8%), but more than Thailand (1.1%) and the Philippines (0.8%). Not surprisingly, we rank well ahead of New Zealand (1.4%) and Indonesia (1.0%)

To summarise, we spend a greater share than most developed Western nations but a lesser share than most of our significant regional neighbours. This probably reflects three things. First, the synergy derived from collective defence in Western Europe. Second, the reality that our regional neighbours are still developing economically, and therefore have to spend a larger share to meet the demands of what is, in many ways, a more challenging strategic environment than that of Western Europe. Third, the economic dynamics of alliance burden sharing, which allow smaller members of alliances like NATO to free-ride on larger members.

As we have argued in previous Budget Briefs, GDP share is not a measure of the adequacy or otherwise of defence spending – that's something that depends on the task at hand. Rather, as it is presented here, it simply measures the proportion of national wealth that a nation devotes to defence. Often, this is captured by the use of the term 'defence burden'.

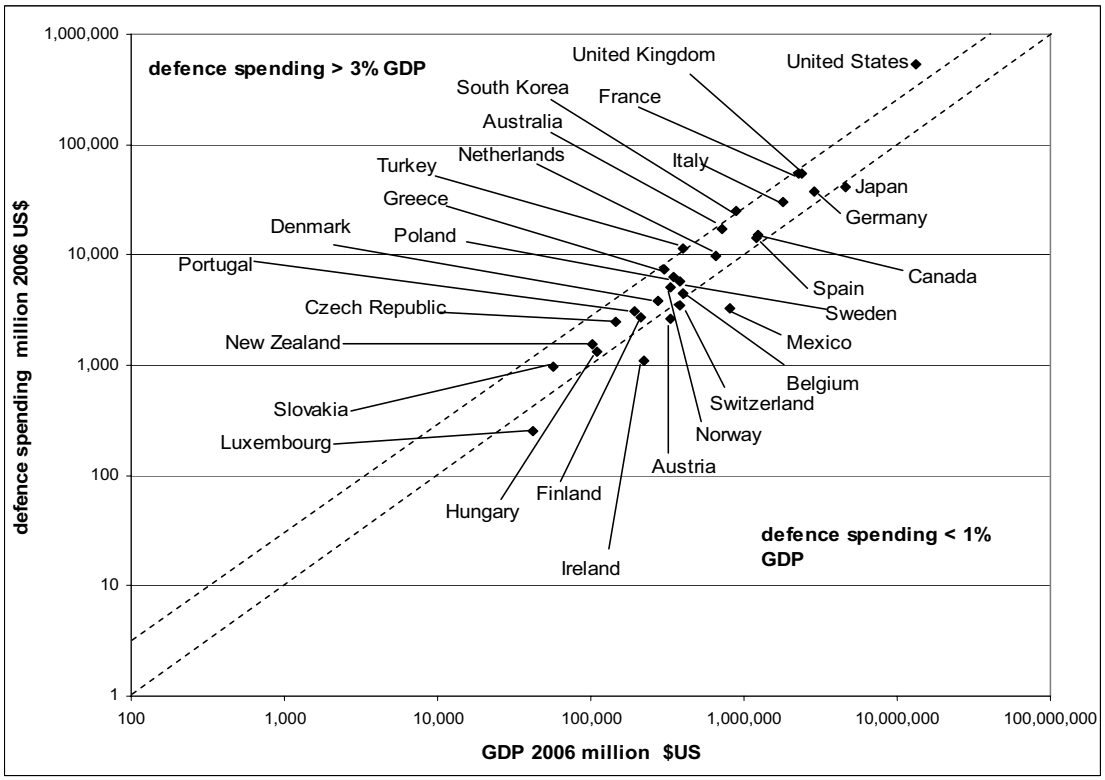
An alternative and often illuminating depiction of the economic resources a country allocates to defence can be achieved by plotting its position on a graph of GDP against defence spending along with other nations. We've done this in Figure 5.1 for some 150 countries based on IISS data. In Figure 5.2 we've isolated the results for (mainly) OECD countries. To properly capture the wide spread of GDP and defence spending values, the data has been plotted on a dual logarithmic scale. This separates out data that would otherwise be clumped together at the lower end of the scale.

Figure 5.1: GDP and defence spending – all countries 2006



Source: International Institute for Strategic Studies: 'The Military Balance', 2008.

Figure 5.2: GDP and defence spending – OECD 2006



Source: International Institute for Strategic Studies: 'The Military Balance', 2008.

A couple of things are immediately apparent. Most obviously, there is a clear correlation between defence spending and economic size; the larger a nation's economy the more it tends to spend on defence. In addition, the vast bulk of nations spend within the band of between one and six percent of GDP on defence. Not surprisingly, those countries that spend larger shares of GDP tend to have more challenging strategic circumstances than those that spend less, or else they are impoverished nations that need to spend a greater share of their meagre resources to achieve a credible capability. Small shares of GDP spending tend to correlate with advantageous geography, strong alliances and benign neighbours. But another factor is also at play. Economically prosperous developed nations tend, understandably, to be able to provide for their defence with a smaller share of GDP.

Money is not the only resource that a nation has available to devote to its defence; there is also people. Table 5.2 lists populations along with the percentage in the armed services.

Table 5.2: Human Resources

Country	POP 2007	Country	Total Armed Forces	Country	% of POP
China	1,321,851,888	China	2,105,000	North Korea	4.75%
India	1,129,866,154	United States	1,498,000	Israel	2.75%
United States	301,139,947	India	1,288,000	Singapore	1.59%
Indonesia	234,693,997	North Korea	1,106,000	South Korea	1.40%
Pakistan	169,270,617	Russian Fed	1,027,000	Taiwan	1.25%
Russian Fed	141,377,752	South Korea	687,000	Russian Fed	0.73%
Japan	127,467,972	Pakistan	619,000	Turkey	0.72%
Philippines	91,077,287	Turkey	510,600	Vietnam	0.53%
Vietnam	85,262,356	Vietnam	455,000	United States	0.50%
Germany	82,400,996	Thailand	306,600	Thailand	0.47%
Turkey	71,158,647	Indonesia	302,000	Malaysia	0.44%
Thailand	65,068,149	Taiwan	290,000	France	0.42%
France	61,083,916	France	254,895	Pakistan	0.37%
United Kingdom	60,776,238	Germany	245,702	Spain	0.37%
Italy	58,147,733	Japan	240,400	Italy	0.32%
South Korea	49,044,790	Italy	186,049	United Kingdom	0.30%
Spain	40,448,191	United Kingdom	180,527	Germany	0.30%
Canada	33,390,141	Israel	176,500	Netherlands	0.28%
Malaysia	24,821,286	Spain	149,150	Sweden	0.27%
North Korea	23,301,725	Malaysia	109,000	Australia	0.25%
Taiwan	23,174,294	Philippines	106,000	New Zealand	0.22%
Australia	20,434,176	Singapore	72,500	Japan	0.19%
Netherlands	16,570,613	Canada	64,000	Canada	0.19%
Sweden	9,031,088	Australia	51,293	China	0.16%
Israel	6,426,679	Netherlands	45,608	Indonesia	0.13%
PNG	5,795,887	Sweden	24,000	Philippines	0.12%
Singapore	4,553,009	New Zealand	9,051	India	0.11%
New Zealand	4,115,771	PNG	3,100	PNG	0.05%

Source: International Institute for Strategic Studies: 'The Military Balance', 2008.

Here Australia is less well endowed. According to the US Census Bureau, Australia ranked 54th in population in 2006, ahead of Syria and below Mozambique. We have about one-third the population of the larger European powers and less than one-tenth

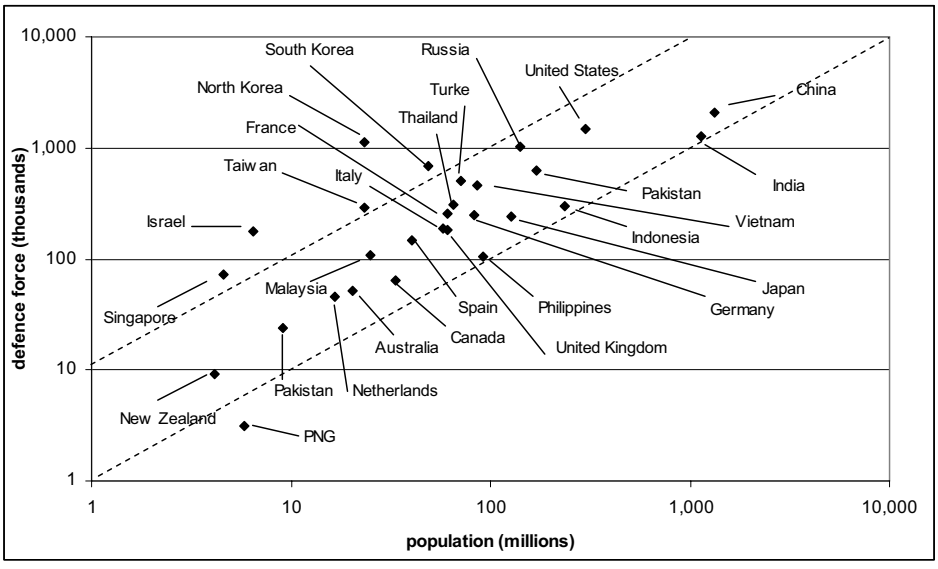
that of the US. In regional terms, we're just a little smaller than Malaysia, North Korea and Taiwan, but only a quarter the size of Thailand and the Philippines. Indonesia has more than ten times our population, and we are but a drop in the ocean compared with India and China. The sobering fact is that we account for less than one-third of one percent of the world's people.

Our permanent armed forces in 2006 amounted to a bit over 51,000, which puts us near the bottom of the table in our selection of countries. Overall, there are 67 countries with armed forces numerically superior to ours. As a proportion of population, we have one-quarter of one percent of our population engaged as full-time military personnel. This is significantly less than European nations like the United Kingdom (0.30%), Germany (0.30%) and France (0.42%), and even further behind the United States (0.50%). In fact, in our selection, the only Western countries we comfortably beat are those well-known strategic optimists, Canada and New Zealand (both of which have their strategic approaches covered by more powerful neighbours). In regional terms, we fall well behind Singapore (1.59%), Malaysia (0.44%) and Thailand (0.47%) but ahead of Japan (0.19%), China (0.16%), Indonesia (0.13%) and the Philippines (0.12%). In general, the trend is that only very populous regional nations devote a smaller proportion of their population to the task of defence than Australia.

Australia's relatively modest ranking in terms of proportion of population needs to be seen in the context of our avowed 'maritime strategy' that has driven force development since the early 1970s, when the 'defence of Australia' doctrine was adopted. With the exception of a short period in the 1960s which saw conscription boost the Army to over 40,000, Australia has never maintained a large peacetime standing Army. Put simply, as a country with no land borders and no prospective adversaries with an amphibious capability, the imperative to develop a manpower-intensive land force is slight.

Figure 5.3 plots the size of the permanent defence force against the population for our selection of nations, with the inclusion of North Korea.

Figure 5.3: Population and defence personnel 2006

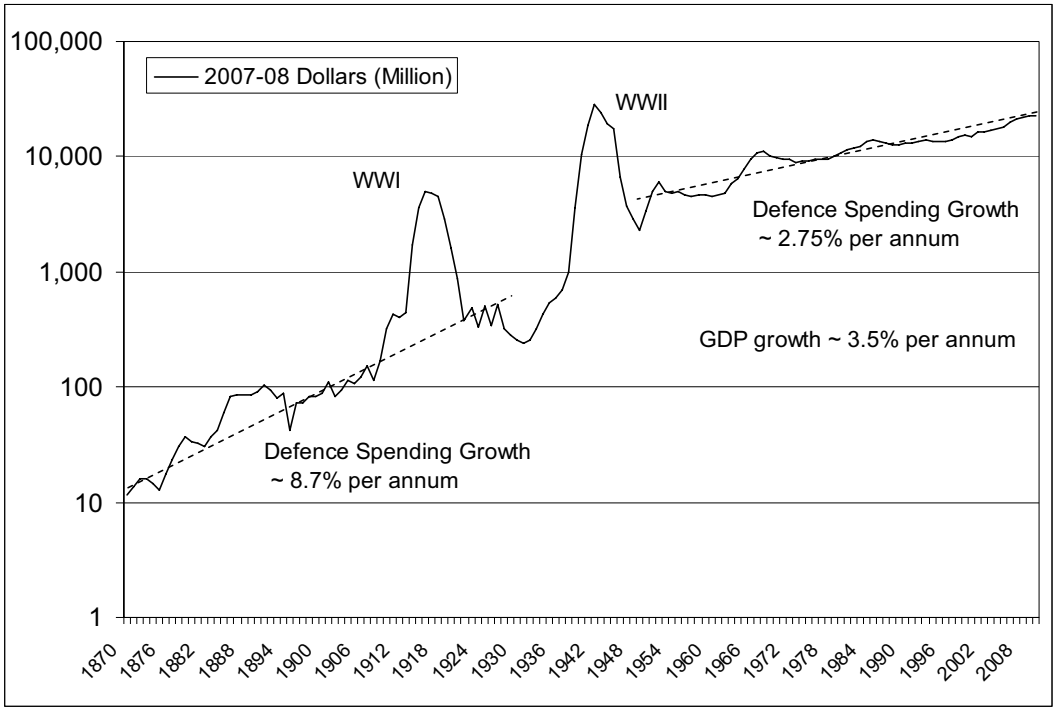


Data source: International Institute for Strategic Studies: 'The Military Balance' 2008

Historical Trends

It's easy to focus on the last decade when looking at Australian defence spending and be impressed by the roughly 3% growth achieved since 2000 and planned through to 2015-16. However, a different perspective occurs if we step back and look at defence spending trends over longer timeframes. Figure 5.6 shows the last 137 years of Australian defence spending expressed in 2007-08 dollars using the CPI. What's interesting is that the post-WW II trend is reasonably approximated by a constant compounding 2.75% real growth once the perturbations due to Korea and Vietnam are taken into account.

Table 5.6: Historical Australian real defence spending



Source data: Correlates of War Project and Meaney "The Search for Security in the Pacific", 1976.

This should not come as a surprise. The ADF has been maintained on roughly the same scale (after taking account of contracting-out) for the last fifty years, and the underlying trends in the cost of the inputs to capability have consistently outpaced inflation by 2% to 4%. Specifically, personnel costs have risen by around a real 2% per annum, operating costs by around 3% per annum and the unit cost of equipment by around 4% per annum. It makes sense that the average annual growth comes out around 3% because it's commensurate with these underlying drivers. It's also consistent with the fact that the DCP remains focused on replacing, rather than augmenting, the capabilities of the ADF.

SECTION 6 – THE COST OF WAR

Introduction

The 2003-04 ASPI Budget Brief included a full analysis of the cost of all deployments since 1999-00. Since then, rather than repeat that extensive discussion, we've maintained a shorter format. This section includes an explanation of how Defence is funded for deployments, updated tables of historical deployment costs, a summary of the cost of the Iraq, Afghanistan and other recent operations, and an assessment of the impact on peacetime rates-of-effort of recent operations.

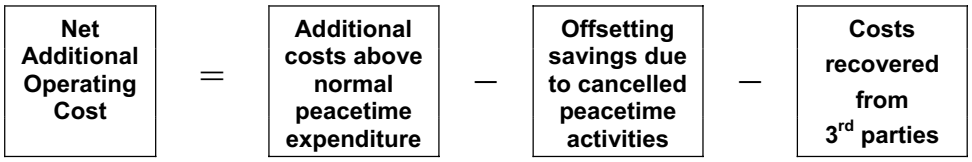
What do we mean by the cost of a war?

As a rule, Defence is supplemented for the *net additional* cost of any major military operation. This makes good sense because, in principle at least, it ensures that Defence does not have to compromise peacetime training to fund operations, and avoids them having to maintain a contingency reserve to cover unanticipated costs. The reasons why the practice has been suspend for 2008-09 are explored in Section 4 of this brief.

Figure 6.1 shows how the net additional cost of an operation is calculated. In the past, Defence only disclosed the aggregate net additional operating cost, the total value of new capital investment and the amount recovered from third parties. However, although offsets remain undisclosed, Defence sometimes provides itemised lists of the individual costs incurred in an operation.

Figure 6.1 Calculating the 'Net Additional Cost of War'

Where:



The net additional operating costs include the additional cost of personnel allowances, shipping & travel, repair & maintenance, health & inoculations, ammunition, contracted support, fuel, inventory, consumables etc. Offsetting savings include the money saved from foregone activities like the cancelled Exercise Crocodile 99 & the Avalon Air Show in 1999-00 due to the deployment of Australian Forces to East Timor. Those costs recovered from 3rd parties include the partial recouping of costs from the UN when participating in a UN peacekeeping operation.

The net additional capital investment usually represents the accelerated filling of capability gaps specific to the operation. Recent examples include the purchase of additional EWSP equipment for the AP-3C maritime patrol aircraft for Iraq, and the

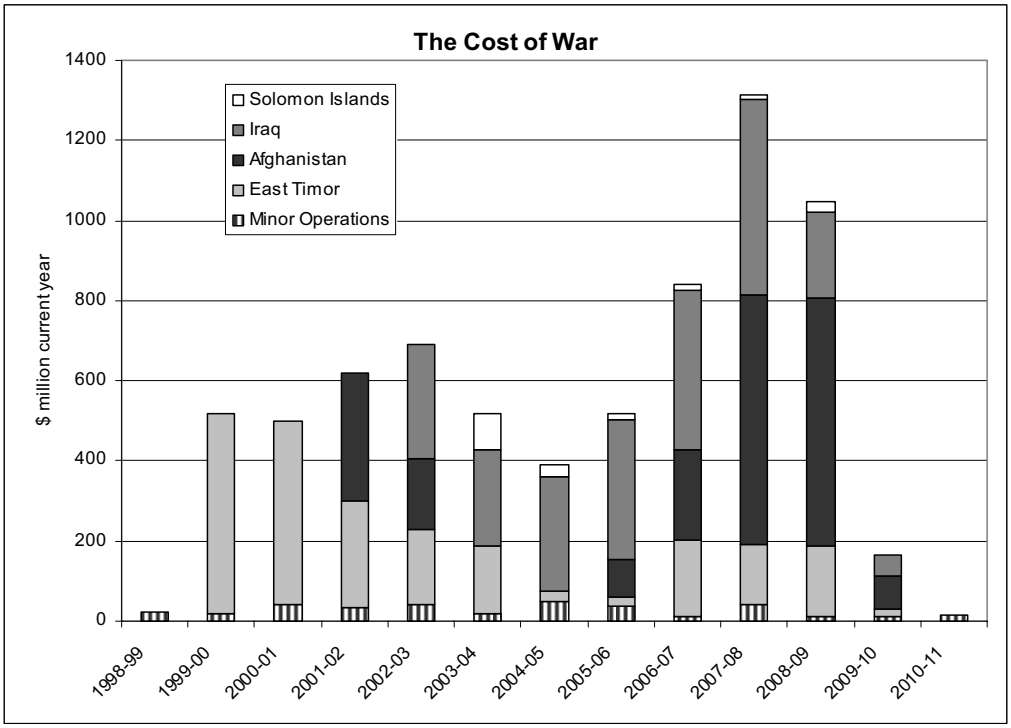
rapid acquisition of the Javelin anti-armour missile for Afghanistan. Capital costs sometimes also include modifications to platforms and additional inventory purchases.

Finally, it's worth being specific about what is not included. The net additional cost of an operation does not include pay and allowances that would normally be incurred, nor does it include the cost of operating platforms within the planned peacetime rate of effort. Nor does it cover the costs incurred outside of Defence by the AFP, DFAT or others involved in operations. Thus, aside from additional items like new equipment, ammunition, transport and contracted services, the net additional cost is the *marginal cost* of increased ADF activity due to an operation.

What's the big picture?

Figure 6.2 shows the net additional supplementation received by Defence for deployments from 1998-99 through 2008-09. Note that Defence has been directed to absorb costs of $46 million in 2007-08 and $1,036 million in 2008-09, and also that $155 million of 2007-08 operational spending is expected to go unspent (including $45 million for equipment rapid acquisitions.

Figure 6.2: The net additional cost of ADF operations



Source: Defence Annual Reports and Budget Papers

Minor operations include Bougainville which cost $109 million between 1998 and 2003 (of which $43.3 million was absorbed by Defence); Border Protection, which will incur costs of $151 million between 2001 and 2010, and the 2006 Commonwealth Games ($13 million). Figure 6.2 excludes the 'force generation' costs nominally associated with expanding the ADF by 3,555 troops for East Timor in late 1999. This was roughly $400–$500 million per annum permanently included into the Defence funding base at the time of the 2000 White Paper. In the figure,

'Afghanistan' includes the Multinational Interception Force (MNIF) which became part of the Iraq operation in March 2003.

As shown in Figure 6.2, the cost of operations is budgeted to fall after having risen for three years in a row. The planned draw down of forces from Iraq is the key factor behind the decline.

New money for operations in the 2008-09 Budget

The PBS explains the additional supplementation that has been provided to cover the net additional cost of operational deployments [PBS pages 26 to 29]. Note that the duration of the spending should not be taken as implying anything final about the likely length of deployment, because additional money is often provided post-deployment for repatriation and reconstitution of equipment.

Iraq

The government has extended the ADF deployment to Iraq to December 2008 and has provided $267 million over two years for that purpose (including previous funding). Even after the end of year drawdown, some ADF elements will remain in Iraq, including the Baghdad security detachment. The total cost of operations in and around Iraq now stands at $2.3 billion.

Afghanistan

The government has extended the ADF deployment to Afghanistan until June 2009 and has provided $702 million over three years for that purpose (including previous funding). The total cost of operations in Afghanistan now stands at $2.1 billion.

Timor-Leste

The government has extended the ADF deployment to Afghanistan until June 2009 and has provided $193 million over two years for that purpose (including previous funding). The total cost of operations in East Timor now stands at $3.75 billion including 'force generation' supplementation.

Solomon Islands

The government has extended the ADF deployment to Solomon Islands until June 2009 and has provided $27.1 million over one year for that purpose (including previous funding). The total cost of operations in Solomon Islands now stands at $188 million.

Impact of operations on peacetime rates of effort

The impact of deployments on planned peacetime rates of effort is often counter-intuitive because rates-of-effort sometimes fall due to disruption caused. For example, despite getting $14 million for increased AP-3C operating costs due to the Iraq deployment during 2002-03, the fleet fell short of its planned rate of effort by 15% in that year. Table 6.1 lists the rate of effort for key platforms employed in recent operations. Unfortunately, figures are not available for Navy vessels, although anecdotal evidence is that they regularly deliver substantial numbers of steaming days in support of operations, well above peacetime rates-of-effort. In 2006-07 the rate of effort for deployed platforms once again tended to fall below the budgeted level. Note that Defence has not requested supplementation for additional flying hours in recent operations.

Table 6.1: Impact of Deployments on flying hour rates

Platform	*Budgeted Peacetime Rate of Effort*	*Actual*	*% Difference*
1999-00 (period including East Timor INTERFET operation)			
Blackhawk	9,260	8,179	-11.67%
Kiowa	8,985	8,379	-6.74%
C-130	16,762	13,144	-21.58%
Caribou	5,080	4,356	-14.25%
2001-02 (period including War on Terror & Border Protection operations)			
C-130	14,000	13,102	-6.4%
F/A-18	13,000	11,287	-13.2%
P-3C	8,660	9,624	+11.1%
2002-03 *(period including Iraq war)*			
C-130	14,000	13,622	-2.7%
F/A-18	12,500	14,077	+12.6%
AP-3C	9,600	8,172	-14.9%
Chinook	1,270	1,364	7.4%
2003-04 (period including Iraq, East Timor and Solomon Islands)			
C-130	15,000	13,992	-6.7%
F/A-18	12,500	12,820	2.6%
AP-3C	9,100	7,702	-15.4%
Chinook	1,270	876	-31.0%
Blackhawk	8,600	6,864	-20.2%
Kiowa	12,970	11,425	-11.9%
2004-05 (period including Iraq and Solomon Islands)			
C-130	16,000	13,502	-16.0%
AP-3C	8,2000	8,431	3.0%
DHC-4	5,080	3,038	-40.0%
2005-06 (period including Afghanistan, Iraq, East Timor and Solomon Islands)			
Chinook	1,270	1,091	-4.1%
Blackhawk	8,600	6,918	-19.5%
AP-3C	8,200	7,418	-5%
C-130	15,000	13,149	-12.3%
2006-07 (period including Afghanistan, Iraq, East Timor and Solomon Islands)			
Chinook	1,270	1,168	-8.0%
Blackhawk	7,500	6,157	-17.9%
AP-3C	8,200	7,094	-13.5%
C-130	10,000	10,182	1.8%

Sources: Defence Annual Reports and Portfolio Budget Statements for 1999-00 to 2006-07.

What do we get for our money?

Table 6.2 lists the net additional cost of recent ADF operations, along with a brief description of what the operation entailed. It's important to note that many smaller operations, even the extensive support given to the Sydney Olympic Games, occur without any supplementation. We've done the best we can to separate out the capital component of the funding but in many cases the data is not available. In some cases the figure given for capital represents the minimum amount that has gone towards capital equipment.

The indicative number of personnel deployed on operations over the past 25 years is plotted in Figure 6.3. The roughly 450 people that have been assigned to border protection since 2001 are not included.

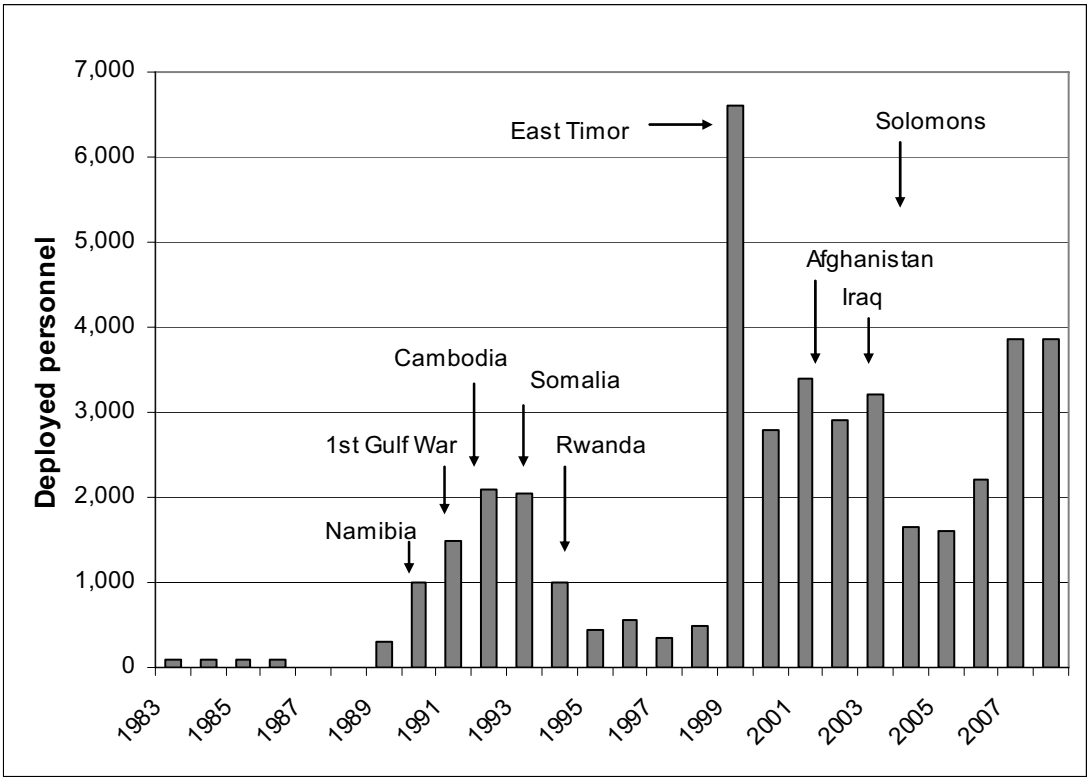
Table 6.2 Supplementation received for the cost of recent ADF operations ($ million)

Operation	Net Additional Operating Cost	Net Additional Capital Investment	Duration (months)	Description
East Timor 1999-00	429.7	70.4	9	A peak of 6,000 personnel reduced to 1,600 in June 2000. Included 12 Blackhawk plus a troop of Kiowa helicopters, plus extensive airlift (Caribou and C-130) and sealift support.
East Timor 2000-01	335.9	123.5	12	1,610 personnel in theatre. Included 4 Blackhawk and a troop of Kiowa helicopters, Caribou detachment plus airlift and sealift support.
East Timor 2001-02	187.5	0	12	1,470 personnel. Included Battalion Group, troop of Kiowa helicopters plus airlift/sealift support. (Blackhawk & Caribou use unknown.)
East Timor 2002-03	172.4	0	12	1,250 personnel. Included Battalion Group, troop of Kiowa, and detachment of Blackhawk helicopters plus airlift/sealift.
East Timor 2003-04	169.1	0	12	Similar to above but drawing down. By 30 June 2004 there were only around 440 personnel and a Blackhawk detachment remaining.
East Timor 2004-05	27.4		12	Australian contribution to extended UN peacekeeping in East Timor. Around 100 personnel with no helicopters.
East Timor 2005-06	23.9		2	Australian response to request from Timor Leste government for assistance following outbreak of unrest in April 2005. Troop numbers vary with need and have ranged between 3,000 in mid-2005 to around 1,100 in mid-2007. Blackhawk (8) and Kiowa (4) helicopters have been involved in the operation.
East Timor 2006-07	120.8		12	
East Timor 2007-08	152.8		12	
East Timor 2008-09	174.3		12	
East Timor 2009-10	18.7		-	Remediation and repatriation costs
Afghanistan & MNIF 2001-02	180	140	9	1,100 personnel. Included 2 Frigates, 1 LPA Amphibious Vessel, 4 F/A-18 Fighters, 2 B707 Air-to-Air Refuelling Aircraft, 2 AP3C Maritime Patrol Aircraft, C-130 Transport Aircraft, 150 Special Forces plus command elements.
Afghanistan & MNIF 2002-03	169	30	MNIF 9 Afghan 3	1,100 personnel. Included 2 Frigates, 1 LPA Amphibious Vessel, 2 P3C Maritime Patrol Aircraft. C-130 Transport Aircraft, 150 Special Forces plus command elements.
Afghanistan 2003-04	-5	0	-	Remediation and repatriation costs
Afghanistan 2005-06	91	?	9	190 strong SF Task Group for 12 months from September 2005 plus and 2 CH-47D Chinook helicopters with 110 personnel
Afghanistan 2006-07	223.3	?	12	240 strong Reconstruction Task Force (and 2 CH-47D Chinook helicopters with 110 personnel until April 2007), growing to around 970 by mid 2007 with the addition of Special Force Task Group.
Afghanistan 2007-08	623.2	?	12	1,000 personnel including Reconstruction Task force plus Special Forces Task Group and two Chinook helicopters and support personnel from February 2008
Afghanistan 2008-09	618.9	?	12	1,080 personnel including Reconstruction Task force plus Special Forces Task Group and two Chinook helicopters.
Afghanistan 2009-10	81.1	?	-	Remediation and repatriation costs
Iraq 2002-03	285.3	?	7	2,000 personnel. Included 2 Frigates, 1 LPA Amphibious Vessel, 14 F-18 fighters, 3 C-130 Transport Aircraft, 2 P3C Maritime Patrol Aircraft, 2 x Chinook helicopters, 500 Special Forces, Clearance Diver Team plus command elements.
Iraq 2003-04	240.6	?	12	830 personnel including 279 in Iraq. Deployment included C-130 Airlift detachment, Air Traffic Controllers, AP-3C Maritime Patrol Aircraft, Frigate, Army Training Team, Medical Team various HQ elements and a security detachment for the Australian mission in Iraq.
Iraq 2004-05	284.9	17.3	12	Pre-April 05: 920 personnel roughly as per 2003-04. Post-April 05: 1,370 personnel including a 450 strong Task Group to Al Muthanna province along with 40 Light Armoured Vehicles (ASLAV).

Iraq 2005-06	351.4	62.8	12	1,370 personnel including a 470 strong Task Group to Al Muthanna province along with 40 Light Armoured Vehicles (ASLAV).
Iraq 2006-07	398.5	?	-	1,400 personnel including a 515 strong Task Group to Al Muthanna province along with 40 Light Armoured Vehicles (ASLAV).
Iraq 2007-08	486.0.1			1,575 – as above but with additional training personnel.
Iraq 2008-09	215.7.3		-	As above but with withdrawal of Al Muthanna Task Group from December 2008. 110 strong security detachment, 155 strong C-130 detachment and 170 strong AP-3C detachment to remain.
Iraq 2009-10	51.7		-	Remediation and repatriation costs
Solomon Islands 2003-04	90.4	?	12	Initially 1,400 ADF personnel and an unspecified number of civilians. The size of the operation was reduced as stability returned to the country.
Solomon Islands 2004-05	27.6	?	12	Around 30 ADF personnel who assist with AFP patrols and augment headquarters staff. A larger security detachment of around 200 was temporarily deployed temporarily.
Solomon Islands 2005-06	12.9			Around 30 ADF personnel who assist with AFP patrols and augment headquarters staff. Additional ~ 200 troops were sent in early 2006.
Solomon Islands 2006-07	17.3			Around 140 ADF personnel who assist with AFP patrols and augment headquarters staff.
Solomon Islands 2007-08	12.7			Around 140 ADF personnel who assist with AFP patrols and augment headquarters staff.
Solomon Islands 2008-09	27.1			Around 140 ADF personnel who assist with AFP patrols and augment headquarters staff.

Note: *The capital cost of the Iraq operation in the first two years was around $146.7 million – split unknown. Most supplementation provided in recent years has been in the form of operating costs. Bougainville and Border Protection have been removed from the table this year.*

Figure 6.3: Indicative deployed personnel numbers, circa May each year.



SECTION 7 – DELIVERING CAPABILITY

Of the many factors that shape the defence force for better or worse, among the most important are the performance of Defence's capability planning and capability acquisition processes. This chapter examines these two key areas.

To be clear on terms: *capability planning* includes the definition, costing, scheduling and approval of major capability projects, and *capability acquisition* refers to the actual purchase and transition into service of equipment sought by those projects. Under the current regime, capability planning is done by the Capability Executive within Defence and acquisition is done by the Defence Materiel Organisation (DMO), which also provides materiel support for equipment in service. The present arrangements are the result of changes made in line with recommendations of the 2003 Kinnaird Review of defence procurement.

In what follows, we analyse historical data to uncover the broad trends in Defence capability planning and acquisition. This may not please those who prefer to set aside any discussion of past performance now that we have entered the new 'post-Kinnaird' era. And they have a point; in many ways the Kinnaird reforms represents an improved approach to capability planning and acquisition. But while the changes have been both significant and beneficial, the lessons of the past remain relevant. More has stayed the same than has changed—not just in term of processes and structures, but also in terms of results. And with a new government having just taken office, now is the time to be looking at the lessons of the past to inform the next round of reform.

Unfortunately, the analysis that follows is not as comprehensive as we would have liked. There are practical limits to what can be recovered from publically available information on acquisition costs and project performance. Although DMO comprehensively monitors and regularly reports to government on the progress of projects, information is only disclosed publically on the top 30 (in terms of cost) of the more than 200 projects underway at any one time. (In the future, however, the depth of reporting of those 30 projects is set to improve; $5.3 million was provided in the budget over four years for the Australian National Audit Office to audit and report on them annually to Parliament.)

Capability planning

There are two problems with capability planning; acquisition costs tend to be underestimated, and project schedules tend to be overoptimistic. The two problems are not independent—as we shall see, cost increases drive schedule delays. For this reason we begin with the question of cost.

Table 7.1 lists those projects costing more than $200 million that have been approved since around the end of 2000, or that remain unapproved, and for which more than a single datum exists (and hence a trend can be established). Original cost estimates are drawn from the 2001 DCP or from earlier unclassified Pink Books for those projects approved early in the decade.

For the twenty-five projects that have been approved, costs rose from an initial estimate of $16.5 billion to $29 billion—a 76% increase. Even if we (generously) subtract 20-30% to account for inflation, a substantial systematic underestimation

remains substantial. Only a little less dramatic is the increase in estimated costs for unapproved projects; from $24.4 million to $39.4 million, or a 61% increase, and these, of course, have the potential to rise further upon approval as has been the case for other projects.

Setting aside random uncertainty—we are clearly dealing with a systematic bias—there are two reasons for initial cost estimates to fall short of the cost at approval;

- systematic underestimation of the cost of planned equipment
- increases to the quantity and/or quality of equipment prior to approval.

There is adequate evidence to conclude that both mechanisms operated during the period that the data in Table 7.1 is drawn from.

It is important to note that the problem is not simply an aberrant 2001 DCP; newly approved projects continue to cost more than even the most recent estimates. In June 2007, for example, the Air Warfare Destroyer and Amphibious Assault Vessel projects were approved at a total cost $2.4 billion above the upper level envisaged in the 2006 DCP, released less than a year earlier. On the positive side, the fact that the new two-pass process flushed out larger (and we presume more realistic) estimates of the costs is a good thing. It should reduce the likelihood of future real cost increases or capability shortfalls in these projects.

However, within the fixed funding envelope of the DCP, rising costs inevitably translate into project deferrals; for every project that rises in cost one or more others must be delayed. Consequently, many planned acquisitions have been deferred in the successive revisions of the DCP (though it should be noted that the introduction of new projects has also contributed to deferrals).

To make matters worse, the approval of new projects appears to have been occurring more slowly that planned, independent of rising costs. We know this because even in those years when DMO is unable to spend its budget, project approvals fail to materialise. The fate of projects in the 2006 DCP is illustrative. Despite coming two years after the Kinnaird reforms and therefore having had ample time to adjust to the new regime, the schedule of projects approvals in the 2006 DCP quickly fell behind, as shown in Table 7.2. It must be noted, however, that some projects received earlier approval than planned, such as the military satellite capability which was brought forward by at least two years because an opportunity arose in a US program. In addition, the demands of previous unplanned large projects, like the C-17 and Super Hornet, have probably strained DMO capacity in the short term and forced a slowing of approvals

Table 7.2: Project approvals from the 2006 DCP

	2005-06	2006-07	2007-08
Approved on schedule	0	7	3
Approved late	4	2	1
Still not approved	2	4	5
unknown	0	0	9

Source: 2006 DCP, Defence Annual Reports and Budget Papers (2007-08 uncertain pending annual report)

To the extent that project approvals have been delayed because of the extra time needed to negotiate the new hurdles of 1st and 2nd pass approval, this is probably for the better. A late but informed decision is better than one that is hasty but on time.

Table 7.1: The rising cost of equipment — planned and approved post-2000

APPROVED				YET TO BE APPROVED			
	Initial cost estimate ($m)	**Cost at approval ($m)**	**Change (%)**		**Initial cost estimate ($m)**	**Current estimate ($m)**	**Change (%)**
Armed Recon Helicopter	unknown	1584	unknown	Chinook Upgrade	100-150	325-450	210%
Additional Trooplift Helicopters	350-450	954	139%	Battlefield Airlifter	750-1000	250-350	-66%
Black Hawk Mid-life Upgrade/replace[1]	750-1000	2566	52%	C-130H Replace/refurb	450-600	750-1000	67%
Hornet Upgrade (radar and comms)	220-700	1110	139%	Pilot Training System	600-750	600-750	0%
Hornet Upgrade (electronic warfare)	200-500	362	3%	New Air Combat Capability	10,500-15,500	10,500-15,500	0%
Hornet Upgrade (targeting)	100-150	141	13%	Multi-Mission UAV	100-150	1,000-1,500	9900%
Hornet Upgrade (structural work)	230-300	830	213%	Maritime Patrol Capability	1500-2000	3500-4500	220%
Air-to-Air Refuelling	500-1000	2007	168%	Seahawk Mid-life Upgrade	450-600	350-450	-24%
Follow-on Stand-off Weapon	350-450	370	-8%	Defence Wide Area Communications	200-250	250-350	33%
MILSATCOM	200-250	927	312%	Sea Lift Ship	150-200	150-200	0%
Amphibious Vessels	1000-1500	2949	136%	Deployable Medical Capability	250-350	250-350	0%
Lightweight Torpedo	450-600	553	5%	Geospatial Information	60-100	250-350	275%
HQ Australian Theatre	100-150	300	140%	Battlespace Comms Land/Air (Phase 3)	100-150	200-250	80%
M113 Upgrade	200-500	515	47%	Battlespace Comms Land/Air (Phase 4/5)	150-200	200-250	29%
Overlander: Army Vehicles	1650-2200	3189	66%	Artillery Replacement	300-400	450-600	50%
Anzac Warfighting Upgrade	150-200	204	14%	Battlefield Command Support	75-100	200-250	159%
FFG SM1 Replacement	450-600	558	6%	Surveillance Enhancements	750-1000	250-350	-66%
ESSM Missile	250-350	299	0%	M113-ASLAV Replacement	1000-1500	1000-1500	0%
Heavyweight Torpedo	200-250	466	107%	Success Replacement	350-450	350-450	0%
Collins Sustainability & Reliability	250-350	391	30%	GPS Enhancements	350-450	100-150	-69%
Collins Operational Capability	350-450	455	14%	Combat Identification for Ground Forces	200-250	100-150	-44%
Patrol Boat Replacement	350-450	455	14%	Joint Command Support System	100-150	250-350	140%
Anzac missile defence	450-600	766	46%	ASLAV Upgrade	72-100	200-250	178%
HMAS Westralia Replacement	350-450	143	-52%	Direct Fire Support Weapon	250-350	150-200	-42%
Air Warfare Destroyer	3500-4500	7,542	89%	Special Operations Enhancements	350-450	350-450	0%
Military Satellite Communication	1000-1500	927	-26%	Collins Continuous Improvement	450-600	100-150	-76%
Total	**16,475**	**28,979**	**76%**	Maritime Communications	50-75	200-250	263%
				Battlespace Communication Land/Air	200-250	450-600	133%
				Soldier Combat System (Phase 3)	450-600	450-600	0%
				Soldier Combat System (Phase 4)	350-450	250-350	-25%
				Total	**24,410**	**39,413**	**61%**

[1]Cost refers to replacement option eventually adopted; percentage refers to cost growth in upgrade option prior to abandonment.
Note: Warstock munitions purchases have been excluded because they represent a financial fillip to routine logistics funding.

Delays in project approvals almost always lead to delays in the delivery of capability. This compounds the other problem with Defence planning; systematic overoptimism about how quickly capability can be delivered and brought into service. Table 7.3 lists some recent project approvals where the date of initial operational capability at the time of project approval was substantially behind the original estimate. (Note: the data does not include schedule slippage after approval.) In most cases, the delay reflects a combination of slower than planned approval and unrealistic initial estimates of project duration.

Table 7.3: Slippage of capability at the time of project approval

Project	Planned Initial Operational Capability	Planned Initial Operational Capability at Approval	Slippage (months)
Additional Trooplift Helicopters	2007	2011	48
AEW&C	2004	2007	36
Amphibious Ships	2010	2014	48
Armed Reconnaissance Helicopter	2006	2007	11
ADF Air Refuelling	2006	2009	36
Anzac anti-ship missile defence	2007	2011	48

Source: Various DCP, Annual Reports, Budget Papers and Ministerial Statements.

Capability acquisition

So what happens to projects once they are approved and become the responsibility of the DMO to deliver? To answer this question we have collected information on the performance of projects valued greater than $200 million (and for which adequate information could be found) which have been mentioned in Defence Annual Reports and Budget Papers over the past five years.

The resulting data set was disappointingly small; a mere 45 projects out of the more than 300 that were active over the period. This was unavoidable because Defence only reports the performance of the most expensive projects and then only in part. In fact, to assemble even this limited amount of information took more than a week of intensive trawling through budget papers, annual reports, defence capability plans, unclassified 'Pink Books', media releases, speeches, parliamentary hansard and questions on notice, specialist magazines and reports from the Australian National Audit Office.

Table 7.4 details the fruits of that labour. The information in each of the columns is as follows. *Start date* is the year of government approval for recent projects or the date of contract signature for older projects. The *duration* of the project refers to the time between its start and the point where the vast majority of capability has been delivered and entered service, though projects normally linger for several years past this point tying up loose ends. The *latest cost* is the cost quoted by Defence around the time the project ended. *Post-approval delay* is the number of months between planned Initial Operational Capability (IOC) and the IOC actually achieved or currently planned to be achieved. Where IOC estimates have been unavailable, equipment delivery dates have been used. *Post-approval cost growth* is the percentage increase in the cost of the project exclusive of price and exchange adjustments and deliberate increases/deceases to project scope (like the decision to put a larger gun on the Anzac frigates or increase the number of troop lift helicopters purchased). Also excluded are inter-project transfers. However, where the scope of a project has been decreased to accommodate rising costs, the effective rise in unit costs has been listed.

In assembling the information, it soon became apparent that certain characteristics of projects correlated strongly with performance. We have labelled these as *risk factors* in Table 7.4 and listed each project's exposure to them according to Table 7.5.

Table 7.4: Project risk factors

	1	2	3	4
	Development	Software	Australian Unique	Local Production
	Predominately new equipment, or an *ab inito* upgrade, for which we are the first or a very early customer.	Project depends on extensive software development and/or systems integration.	Equipment has been entirely designed or substantially modified to our requirements.	New production line will be built or a foreign a foreign line will be duplicated in Australia.
	Equipment developed by evolving an established design.	Project requires a moderate level of new software and/or systems integration.	Equipment has significant modifications to meet our requirements.	Assembly of foreign components in Australia and/or significant Australian content.
	Equipment already established in military service or in use commercially.	Project either does not depend on software or software is already complete.	Few or no modification to meet our requirements.	Equipment largely imported from overseas.

Labelling projects accurately according to the scale in Table 7.5 is, to some extent, a matter of judgement. Not only is it difficult to use a single scale to label both upgrades and acquisitions, but the intrinsic technical difficulty of projects represents a further complication. There is a lot of difference between designing and constructing a patrol boat and doing the same for bleeding edge electronics systems on an AEW&C aircraft. But even if the details of the specific judgements in the final columns of Table 7.4 are open to debate, the overall trends are nonetheless clear:

- Cost increases to approved projects are relatively infrequent, or at least less frequent than often supposed.

- Long delays are common in projects that have several risk factors rated high.

In fact, the relatively few cost increases detailed in Table 7.4 probably overstates the situation. Our limited sampling of expensive projects unavoidably skews the result, given that smaller projects are usually easier to plan and deliver. In fact, DMO have advised that from a study of 239 completed projects valued in total at a $26.8 billion, the total final cost was around 98% of approved budget. This is perhaps not surprising. Once a project is approved the tendency is to manage within the cost cap and, if necessary, to compromise on capability. The Collins submarine project is a prime example.

The reported delays across the entire program managed by DMO (including smaller projects) are also somewhat less than that which might be inferred from Table 7.4. In February 2007, DMO told a Senate Committee that only 57 out of 230 projects were delayed. As noted above, the difference is probably because our sample of projects is limited to expensive projects which tend to be riskier and to hang around longer when they go off the rails. Or it could be that DMO reports delays relative to revised schedules rather than those planned at project approval. Until such time as complete public disclosure of project performance occurs, we are left to speculate.

In any case, even taking the overall DMO reporting at face value leaves no reason for complacency. In February last year 18.5% of the DMO project budget represented projects with a delay in excess of 12 months, including 17.3% with a delay in excess of 18 months. With around $50 billion worth of projects underway, this translates to more than $8 billion worth of capability that will arrive more than a year and half late.

And just as rising costs lead to delays, delays lead to rising costs. If nothing else, Defence has to carry the cost of administering projects longer than planned, and equipment that was planned to be retired has to be kept longer, incurring unplanned costs and complicating logistics planning.

Before leaving the question of delays, it's worth mentioning that the final entry into service is sometimes driven by factors beyond the acquisition of the physical assets. For example, delays with the initial operational capability of the Armed Reconnaissance Helicopter were largely due to the failure of non-materiel inputs to capability.

Should we be worried?

It's sometimes argued that Australia's performance in defence acquisition is not that bad when compared with the United States and United Kingdom. This argument misses the point; both the United Kingdom and United States use their very substantial procurement budgets (2.5 and 18 times larger than ours respectively) to pursue highly developmental defence programs. The question is: should Australia be taking on anything like the sorts of risky projects that our much larger friends do? The cost of doing so is high; mounting delays and rising costs do more than embarrass Defence officials and their political masters, they directly compromise our security in at least three ways.

First, delayed projects—by definition— fail to deliver equipment to the ADF on time. No defence acquisition is made on a whim (we hope); every taxpayer dollar spent on military equipment is designed to deliver military capabilities at a level and time that our strategic circumstances demand. If a capability is delivered late or below specification, we are at greater risk than was intended. It is as if we have paid for an insurance policy but received no coverage.

Second, rising costs compromise cogent force structure planning. Each and every capability proposal has to be balanced against the alternatives. This can only be done if a reasonable estimate exists of what the capability, and the alternatives, will cost. The very real danger is that rises in costs for projects in the pipeline now will force uncomfortable compromises, extended delays or even the cancellation of proposals yet to come. The resulting force structure may progressively owe more to happenstance than deliberate planning.

The adverse impact of rising costs can be insidious on the value delivered to the taxpayer. Take the F-111 for example. In 2003, Defence was scrambling to make ends meet because of cost growth in the procurement program and elsewhere, and the decision was taken to retire the venerable F-111 fleet. This means that the $438 million spent on a new air-to-surface stand-off weapon for the F-111 will deliver just 3 years of operational service (after increasing in cost by 35% and arriving 108 months late in 2007). And the F-111 is just one part of the overall air combat capability saga that will see the multi-billion dollar classic Hornet upgrade complete

the year *after* the new Super Hornets arrive. If the true cost and risk of the upgrade had been appreciated earlier, the business case for an earlier and larger Super Hornet purchase might have been considered.

Table 7.5: Performance of major acquisition projects (see Table 7.4 for legend)

Project	Start date	Duration (years)	Latest cost ($m)	Post-approval delay (months)	Post-approval cost growth	Risk Factors 1	2	3	4
JORN	1991	12	1,226	65	0%				
Collins-class submarine	1987	14	5,078	62	21% [1]				
P-3C Update	1992	10	904	51	0%				
HF Modernisation	1996	ongoing	673	35 to 57	scope ▼				
Anzac Ship Helicopter (Seasprite)	1997	cancel	953	84	100% [2]				
AEW&C	2000	ongoing	3,472	28	0%				
Air Defence Command and Control	2003	ongoing	263	30	0%				
Air-to-Surface Standoff Weapon	1997	9	445	108	32%				
Anzac Ships	1989	17	5,377	16	0%				
Coastal mine-hunter vessels	1994	12	1,257	40	0%				
Hornet Upgrade (Ph.2.3) EWSP[3]	2004	ongoing	307	24	0%				
FFG Upgrade	1999	ongoing	1,504	60	48% [4]				
Heavyweight Torpedo	2003	ongoing	432	6	0%				
Lightweight Torpedo	1999	ongoing	287	48	0%				
Collins Operational Capability	2003	ongoing	452	6	0%				
Anzac Missile Defence (Ph. 2A)	2004	ongoing	359	0	0%				
Anzac Missile Defence (Ph. 2B)	2004	ongoing	438	0	0%				
EWSP for ADF Aircraft	2003	ongoing	303	6	0%				
Bushranger Infantry Vehicle (initial)	1999	7	352	39	19% [5]				
M113 Upgrade	2002	ongoing	624	13	0%				
Armidale Class Patrol Boats	2002	5	559	0	0%				
Armed Reconnaissance Helicopter	2001	ongoing	2,026	24	0%				
Hawk Lead-in-Fighter	1996	6	1,031	12 to 96[6]	0%				
ASLAV (Ph. 3)	1999	ongoing	681	2	4% [7]				
Air-to-air refuelling aircraft	2003	ongoing	1,750	0	0%				
Tactical Air Defence Radars	1998	7	209	52	19%				
Collins Augmentation	1999	3	236	0	113%				
Collins Sustainability	2002	ongoing	396	0	0%				
Hornet Upgrade (Ph.2.1) radar	1998	5	473	6	0%				
Hornet Upgrade (Ph.2.2) avionics	1998	9	558	12	0%				
Hornet Upgrade (Ph.3.1-2) structure	2004	ongoing	999	0	0%				
Air-to-Air Weapons	1998	6	423	32	25%				
Evolved Sea Sparrow Missile	?	ongoing	621	0	0%				
SM-1 replacement for FFG	2004	ongoing	575	3 to 18	0%				
Milsatcom - ground	1997	ongoing	210	0	0%				
C-130J Strategic Airlift	1994	9	1,070	25	0%				
Additional Trooplift Helicopters	2004	ongoing	3,557	0	0%				
Milsatcom - payload	1997	7	348	12	-7%				
Tank Replacement	2003	ongoing	423	0	0%				
C-17 Strategic Airlifter	2005	3	1,838	0	0%				
Recent Approvals									
Follow-on Stand Off Weapon	2006	ongoing	373						
Next Generation Satellite	2007	ongoing	790						
AWD	2007	ongoing	7,542						
Amphibious Assault Ships	2007	ongoing	2,949						
F/A-18 Super Hornets	2007	ongoing	3,156						
Army Vehicles (Overlander)	2007	ongoing	3,198						

[1] Based on $1,074m worth of remediation to make submarines operational.
[2] Opportunity cost of cancelled project.
[3] Risk refers to initial bespoke ALR2002 solution that was abandoned thereby causing delay.
[4] Unit cost increase from reducing from 6 to 4 vessels accompanied by only $54m in savings.
[5] Reduction in initial purchase from 370 to 299 vehicles in initial purchase.
[6] Delays relate to Australian unique avionics and weapons systems
[7] Unit cost increase due to reduced numbers.

The FFG upgrade is another example. Once again to save money, it was decided in 2003 to cut the FFG fleet from 6 to 4 vessels. Because equipment had already been brought for their upgrade and the upgrade project was increasing in cost anyway, the

taxpayer got back just $58 million from the $1.5 billion contract. Worse may be yet to come. Navy's website says that the remaining four FFG will remain in service until 2015-2021—a credible return on investment even with the FFG upgrade scheduled to deliver initial operation release five years late in 2008. But if there is not enough money to keep the FFG in-service concurrent with the delivery of the new Air Warfare Destroyers due in 2015, the return on investment from the upgrade will collapse even further.

Finally, delays can have a deleterious impact on the sustainability of the existing ADF. Military equipment is nothing without adequate numbers of trained and experienced personnel and delays in equipment delivery can compromise the sustainability of the workforce. The Collins program, for example, was supposed to allow a smooth transition from the six Oberon class boats, but delays in the delivery of the Collins as the Oberons were de-commissioned saw the number of experienced submariners fall at a critical time—a situation Navy is yet to recover from.

So we should not just be worried, we should be impatient to see defence capability planning and acquisition improved.

What should be done?
The Kinnaird reforms to defence procurement have done a lot to improve how Defence goes about planning and acquiring capability, and Defence and DMO have been active in implementing those reforms. But five years on, and with a new government in place, the time is right to take the next step.

Here are seven recommendations to that end:

1. ***Make Defence live within a fixed long-term budget.*** The central problem with Defence's capability planning is not the inherent complexity or uncertainty of the task, both of which can be managed. It is the systematic underestimation of cost and schedule prior to second pass. Correcting this bias will not be easy. But, as things stand, there is little incentive for Defence to be realistic about initial project costs. In fact, the contrary is the case. Take the Air Warfare Destroyer project. Would the government have included the Air Warfare Destroyer in the DCP back in 2000 if they had known how much it was really going to cost? And what practical options did they have to call off the project when the final figure emerged? It would have been a brave politician to tell the folks in South Australia that their cherished project had been cancelled because it no longer represented value for money.

2. One way to force discipline on Defence planning is to impose long-term fiscal discipline across the entire Defence budget. In capital investment, as elsewhere in Defence, planning proceeds as if there is an infinite spring of taxpayer dollars from which the budget can be replenished. And for the past eight years this has effectively been the case. Despite lots of talk about rigorous strategic planning, Defence has lurched from one implausibly justified decision to another and been rewarded with more money along the way. They have not planned well because they could afford not to. Making Defence live with the financial consequences of their planning could only improve the rigour with which future plans are made.

3. ***Strengthen internal review***. In a hierarchical organisation like Defence, the potential for group-think to take hold is ever present. To counter this, each and every new capability proposal should be contested by an independent multi-disciplined 'red team' from within Defence—just as it was in the days of the now-defunct Force Development and Analysis Division. As a matter of common sense, any new review body must be completely independent of the Capability Executive which sponsors proposals. In addition, when it comes to the question of initial cost and schedule estimates, it would make sense for DMO to have responsibility for confirming the figures put forward by the Capability Executive. Not only does DMO have the largest pool of experience and expertise on such matters, but they have an incentive to get estimates right rather than have to explain the difference at second pass.

4. ***Professionalise the Capability Executive.*** At present, project proposals are developed by ADF officers who are mostly posted in from operational units. While recent operational experience is an essential input to sound capability development, there is no reason to think that an Air Force pilot, Army company commander or Navy warfare officer has the skills and experience necessary to plan multi-hundred million dollar acquisition projects. The Capability Executive needs to develop an experienced cadre of capability development professionals—including experienced civilian project planners and managers and a core of retired military personnel with capability development, project management and engineering experience. Officers with recent operational experience would still be needed, but in far fewer numbers.

5. ***Continue reform of DMO.*** So far, so good, with the reform of DMO. The question is what to do next. The oft-raised possibility of making DMO an executive agency warrants close consideration, and no doubt it will be looked at by the recently announced review of defence procurement. Irrespective of the outcome, there are two things that need to happen which would be consistent with (but not dependent on) DMO being recast as a more independent executive agency:

    - DMO needs to be released from the arcane strictures of APS personnel management that make it hard to attract people with competitive commercial experience, and even harder to manage underperformance.
    - The head of DMO needs to be made responsible for giving independent and direct advice to the government on the risk of project proposals.

    - ***Make military-off-the-shelf the default***. It has long been held that Australia has unique capability requirements that justify *ab initio* designs and/or substantial modifications to existing platforms. It is the view of this author that the instances where this is assumption is justified are much fewer than reflected in the pattern of Australian defence procurement. So much so, that military-off-the-self (MOTS) equipment should not just be an option, it should be the default option in every capability proposal. Just to be clear. MOTS equipment means equipment that;
    - is already established in-service with the armed force of another country or Australia

- is sourced from an established production facility (not just a MOTS design)
- has at most minor modifications to deliver interoperability with existing ADF and/or allied assets.

Of course there will be instances where it makes sense to pay more and take greater risks to achieve a comparative capability advantage, for example, by joining a foreign program developing the next generation of equipment. And at other times the market will simply not offer anything suitable—as with the upgrade of older platforms. Nonetheless, as a firm policy, any departure from MOTS procurement should only occur where robustly justified on strategic and/or technical grounds, and with the cost of doing so made transparently clear.

6. ***Be strategic about local defence industry.*** Australia's self-reliant defence posture requires a level of local defence industry. Consequently, it is sometimes necessary to quarantine projects from foreign competition to ensure the sustainment of critical defence industries within Australia. That said; it is clear that the decision to use local production is often made on other than strategic or financial grounds. The fact is that governments like creating jobs in Australia. Leaving aside the questionable economics of doing so in a globalised arms market (and an economy at full capacity) there is a cost to be reckoned.

   Any claim that the premium for domestic construction is small ignores the basics of production economics. There is a reason why commercial firms pursue economies of scale. Every new production facility carries with it a hefty fixed cost and every new production run pays a learning penalty that an established production line does not. For these reasons, defence acquisitions should be sourced from the international market without favour or prejudice to local suppliers—except in those circumstances where self reliance or through-life support capabilities are a factor. And, where preference is given to local industry, the additional cost and risk should be indentified so that the self-reliance being purchased can be tested for value-for-money and the opportunity cost be understood.

7. **Report the performance of Defence and DMO in developing new capability.** Although much more information is now made public on the planning and performance of defence projects than in the past, Australia still lags behind the level of disclosure of the United States and United Kingdom. Aside from simple accountability for billions of taxpayer dollars, greater transparency would help drive improved performance just as it does in any other field of endeavour. It is not that the data is unavailable; as already mentioned DMO comprehensively report to government on the progress of projects (and also on sustainment activities).

These recommendations, if implemented, would not only change the processes for capability planning and acquisition, they would change the shape of the ADF and broader Defence organisation.

A greater reliance on MOTS solutions would simplify the process of planning and acquisition. The breakneck speed with which the C-17 acquisition was executed (and the good outcomes of the acquisition) provides an example of what can be achieved. If more projects like this were pursued, at least some of those military personnel presently tied down administering long drawn out acquisition projects could rejoin the

operational ADF. Over time, DMO would be come smaller and less costly. With less developmental projects, the Defence Science and Technology Organisation (DSTO) could focus its work on those areas where Australia has no choice but to go it alone—like its ground breaking over-the-horizon-radar—rather than try and cover the waterfront of all military technology. And like DMO, it might also diminish in size.

But the most important change would be that the ADF would get equipment that works, rather than waiting for years as faltering developmental and Australian-unique projects limp on. In recent years Defence has shown what can be achieved with MOTS acquisitions like the C-17 transport aircraft, Abrahams tanks, Sirus Oiler, Javelin missile and (we trust) Super Hornet fighter. The trend needs to continue.

SECTION 8 – 20 SELECTED MAJOR PROJECTS

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1. Network Centric Warfare – an overview
2. FFG Progressive Upgrade—SEA 1390
3. Collins Replacement Combat System—SEA 1439
4. ANZAC Anti-Ship Missile Defence—SEA 1448
5. Air Warfare Destroyer (AWD)—SEA 4000
6. Artillery Replacement —LAND 17
7. Field Vehicles and Trailers (Overlander)—LAND 121
8. Armed Reconnaissance Helicopters—AIR 87
9. Airborne Early Warning and Control (Wedgetail)—AIR 5077
10. 2 CRU/3 CRU Replacement (Vigilare)—AIR 5333
11. Bridging Air Combat Capability (Super Hornet)—AIR 5349
12. Hornet Upgrade—AIR 5376
13. Air-to-air Refuelling—AIR 5402
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15. Maritime Surveillance & Response (AIR 7000)
16. Amphibious Assault Ship (LHD)—JP 2048
17. Lightweight Torpedo (Djimindi)—JP 2070
18. Battlespace Communications System—JP 2072
19. Electronic Warfare Self Protection for Selected Aircraft (Echidna)—AIR 5416
20. Obituary: ANZAC Ship Helicopter (Seasprites)—SEA 1411, 1996-2008

Note: At the time of writing, the government-mandated review of the future air combat capability was yet to report. The discussions of the air combat projects AIR 5077, 5333, 5349, 5376, 5402 and 6000 should be read with this in mind.

Network Centric Warfare – An Overview

Project overview and key issues
Network Centric Warfare, or NCW, is the term that describes one of the most fundamental forces shaping the ADF over the next two decades.

The benefits the ADF and its allies are seeking from NCW were summarised in May 2003 by then-Chief of the Defence Force General Peter Cosgrove as 'shared omniscience'. The ADF's goal in embracing NCW is what it terms a 'Network-Enabled Force' where information is shared automatically between members of a unit, group or force, and their sensors and weapons, in close to real time with minimal (or, ideally, no) re-formatting, manual handling and re-entry.

The benefits of NCW are simply stated: commanders and their troops will know where they and the enemy are at all times and what the enemy is doing as soon as it happens. Armed with this information, commanders can react faster than their opponents – what the ADF describes as 'getting inside the enemy's decision cycle'. Tactical information provided by individual troops, ships or aircraft can be converted instantly to targeting information for precision-guided weapons. And force planners and logisticians know from minute to minute the locations and status of combat units, reinforcements and supplies.

These benefits are delivered by much the same office automation processes and technology employed by the commercial world. Most of the NCW technology adopted by defence forces around the world has its genesis in non-military Information and Communications Technology (ICT) applications.

However, technology is only part of the NCW construct. Organisations must be re-configured and streamlined to exploit the functionality delivered by the new networking technology, and individuals must be trained both to use the technology and operate as effective members of the re-configured organisations, whether combat units, headquarters or logistics and administrative organisations.

Modern warfare is increasingly a 'Joint' undertaking involving multiple services and supporting elements working as a coherent whole. So, in order to capture the benefits of NCW, the ADF is implementing its NCW vision across the entire force in a graduated way. The ADF NCW Roadmap was first published in October 2005, and then updated in March 2007.

The NCW Roadmap is the blueprint for the ADF's transition to a seamless, joint, network-enabled force by 2020 and sets out the milestones critical to the realization of the NCW vision. The Roadmap encompasses the whole of Defence and outlines the key responsibilities for NCW implementation by all stakeholders, acknowledging that it needs to be flexible enough to accommodate technical innovation as well as changes in operational doctrine.

The Roadmap identifies four concurrent tasks which will enable the ADF to become a mature NCW force:

- Set the NCW-related targets and milestones for the ADF
- Establish the Network that will link engagement systems such as guided weapons and fire control systems with sensor and command and control systems
- Develop the critical human element of NCW by initiating changes in doctrine, education and training
- Accelerate the process of technical change and innovation through collaborative research and development with DSTO and industry.

There is no "NCW Project" as such. Instead the Roadmap identifies some 48 major equipment and systems projects or sub-phases already in the Defence Capability Plan. Collectively, these will deliver the ADF's network-enabled capability.

In total these projects are worth nearly $28 billion and range from the acquisition of equipment ranging from airborne early warning aircraft and the F-35 Joint Strike Fighter to tactical data links, satellite communications systems and amphibious landing ships with integrated command and control suites. The NCW Roadmap shapes and coordinates these projects to ensure they contribute collectively to the ADF's NCW capability goals.

Defence has identified a series of milestones to measure progress in achieving an NCW capability within six separate domains: the networked Coalition Domain; the Joint Force Domain; the Land, Maritime and Aerospace Domains; and the ISR (Intelligence, Surveillance & Reconnaissance) Domain. These milestones are mutually supporting and all contribute, ultimately, to the goal of achieving a Networked Coalition Combat Force by 2016:

2008: Networked Special Operations Unit; Networked Air Combat Force
2009: Networked Army Battle Group; Networked Rapid Mobility Force (Aerospace)
2011: Networked Maritime Task Group; Networked Combat Support Force (Aerospace); Networked Tactical ISR
2012: Networked Special Operations Task Group; Networked Deployable Joint Force HQ
2014: Networked Fleet (Maritime); Second Networked Brigade; Networked Aerospace C4ISREW Force; Networked Operational ISR; Networked Operational Joint Task Force
2016: Networked Joint Force; Networked Coalition Combat Force

The Roadmap acknowledges the key role of technology mastery and seeks to accelerate the process of change and innovation through Defence's Rapid Prototyping, Development and Evaluation (RPDE) program.

The 2007 edition of the NCW Roadmap includes an analysis of the current force which notes that the three services are at different states of NCW development. Navy is most advanced, having operated with coalition partners since the 1970s, beginning with platform-to-platform datalinks, then satellite communications and operating in a recognisably network-centric environment with allies and coalition partners over the past few years. The RAAF and Army lag some way behind, with the Roadmap observing that they continue 'relying on manual transfer of information across gaps between systems. While data links are prevalent within the maritime environment, voice communications still dominate the land and air environments.'

That said, ADF air power capabilities will receive a boost by 2010 with the delivery of new airborne early warning, ground-based command and control, precision-guided stand-off missiles and network-enabled combat aircraft such as the F/A-18F Super Hornet Block II. These capabilities are all key elements of the NCW Roadmap.

Similarly, the Hardened and Networked Army (HNA) initiative, which is also shaped by the NCW Roadmap, will transform the Army's networking capabilities and enhance interoperability with key allies. However, the Army's ambitions suffered a set-back in 2007 when the contract for a key NCW-related project, JP2072 – Battlespace Communications System Land, was terminated. Many of the capabilities sought under this contract will now be delivered through the procurement process in place for Projects Land 75 radio communications (Battlefield Command Support System) and 125 (Soldier Combat System). Funding of these communication capabilities will be in accordance with the original project approvals while a new acquisition strategy for JP 2072 is being sought.

Meanwhile the sensor, weapon and command and control suites on the Navy's new Air Warfare Destroyers and amphibious landing ships will enhance the network-enabled

capabilities of the Navy at both national and coalition level. A growth path, if required, would enable the RAN to deploy an anti-ballistic missile capability as part of a US-led coalition.

A key inclusion in the 2007 edition of the plan was the RPDE program. This was set up in 2005 by Defence's Capability Development Group (CDG) to engage Australia's defence industry and hasten the development and fielding of critical NCW-related technologies and operational solutions to pressing problems. Over 100 Australian defence companies have joined RPDE since it was established, and the program is widely acknowledged to have been a success.

RPDE differs from R&D organisations such as DSTO in three important ways:

- Collaboration – it spends up to $20 million each year funding R&D and studies by combined Industry/Defence teams to identify and develop rapid prototypes and propose solutions to urgent operational NCW-related problems
- Tempo – RPDE Program task schedules are measured in months rather than years, to enable more rapid fielding of NCW innovations
- Focus on all Fundamental Inputs to Capability – RPDE doesn't focus just on technology and equipment: it looks also at personnel, training, cultural, organisational, support and command and control aspects of NCW-related issues.

That final point, according to the Roadmap, is the key strength of the RPDE Program: it is focused on implementation, and a key deliverable in each task is an implementation plan which addresses both the networking and Human dimensions of NCW.

While significant progress is being made in the networking dimension, Defence as a whole has really only begun the long-term program of work required to address the human dimension of NCW. That program will see significant and, in some cases, fundamental changes to organisations, structures, individual and collective training and the recruitment and education of personnel.

Defence plans to publish an updated NCW Roadmap towards the end of 2009, reflecting the defence policy guidance contained in the new Defence White Paper. However, its implementation cannot proceed faster than the individual projects which contribute to the planned NCW capability.

According to CDG, the milestones published in 2007 are still the planned waypoints in achieving a network-enabled ADF by 2020. While some of the dates may have altered slightly as project schedules get adjusted, the ultimate 2020 goal remains achievable and is being pursued.

Defence's caution in setting out its goals reflects the challenges of integrating legacy systems and equipment into a new and complex NCW environment. Defence considers the relationship between combat force elements carefully during the Capability Development process, and particularly the requirement to network them where appropriate. A networked force is important to achieve the maximum possible effects from battlespace entities. Notwithstanding, Defence warns that the sheer cost of integrating some legacy systems may prevent implementation of some of its networking strategies.

This aspect of pursuing the NCW goal, along with choosing which technical standards are required to meet both ADF and coalition interoperability needs, will remain a major challenge and persistent source of risk for the ADF and wider defence organisation.

FFG Progressive Upgrade (SEA 1390 Phase 2)

With the decommissioning of two of the oldest ships, HMAS Canberra and Adelaide in November 2005 and January 2008 respectively, the RAN now has four Adelaide Class frigates. Based on the US designed FFG-7 guided missile frigate, the youngest of the remaining four were built in the United States and the others in Australia. Designed as carrier escorts for operation in low to moderate threat environments, they came with modest combat capabilities including anti-air and anti-ship missile systems, a 76mm gun and torpedo tubes. Additional enhancements for RAN operations included the addition of a Seahawk helicopter and the Nulka anti-missile decoy.

The SEA 1390 Progressive Upgrade project was initiated due to the growing mismatch between the capability of the FFG's unchanged sensor and weapon systems and the increasing and complex regional threat environment. The ships also experienced supportability problems through component obsolescence and the high maintenance costs of some equipment. This substantial upgrade is expected to restore the FFGs parity against regional capabilities through improvements to their air defence, anti-submarine and anti-surface warfare capabilities, with specific emphasis on improved self-defence against anti-ship missiles—a significant performance shortcoming. It is anticipated that that the service life of the fleet will be extended to the period 2016-2020, in time for the delivery of the three Hobart class air warfare destroyers.

ADI Limited (now Thales Australia Ltd) was awarded the prime implementation contract, now worth some $1236 million (Jan 2008 prices). ADI's successful bid included the upgrade of the existing FFG fire control system to a modern variant, the Australian Distributed Architecture Combat System (ADACS), and the installation of an Mk 41 VLS missile launch system. The Evolved SeaSparrow Missile (ESSM) will be used as the short range self-defence missile, while the Phalanx close in weapon system will also be integrated into the fire control system.

The command and control system is being wholly replaced with a local area network linking all sensors and weapons. The hull-mounted sonar is also being replaced and the long-range air warning radar upgraded. The provision of the Link 16 tactical data link will improve communications with allies, while replacement of the diesel generators and static frequency converters will improve the ships through-life supportability. A further upgrade will see the four ships equipped with SM-2 surface-to-air missiles, to further boost the ships' air defence capabilities. That task will be undertaken separately but in parallel with the upgrade program.

While extending the life and reliability of the platform was not considered unusually difficult, the development and integration of the ships combat system has been a major challenge. Schedule risk for this project has always been high due to the complex and extensive weapon, sensor, and command and control systems upgrades. Difficulties with the integration task have contributed to an overall schedule delay of the last ship to be upgraded by four and a half years. This has been a troubling issue with the project in view of the high intensity operations, which have involved the RAN in recent years.

The lead ship in the program, HMAS Sydney, was formally handed back to the Navy on 28 April 2006, following extensive harbour tests and sea trials which had commenced in late 2004. Contrary to some speculation, the sea trials revealed no adverse impact on the ship's performance due to increased weight from the upgrade or instability from the forward mounting of the Mk 41 Vertical Launch System.

HMAS Sydney achieved contractual provisional acceptance on 15 December 2006. However, there are known deficiencies with the underwater warfare systems, the electronics support

system and the Australian Distributed Architecture Combat System (ADACS) software. Under contract provisions, work by the prime contractor is to continue to rectify the deficiencies before HMAS Sydney's acceptance, now scheduled for late this year (2008). Initial operational release, previously anticipated in mid-2007 has been deferred to this year to allow for the resolution of Navy's concerns with support deficiencies.

The Rafael C-Pearl ESM system has a number of deficiencies, including the antennae, hardware (upgraded and remaining legacy equipment) and software. The Commonwealth continues to work collaboratively with Thales Australia (ADI Ltd) and Rafael on a program to remedy observed performance shortcomings and demonstrate compliance with contracted requirements. Good progress has been made against the schedule as planned. Unless the test results indicate that there is a high probability of the system meeting the contracted requirements, the introduction of an alternative system, along with the associated risks, may need to be considered.

The first follow-on FFG for the Upgrade, HMAS Melbourne, entered the Captain Cook Graving Dock at Garden Island, Sydney in mid-February 2006 and formally commenced the production and installation phase of the upgrade later that month. HMAS Melbourne achieved provisional acceptance in October 2007. HMAS Darwin commenced the docking phase of her upgrade in January 2007, which is now completed. HMAS Newcastle entered the upgrade docking in November 2007 and is on schedule to achieve contractual provisional acceptance in 2009. The program should be completed with the contractual acceptance of the last ship in mid December 2009. Despite the extensive and serious schedule delay the project is still within budget although some future schedule slippage is likely—a not inconsiderable issue given the relatively short remaining life of the vessels.

Cumulative expenditure of the project to 31 March 2008 was $1154m from an approved budget of $1494m, including contingency (2007-2008 Additional Estimate). Forecast expenditure for 2007-08 continues to be $96m, in line with the Additional Estimate. The cost impact of the decision to upgrade four instead of six frigates is now finalised. The FFG Upgrade prime contract was renegotiated as a global settlement and a Deed of Settlement and Release signed 29 May 2006. This formalised the Government’s decision (November 2003) to reduce the FFG Upgrade project from six to four ships. It also settled a number of outstanding commercial and contractual issues on this project, and agreed a Contract Final Acceptance of December 2009 but within the fixed price which was reduced by approximately $40 million dollars (Feb 98 Contract base date price).

Australian Industry Involvement (AII)
ADI Limited was contracted to achieve AII levels of 52 per cent of the contract value. The support and maintenance of new operational software at the Weapon System Support Centre, established by ADI at Garden Island, is an important component of AII. It is anticipated that ADI’s 52 per cent target of contract value will be realised.

Collins Replacement Combat System (SEA 1439 Ph.4)

Construction of the Collins Class submarines, which commenced in the late 1980s, was the largest and most costly military project undertaken to that time in Australia. As may have been anticipated with such a complex undertaking, it encountered serious difficulties. In many respects these were not managed as well as they might have been.

But the problems were not insurmountable and, while the faltering program initially drew extraordinary levels of public criticism, what was then widely disparaged can now be seen as a remarkable industrial achievement. The Royal Australian Navy is being equipped with six of the world's most advanced conventional submarines.

However, the very demanding design, protracted development and integration of what was intended to be the world's best combat system was an undertaking of unanticipated difficulty and the result gave rise to intractable problems in its operation. From 1994 onwards, the combat system's software was the greatest single concern, successive releases of which consistently failed to perform as hoped, raising doubts as to whether they system would ever work satisfactorily. Advances in technology, especially computer technology, were especially revealing of the system's inherent problems. By the end of 1998 it was clear that the system was never going to work as intended.

The McIntosh-Prescott report of July 1999 found that the combat system was the central problem with the Collins Class submarine. With considerable support from the US Navy, the legacy Combat System suppliers and a number of smaller Australian companies, arrangements were made to 'fast track' capability improvements on two submarines to ensure they had a minimum operational capability. By the end of 2000 five submarines had been delivered and provisionally accepted and the last was almost complete. But the combat system was still seen as cumbersome, difficult to operate and unable to handle data adequately. The McIntosh-Prescott report recommended the acquisition of an in-service 'off-the-shelf' combat system. A number of systems were considered, with two selected for evaluation. However, strategic considerations led the then Government to terminate the selection process in July 2001. Instead a 'new acquisition strategy would be developed around ensuring interoperability with the United States.' A formal agreement on cooperation on submarine related matters was signed in Washington on 10 September 2001.

The decision to buy the US system, despite the delays and risk associated with what is essentially a developmental program, speaks the technical merits of the system that has been developed and to the value of the American alliance for the navy and the submarine force. It also offers the advantage of participating in a continually evolving combat system.

SEA 1439 Phase 4A involves replacement of the tactical and weapon control component of the combat system by the AN/BYG-1 tactical command and control system, as well as sonar control and display upgrades derived from the previous 'fast track' process, and system and navigation improvements. The developmental risk associated with the AN/BYG-1 is shared with the USN, while Australia assumes the risk associated with the remainder of the sonar and navigation upgrades, including overall system integration risks.

Under the arrangement with the USN, two systems have been acquired under an FMS case and the remaining systems and system support are being acquired under an Armaments Cooperative Project (ACP). Under this cooperative program the USN, supported by Raytheon US and General Dynamics, are providing the systems and the ongoing development of AN/BYG-1.

The joint AN/BYG-1 continuous improvement program provides for ongoing staged upgrades to both hardware and software elements. The Technical Insertion (TI) program provides for hardware upgrades on a two yearly basis. Hardware upgrades may range from simple replacements for computer processors and supporting infrastructure to more substantial changes where the upgraded elements require rework of the existing cabinet infrastructure. The degree of change would determine when the change would be implemented. For logistical reasons it is anticipated that TI's would be linked to a scheduled short duration docking opportunity.

The Advanced Processor Build (APB) program develops new or enhanced software products that can be supported through the TI program. The APB program provides upgrades on an annual basis and would generally be installed in a short time frame outside of the submarine docking program.

A key element of the ACP is the use of COTS technology updates to manage obsolescence and related integrated logistic support by incremental replacement. With the hardware improvement comes increased processing power, which enables incremental improvement to system software capability and enhanced operational capability.

While MILSPEC was once the only viable option, COTS technology has improved equipment tolerances to adverse environmental parameters. By judicious choice of COTS equipment and environmental testing where necessary, it has been possible to obtain acceptable equipment performance. In some cases COTS equipment is housed in rugged sealed cabinets to reduce the environmental hazards.

All of these practices are employed in the selection and use of COTS equipments associated with SEA 1439 Phase 4A. Any non-conforming equipment is subjected to an intensive safety program in which risks are identified and assessed against the Navy Hazard Risk Index, with mitigation procedures applied as necessary.

Following delivery of fully tested USN tactical software, integration of the RCS at the ITTF was completed and subsequently accepted by August 2006. The approved acquisition strategy for the RCS program identified Raytheon Australia Pty Ltd (RAPL) as the integration support contractor and ASC Pty Ltd as the submarine installation contractor. Under a $54 million contract signed in August 2003, RAPL is tasked to design, develop and produce hardware and software to support the installation and integration of the combat system into the submarines. Under Through Life Support Agreement orders, ASC Pty Ltd has undertaken platform modification design and preparatory work for the installation of the RCS.

An order was placed with ASC for installation of the first RCS in HMAS Waller during Full Cycle Docking (FCD). Following post-FCD sea trials in early 2007, including an extensive period of operational testing, Interim Operational Release (IOR) was achieved in March 2008. Installation of a similar TI02 system in HMAS Farncomb is now underway during its Mid-Cycle Docking (MCD) due for completion in mid-2008, with IOR scheduled for second quarter 2009.

The third RCS installation will be in HMAS Dechaineux during its FCD, which commenced in mid-2006 and will be completed at the end of 2008, with IOR scheduled for last quarter 2009. The next three platforms, HMAS Collins, HMAS Sheean and HMAS Rankin will be progressively upgraded on a scheduled availability basis with all submarines upgraded by the end of the decade.

The systems bought initially, and which have been installed on the first two submarines are the AN/BYG-1 TI02 (technology insertion '02) version. The next four submarines, starting with HMAS Dechaineux, are being equipped with the latest AN/BYG-1 (V)8 TI06 version, delivered under the ACP program. This is now the baseline for all six submarines, implying that the RCS on HMAS Waller and HMAS Farncomb will need to be updated to TI06 at some future stage.

Due to US technology protection concerns there is a secure gateway between AN/BYG-1 and the European-sourced Collins Sonar Sub-System which limits the transfer of data from the Tactical system to the sonar system. However, as the required data flow is predominately from the sonar and other sensor systems to the AN/BYG-1, there is currently no discernable impact from the restriction on the flow of tactical data to the sonar system. This situation will require review in the context of SEA1439 Phase 6 the Upgrade to the Collins Sonar system.

Of the $450m approved funding for Phase 4A, cumulative expenditure to June 2007 was $352m with a further spend of $40m estimated to June 2008, $8m less than anticipated due to reduced cost of some deliverables over original quotations. Under this phase approved

funding covers the acquisition and installation of the current USN AN/BYG-1 system as well as sonar upgrades on all the Collins class submarines.

Australian Industry Involvement (AII)
While the capability enhancements and improvements to the Collins submarine involve overseas sourcing of major equipment items there is very considerable scope for the continued involvement of Australian industry in the design, integration, installation and long term support of the submarines and their equipment as well as ongoing opportunities for the manufacture and supply of components. The original estimate of up to 30% AII is likely to be achieved.

ANZAC Ship ASMD Upgrade (SEA 1448 Phase 2)

Project overview and key issues
The ANZAC Anti-Ship Missile Defence (ASMD) upgrade is designed to provide these ships with a significantly improved self-defence capability against emerging regional anti-ship missile capabilities.

The ANZAC Ships were designed originally as 2nd tier combatants. Their air, surface and underwater warfare capabilities were limited and designed for self-defence in a relatively benign environment.

During the late-1990s the limitations inherent in the ships' baseline configuration became apparent. However, space and weight allowances for future upgrades were made in their design ('fitted for but not with' in the parlance of the day) and they have undergone a series of enhancements designed to increase their surface, underwater and air and missile defence capabilities. (The ANZAC Underwater/Surface Warfighting Upgrade, which is nearing completion, forms Phase 3 of Project Sea 1348, the original ANZAC Ship construction program. This phase has seen the progressive installation across the class of the Harpoon anti-ship Missile and a Mine and Obstacle Avoidance Sonar.)

The ANZAC Anti-Ship Missile Defence (ASMD) upgrade under Phase 2 of Project Sea 1448 was intended to redress the vulnerabilities of the ANZAC Ships to emerging air and missile threats. A number of potential capability upgrade options were studied by Defence and Industry. These were then modelled by DSTO and assessed in realistic simulations of operational scenarios. This process resulted in recommendations for a suite of sensor, command and control and weapons upgrades.

Meanwhile, to provide an effective and efficient mechanism for managing through-life support and for designing and implementing upgrades for the ANZAC Ships, Tenix Defence, Saab Systems and the Commonwealth formed the ANZAC Ship Alliance. The Alliance, headquartered at Rockingham (WA), was charged with determining whether the proposed capability could be procured, integrated and introduced into service and supported within the program budget.

As a result, under Phase 2A, a baseline configuration for the ASMD upgrade was prepared, comprising a number of capability enhancements and system upgrades and associated platform design changes. One essential component of this package, the Link 16 tactical data link, received priority approval for installation under a separate project.

Various internal government processes and reviews saw funding approval for Phase 2A delayed until April 2005, when a Project Alliance Agreement was signed with the ANZAC Ship Alliance under a $260 million contract to implement Phase 2A's high priority elements.

These were the acquisition of an Infra Red Search & Track (IRST) system for improved detection of low level aircraft and incoming missiles from French company SAGEM and the upgrade of the ship's Saab 9LV Mk3 Combat Management System (CMS) to the more capable 9LV Mk3E standard with increased data processing capability to match the planned sensor and weapons improvements.

The DMO reports that Phase 2A is on schedule and under budget. Delivery of CMS and IRST hardware into the ASMD primary integration test site at HMAS Stirling, Western Australia, occurred in March 2008 and the initial integration effort is now under way.

A key part of the ASMD program was to provide a second channel of fire, enabling the ship to engage two or more targets simultaneously using its radar-guided Evolved Sea Sparrow Missiles (ESSM). The baseline ANZAC Ship design has a fire control director to 'illuminate' targets for the ESSM and so can only engage single targets.

Phase 2B included a feasibility study into the addition of an active phased array radar (PAR) to improve the ships' surveillance and target detection capabilities. Phased array radar technology allows a single radar to illuminate more than one simultaneous target, holding out the prospect of a significant capability improvement.

Consideration was also given under Phase 2B to the installation of a very short-range air defence (VSRAD) capability based on lightweight infra-red ('heat-seeking') missiles to intercept anti-ship missiles.

The PAR technology had been developed by an Australian company, CEA Technologies Pty Ltd. Trials of a prototype radar at a land site and then at sea aboard HMAS Arunta were extremely promising and in September 2005 the Commonwealth announced that CEA Technologies had been chosen to provide its lightweight radar system for the ASMD program. The VSRAD option was rejected.

The major components of the CEA system are a search and track radar (CEAFAR) and a phased array missile illuminator (CEAMOUNT). In addition to providing self-protection, the ANZAC Anti-Ship Missile Defence system will also be able to protect nearby vessels such as amphibious, auxiliary support and merchant ships. The technology which enables CEAMOUNT to illuminate several targets simultaneously for ESSM missiles is called Interrupted Continuous Wave Illumination (ICWI); the guidance systems of the ships' ESSMs have had to be upgraded to enable ICWI.

A six-face CEAFAR radar and four-face CEAMOUNT system will be located alongside the ships' existing Raytheon SPS-49 air search radars on a redesigned, lightweight mast atop the ships' superstructure. The necessary design changes, including ICWI licences, may add up to $200 million to the overall cost of the Project, but haven't delayed development of the PAR itself, which remains on schedule and passed its Preliminary Design Review in August 2007.

The Critical Design Review for overall integration of the PAR and Phase 2A hardware remains on schedule for late August 2008. Because of the scale of the design changes, the acquisition strategy has been modified. The capability will be proven at sea aboard a lead ship, HMAS Perth, before installation begins in the remaining ships.

The first 'ship set' of PAR is scheduled for delivery in January 2010, but a full PAR system will be installed at CEA Technologies' purpose-built test facility in Canberra in early-2009 for a three month Qualification and Verification program.

The evaluation and subsequent adoption of the PAR option in Phase 2B has altered the original project schedule. This is due to CEA Technologies' schedules and the need for a 12-

month RAN Operational Test & Evaluation (OT&E) period post Initial Operational Release (IOR). The intended IOR date for the Lead Ship is July 2011. Phase 2B should now be completed in late-2016.

Despite this project's extensive delays, which necessitated cost re-validation by equipment suppliers, risk mitigation studies undertaken during 2004 allowed the project to proceed within current approved funds. The approved budgets for Phases 2A and 2B, respectively, are $352 million (January 2008 dollars) and $426 million. From the combined budget of $778 million, the estimated cumulative spend to December 2007 is $179 million.

The prime contracts with the ANZAC Ship Alliance for Phases 2A and 2B are $254 million and $44 million respectively, with a further $72 million for CEA Technologies under Phase 2B.

The outstanding major risk factors are now associated with the overall ASMD system integration effort and sea trials. The ANZAC Ship Alliance is working to retire residual risk progressively through 2008 and 2009.

Under the as yet unapproved Phase 4 of Project Sea 1448, the ANZAC Ships' SPS-49 radars and Electronic Support Measures will be replaced.

Australian Industry Involvement (All)
There is substantial local industry involvement in the ASMD program through the development, integration, test and verification of the various components by Alliance members including through use of their facilities. Alliance members will also be responsible for the installation, set-to-work, and through life support of the equipment including software maintenance and upgrade.

With the adoption of the PAR option in Phase 2B the value and level of AII has increased significantly. The CEAFAR and CEAMOUNT radars are world-class systems designed and developed entirely in Australia. It is estimated that 130 jobs will be created during acquisition and installation of these radars, and a further 25 jobs will support them through the life of the ANZAC Ships.

Just as significantly, the RAN's adoption of the PAR technology has strengthened Australian industry's prospects in the export market. German shipyard Thyssen Krupp Marine Systems has selected the CEAFAR/CEAMOUNT package along with the Australian-developed Saab 9LV Mk3E CMS as the baseline for its new light frigate designs, and other navies operating ships similar to the MEKO 200-derived ANZAC frigate, or armed with ESSM missiles, have also expressed interest in this unique PAR/CMS combination.

Air Warfare Destroyer (SEA 4000)

In September 1999 Defence commissioned a series of studies to determine the cost, schedule and risk impacts of incorporating a replacement Air Warfare capability into the Australian Defence Force (ADF). The strategic need to provide this capability was outlined in the Defence 2000 White Paper, where the vulnerability of the fleet without a long-range air-defence capability was highlighted.

Without a long-range air-defence capacity, Royal Australian Navy (RAN) fleet units would be more vulnerable to air attack, less capable of defending forces deployed off shore and less capable of contributing effectively to coalition operations. Consequently, the government agreed to replace the FFGs (frigates) with at least three air-defence capable ships, expected to

be significantly larger and more capable than the FFGs and which would make an essential contribution to the ability of the ADF to conduct operations in regional contingencies and to enhance global security and stability.

In its primary role, the new Air Warfare Destroyer (AWD) will provide area air defence for accompanying ships and for land forces and infrastructure in proximate coastal areas, as well as self-protection against attacking missiles and aircraft. The AEGIS weapon system, incorporating the AN/SPY 1D(V) phased array radar in combination with the SM-2 missile, will provide an advanced air defence system capable of engaging enemy aircraft and missiles at ranges in excess of 150km.

With a range of up to 6000 nautical miles and the ability to remain at sea for prolonged periods, the ship's surface warfare function will include long range anti-ship missiles and a naval gun capable of firing extended range munitions. The AWD will also be able to conduct undersea warfare and will be equipped with modern sonar systems, decoys and surface-launched torpedoes. The ability to embark and operate helicopters is also essential, in order to undertake surveillance and response to support these key warfare areas. The ship design will include a margin for combat system growth over the life of the ships, to allow for the addition of new technologies as they become available.

The modern capabilities and sophisticated command, control and communications fit of the AWD will ensure this platform is an enabler for Network Centric Warfare which can integrate seamlessly into a United States (US) task group and have full interoperability with other ADF units. The AWD will therefore provide a truly joint and combined operational capability for the ADF.

In keeping with the Kinnaird reforms, two competing designs were considered when the project came up for second pass approval by government in the latter half 2007. These were the Spanish F100 designed by Navantia, slightly modified for Australian conditions, and the preferred design evolved by Gibbs & Cox from the US Arleigh Burke class.

In June 2007 the Navantia-designed F100 was selected as the baseline platform design for the new Hobart Class Destroyers, which will be named HMAS Hobart, HMAS Brisbane and HMAS Sydney. The F100 has been developed with modern accommodation requirements in mind and has a crew of around 200. It also provides the Navy with a growth path to accommodate tomorrow’s naval warfare technologies.

In selecting the F100, the Government has ensured the Navy will take delivery of an Aegis equipped AWD before any potential maritime air warfare capability gap eventuates. Because the F100 is an existing design in service with the Spanish Navy, and only a minimum of changes are needed to 'Australianise' the design, the AWD Program assesses that there is only a medium level of risk associated with the F100 design. Downsides of the choice are the forty-eight missile cells and single helicopter compared to the sixty-four cells and two helicopters of the losing evolved Arleigh Burke design.

First of class HMAS Hobart is due to enter service by the end of 2014, followed by the others in early-2016 and mid-2017 respectively. The ships are to be built in Adelaide by the AWD Alliance comprising the Defence Materiel Organisation (DMO), ASC Shipbuilding and Raytheon Australia. ASC Shipbuilding and Raytheon were selected in 2005 as shipbuilder and combat system systems engineer respectively. The AWD Alliance operates out of the AWD Systems Centre, opened in Adelaide in August 2006.

AWD build phase and Australian Industry Involvement (AII)
Under the AWD Alliance, ASC Shipbuilding and Raytheon Australia had worked with the DMO to deliver two costed options to government and Navantia is now working with the

Alliance members in delivering the capability to the Navy. The current phase is expected to run until 2017, with key activities being finalisation of the detailed design, and the build of the three ships. The principal AWD contract signed on 4 October 2007 was the three-way Alliance agreement. The Platform System Design contract between the Commonwealth and Navantia SA was signed at the same time.The project is the most complex Defence acquisition ever undertaken in Australia and provides many opportunities for Australian industry.

As an integral member of the AWD Alliance, the Defence Materiel Organisation will work alongside ASC and Raytheon Australia staff in the AWD Systems Centre across a range of technical, financial and project management areas throughout the life of the program. The DMO will work closely with Defence and Industry stakeholders to ensure maximum practical Australian Industry Involvement in the construction and delivery of the three ships. ASC Shipbuilding will fabricate, assemble and test the Hobart Class AWDs at its shipbuilding facility in Osborne, SA, where it will also develop a through-life support system.

This activity includes:

- the procurement of all ship materials and equipment
- the management of subcontract packages for ship module construction around Australia and subsequent delivery to ASC's shipbuilding facility
- installation of combat system equipment.

ASC has engaged US ship designer and builder Bath Iron Works (a subsidiary of General Dynamics) as a capability partner to assist in its role as shipbuilder. ASC is also involved with the South Australian Government's development of the new Common User Facility infrastructure, including ship lift, wharf and dry berths.

As the AWD mission systems integrator, Raytheon Australia will be contracted to complete the design, development and procurement of the 'Australianised' combat system. This includes:

- the integration of the non-Aegis elements of the combat system and the conduct of combat system trade studies
- development and design of the complete AWD combat system with the Commonwealth, USN and the Aegis Combat System Engineering Agent
- development of project management and systems engineering structures and delivery of mission systems integration.

Defence Additional Estimates for 2007-08 show approved project expenditure of $7.025 billion for the build phase with an additional $299 million transferred to Phase 3 from earlier closed phases. AWD Phase 2 and Phase 3 expenditure to June 2008 is $310 million.

The decision to build the AWDs in Australia should ensure significant levels of Australian industry involvement in both construction and through life support. It is anticipated that Australian industry will deliver products and services for some 55 per cent of the near $8 billion AWD program over the next 15 years which will be followed by high value through life support contracts into the middle of the century. While Adelaide-based ASC will conduct the final assembly of the AWDs, around 70 per cent of the ship modules will be built at other shipbuilding sites around Australia, potentially including sites in Western Australia, Queensland, New South Wales, Victoria and Tasmania. This element of the project is expected to be worth more than $460 million.

Artillery Replacement Project (Land 17)

LAND 17 was raised to improve the Army's indirect fire capability through the replacement or upgrade of the 105mm Hamel Howitzer and 155mm M198 Howitzer fleets when they reach the end of their service life. The Australian Army's current artillery systems are based on designs dating back to the 1960s, and which were introduced into service with the ADF in the 1980s. The goal is to provide Army with new protected self-propelled guns, new lightweight towed guns, and a digitised, networked, Battle Management System. The Advanced Field Artillery Tactical Data System (AFATDS) has been selected as the Command and Control component of the Battle Management System.

Land 17 achieved First Pass approval on 14 February 2006, to explore the acquisition of not less than two batteries of protected self-propelled howitzers, not more than four batteries of lightweight towed howitzers, precision guided munitions and a digitised, networked Battle Management System, with in-service delivery anticipated from 2011.

It is anticipated that the business case for Second Pass will be developed in late 2008 with Government approval expected in mid 2009.The following solicitation documents were released on 26 September with varied closing dates:

- an RFT for the acquisition and support of protected self-propelled howitzers (14 April 2008)
- an ITR for the provision of AFATDS (14 November 2007)
- an ITR for the provision of lightweight 155mm howitzers (14 November 2007)
- an ITR for the provision of forward observer equipment as part of the Battle Management System (4 February 2008).The RFT is expected to be released in the third quarter of 2008.

Self-Propelled Howitzers (SPH)
The RFT for the 155mm SPH included provision for separate contracts for the acquisition and support of the SPH capability, to meet the following requirements:

- supply of 18, 24 or 30 SPH systems to achieve an in-service date of June 2011, with an option for the Commonwealth to purchase up to six additional systems within five years following final acceptance under the acquisition contract
- provision of an initial five years support of the SPH capability with options for additional periods of support for the life of the equipment.

It is understood that there are only two contenders for the protected SPH requirement. They are South Korean firm Samsung Techwin teamed with Raytheon Australia offering the AS-9, and Krauss Maffei Wegmann (KMW) from Germany, teamed with BAE Systems Australia and offering the PzH 2000. Both are tracked self-propelled howitzer systems.

Lightweight 155mm towed howitzer
The aim of this ITR was to determine the marketplace for an air deployable Lightweight 155mm towed howitzer (LW155), tactically deployable by air and land to support ADF forces. The LW155 capability would provide support to the close battle and employ indirect fire to shape the battlespace and would thus form part of an Indirect Fire Support System (IFSS).

The LW155 capability sought comprises a minimum of 18 (and up to 35) lightweight howitzers, with exact quantities to be determined in the subsequent RFT. In an obvious if unspoken reference to the availability of the BAE Systems M777A2 (now in full rate production), the ITR made clear the Commonwealth's preference for a non-developmental item with some development only expected for external interfaces with nominated government furnished equipment (GFE).

The LW155 requires a fire control system (FCS) as an integral part of the capability and requires integration with the specified C2 system, AFATDS, and also the portable fuse setter supplied as GFE. Defence must decide whether to acquire this system through a commercial arrangement with BAE Systems or through a Foreign Military Sales case, with the last seen as the preferred course as it may offer the opportunity for early delivery of systems.

AFATDS Joint Fires C2 system
The purpose of this ITR was to determine the marketplace for the supply of the latest Windows XP version of the Advanced Field Artillery Tactical Data System (AFATDS), together with the technical resources for its integration into the Land 17 LW155 and SPH platforms and with other ADF systems. The requirement also includes software development services for Australian customisation and training, and through life support arrangements.

AFATDS is an integrated fire support command and control (C2) system that processes fire missions and other related information to coordinate and optimise the use of all fire support assets, including mortars, field artillery, anti-air missiles, attack helicopters, air support and naval gunfire. The current indicative quantity is for up to 88 AFATDS workstations and their components, with actual quantities to be advised later. Respondents were asked to demonstrate their proposed solution at their corporate headquarters.

The Commonwealth has elected to be the prime system integrator (PSI) but has requested respondents to provide technical integration resources to aid it and prospective L17 corporate partners with ADF customisation of AFATDS and the very complex and extensive integration of AFATDS to:

- the SPH and LW155 platform Fire Control Systems
- the Forward Observer System
- the Theatre Battle Management Core System and Naval Surface Fire Support
- ADF sensors such as Weapon Locating Radars and TUAVs.

Raytheon Australia is believed to be the only contender for the supply of AFATDS and its US parent arranged demonstrations of the system in Australia for the RPDE Joint Fires study. These showed the effectiveness of AFATDS in the coordination of joint fires and led to the adoption of AFATDS as the preferred BMS-F C2 system. Because AFATDS will communicate using advanced military grade digital, secure CNR and LAN connections, respondents will need to provide detailed design and specification of digital CNR options that are compatible with AFATDS.

BMS Fires Forward Observer
The purpose of this ITR is to determine the marketplace for the supply of BMS-F Forward Observer (FO) hardware and software as well as the provision of technical services (managed by the Commonwealth) for the integration with AFATDS and the SPH and LW155 platform fire control systems.

The quantity of FO systems acquired will be confirmed later, but the current indicative quantity will be up to 107 systems – inclusive of all software and hardware. The requirement seeks an advanced FO system that handles the normal aspects of target location and description, and thus the response in terms of number of guns, fuse, charge, projectile etc, the command authority to fire, followed by battle damage assessment. This may include the simultaneous coordination and execution of multiple fire missions with different fire units. However the requirement also requires the system to be capable of calling in and handling offensive air support and naval surface fire support (NSFS).

This project is still in information gathering mode, and the estimated DMO expenditure to June 2008 is $1.33 million.

Australian Industry Involvement
While there will be insufficient demand for a viable local manufacturing capability, there may be opportunities for Australian industry to undertake component production as well as significant involvement in integration, training test and evaluation. Later, it is anticipated that there will be considerable opportunities for local industry involvement in the long term support and maintenance of artillery systems and in the maintenance and support of software.

Field Vehicles & Trailers: 'Overlander' (LAND 121 Phase 3)

Land 121 (Overlander) is a multi-phased project to provide the Australian Defence Force (ADF) with field vehicles and trailers (FV&T) beyond the life-of-type of the current fleet. The ADF fleet of field vehicles and trailers is the backbone of its war fighting force and sustainment structure. The vehicles are used to transport personnel, combat supplies, materiel, replacement combat systems, and when necessary, evacuate casualties. They also serve as platforms and prime movers for command, control, communications, computer and intelligence (C4I) systems and numerous weapon systems.

The current FV&T fleet consists of a variety of light and lightweight Perentie Land Rovers, Unimog 4-tonne trucks, Mack 8-tonne trucks, International S Liner prime movers and general service trailers. Fleet vehicle numbers comprise approximately 1100 (heavy), 2150 (medium), 3950 (light) and 3200 trailers.

The Overlander FV&T replacement solution aims to reduce whole of life costs (including fuel consumption), rationalise vehicle types and numbers, incorporate emerging and legislative design features and capitalise on new ideas from industry. The requirement comprises six generic fleet ranges, with approximately 15 vehicle types. In addition, 18 modules or shelters are to be procured along with nine trailer variants. The total project is worth in the order of $3 billion.

Phase 3 is Overlander's major acquisition phase, which will see the acquisition of the bulk of the fleet. Originally, this phase comprised two sub-phases, 3A and 3B, splitting this very large acquisition into two separate tranches, each requiring second pass approval from government.

Phase 3A, which received first pass approval in mid-2004, was planned to commence the replacement of the current FV&T fleet in certain high readiness units with approximately 1300 vehicles that were to be in-service between 2009 and 2011. The number of vehicles and trailers to be acquired under this phase depended on the government-endorsed capability option and overall project affordability. It was the ADF's intention that the vehicles operate for a minimum of 15 years.

Phase 3B was to follow on from Phase 3A, and was aimed at completing the replacement of the FV&T requirements with between 4000 and 7000 vehicles during 2012 to 2015. There was an overall cost cap of approximately $3 billion on both subphases. Since the intent was that the two subphases would be linked, in pricing the initial requirement, tenderers agreed the same pricing mechanisms and controls would apply to the follow-on requirement. The emphasis was that whole of life costs across the entire Phase 3 purchase would drive the outcome of Phase 3A selection. Separate RFTs for Phase 3A had been released on 13 December 2005, closing mid-June 2006, for three categories of vehicles:

Medium/Heavy MOTS vehicles and support—A restricted tender for the acquisition of medium weight (5 ton) vehicles and modules; medium (10 ton) vehicles including recovery and semi-trailer vehicles and modules; heavy (16.5 ton) vehicles including recovery and semi-trailer vehicles and modules; and truck tractor (35 ton) vehicles. All vehicles in the

medium/heavy section will be able to be fitted with crew protection against projectiles, land mines and explosive devices.

Lightweight/Light MOTS vehicles and support--An open tender for the acquisition of lightweight (1 ton) vehicles and light (2 ton) vehicles with their various task modules.

Trailers—an open tender for trailers (cargo) and their through life support comprising lightweight trailers (750kg), light trailers (1250kg), medium-weight trailers, heavy trailers and semi-trailers.

The tender required delivered equipment to maintain or enhance current capability through improved availability, mobility and personnel protection. A significant proportion of the acquired fleet will need to be fitted for (but not with) Survivability Enhancement Kits to protect their crews. Other improvements over extant capabilities sought through these requirements included the provision of communications and tracking systems and higher payloads and systems throughput. Integrated load handling systems for the 10 ton and 16.5 ton vehicles are being introduced as a new capability.

The initial evaluation of tenders was completed by late November 2006. A draft source evaluation report was prepared and Options and Tender Evaluation Board recommendations were completed by March 2007. The Phase 3A Second Pass business case was then developed for submission to government, recommending a shortlist of two contenders in each vehicle category.

Second Pass approval was received in August 2007 when the Government decided that funding approval should be for the whole of the Phase 3 capability. It also agreed to identify single preferred tenderers in each segment as there was a clear value-for-money selection. The following were selected as preferred tenderers (subject to successful contract negotiations):

- Mercedes Benz Australia/Pacific for Light & Lightweight vehicles (G-Wagon)
- BAE Systems Australia for Medium Weight through Heavy vehicles (based on the US in-service FMTV trucks and Scania truck-tractors)
- Haulmark Trailers (Australia) for trailers.

Subject to negotiations that were expected to be completed by the second half of February 2008, BAE Systems will supply about 2400 medium and heavy trucks to the ADF, Daimler/Chrysler Australia/Pacific will furnish approximately 1100 lightweight and light vehicles while Haulmark Trailers will supply about 3000 trailers in nine different variants.

Both BAE Systems and Mercedes Benz will also sign 15-year support contracts, with each having an option of a further 15 years. All three companies are to enter into long term strategic agreements with the DMO to ensure their respective fleets are operated at maximum efficiency. As previously announced, the government will also purchase a further 250 Bushmaster Protected IMVs from Thales Australia. The total cost of Phase 3 is $3.1 billion. Many specialist vehicle modules, trailers and all the Bushmasters will be produced in Australia. This will be worth approximately $800m.

Future phases of the project will consider further specialised protected light vehicles, with a procurement decision on Phase 4 expected in 2010, involving a potential additional investment of approximately $1.2 billion. In 2012 the government is expected to consider the fifth and final phase of the project which will provide commercial vehicles to augment the fleet for Australian training activities, at a cost of about $300 million.

Australian Industry Involvement
The industry requirements will be based around developing and maintaining sufficient capability within Australian industry to undertake a full range of through-life maintenance and support activities to the maximum extent possible. Land 121 Phase 3 and subsequent phases will offer the following opportunities for Australian industry:

- specific production/design opportunity in the total work package that may contribute to the global market
- production of components that may contribute to the global supply market
- modifications to meet Australian requirements
- production of trailers
- production and integration of shelters/modules for overseas sourced cab/chassis
- project management
- facilities construction
- training and production of technical documentation.

Armed Reconnaissance Helicopter (Project Air 87)

Project overview and key issues:

The Army is acquiring a force of 22 Eurocopter Tiger Armed Reconnaissance Helicopters (ARH) under Project Air 87. These aircraft will serve with the 1st Aviation Regiment in Darwin, the Aircraft Research & Development Unit (ARDU) in Adelaide, and the Army Aviation Training Centre at Oakey.

The Tiger ARH will be a key element of Australia's emerging Hardened and Networked Army. Its suite of sensors and tactical data links, along with its gun and missile armament, provide a significant airborne reconnaissance capability along with the ability to escort other helicopters and provide fire support when required. The Tiger will replace the Army's obsolete, Vietnam-era Bell UH-1H 'Bushranger' gunships and unarmed Bell 206 Kiowa reconnaissance helicopters.

The total approved budget for this project is $2.002bn (January 2008 dollars). This includes a $1.534 billion fixed-price prime contract signed in December 2001 with Australian Aerospace Ltd, the Australian subsidiary of Eurocopter. The prime contract also includes a Ground Mission Management System, a training system with a suite of aircrew and ground crew training devices and a contractor logistics support system.

The Tiger is a tandem seat helicopter weighing six tonnes and is powered by two Turbomeca MTR 390 turbine engines. Based closely on the French Army's Tiger HAP variant, Australia's ARH is armed with a 30mm gun, 70mm rockets, Hellfire air-to-ground missiles and infra-red and electro-optic reconnaissance sensors. Built largely from carbon fibre composites with armour and fitted with Electronic Warfare Self-Protection (EWSP) systems, the Tiger ARH is crewed by a pilot and a 'battle captain' who is the tactical coordinator and aircraft commander. Australian-specific modifications have been minimised to reduce project risks. These consist of secure radios, the Hellfire missiles and some minor associated cockpit and flight simulator modifications.

As of April 2008, eleven aircraft have been accepted into service. Final delivery is currently scheduled for 2009. The first four ARH were manufactured by Eurocopter in France and the remainder are being assembled at Australian Aerospace's Brisbane Airport facility.

The first aircraft were delivered on time in December 2004, but the project has slipped behind schedule, largely because of delays with the Franco-German Tiger program which delayed the delivery of Australian aircraft and therefore the training of test pilots and instructors for the

Australian Army. While many of the European problems have been resolved, the effects of these delays are still being felt throughout the project.

As a result, Initial Operational Capability (IOC) with a cadre of trained aircrew for the first of the two squadrons has been delayed from the original goal of July 2007. The Army expects to have a Troop of helicopters in Darwin by December 2008 and intends to conduct operational evaluation during 2009. The remaining helicopters, training and logistics will be delivered in 2009 -10, with the first deployable squadron expected to be operational in 2010.

By April 2008, Army had trained fifteen ARH pilots, including 11 instructors and four test pilots. A further four instructors and seven operational pilots were under training at the time of writing. Pilots will take six months to transition to the ARH Tiger; battle captains will take 12 months.

The throughput of pilots and battle captains has increased now that sufficient instructors have been trained and the new twin-dome Full Flight & Mission Simulator (FFMS) at Oakey has been commissioned.

The FFMS, manufactured by Thales, was accepted by the DMO in December 2007 and is the world's first twin-dome flight simulator accredited to Civil Aviation Safety Authority (CASA) Level D – in the commercial airline environment this level of fidelity enables pilots to train to fly a new aircraft with zero actual flight-time. In the Army's case, this means up to 70 per cent of ARH pilot individual training can be conducted in the simulator.

The FFMS is still awaiting final integration of some aspects of sensor and tactical training functionality before it can be used for the full conversion training syllabus. These aspects are dependent on the certification process of the Tiger ARH.

The final integration process will start at the end of 2008 and the FFMS will return to service in 2009. In the meantime the training load at Oakey and at 1st Aviation Regiment's new facility in Darwin will be borne by Thales's Tiger Cockpit Procedures Trainer (CPT), which is currently undergoing on-site Test & Evaluation at Oakey. This lacks the motion base of the FFMS and its visual system has a smaller field of view, but it has the same flight software and Helmet Mounted Sight (HMS) and Night Vision Goggle (NVG) functionality. The CPT at Oakey is due for acceptance in November, with the second due to enter service in Darwin in 2009.

Australia is the first Tiger customer to order the Lockheed Martin Hellfire II laser-guided anti-armour missile, and has led the integration program, completed in December 2005. Eight successful test firings at Woomera, including one at night, proved the lethality and accuracy of this weapon. Some minor testing of components such as the environmental protective cover for the missile seeker head and the laser designator will be completed in late 2009.

Following a demonstration in Australia and provision of technical information, France has selected the Hellfire for its own Tiger helicopters. This is an excellent project achievement that will significantly benefit the combat development and the sustainment of this critical capability.

The Tiger will gather and exchange tactical and surveillance data with Army's Battlefield Command Support System (BCSS) through a dedicated suite of Ground Mission Equipment (GME). The GME was delivered and accepted at the Australian Army Aviation Training Centre at Oakey in 2006.

Eurocopter has completed minor engine modifications to increase the engine power margins by about three per cent so the ARH will meet the contracted requirement. Hardware

modifications are being implemented across the ARH fleet; however software changes to the engine management system are still under development and expected to be complete in 2009.

Australian Industry Involvement (AII)

AII Target: In-service support capability, especially for sensors, mission and EW system software and airframe, engine and mechanical repairs.

AII Achievement: Except for the first four aircraft which were built in France, the Tigers are being assembled by Australian Aerospace Ltd in Brisbane; this will be their logistics support base, sustained by an assembly line for the MRH90 troop lift helicopter.

Thales Australia and Avalon Systems Pty Ltd will be responsible for the ground mission segment and part of the software support aspects of the contract; and Halliburton KBR Pty Ltd is responsible for delivering aircrew and ground crew training, except for tactical training which will be provided by uniformed personnel. Thales Training and Simulation Pty Ltd have installed the majority of aircrew training devices. In addition, Australia will be the sole source of some components for the global Tiger program: Thales is providing electrical wiring looms, Ferra Engineering is building flight control components and all ground training devices have been designed and produced in Australia by Australian Aerospace and local SMEs.

In April 2006, Australian Aerospace announced it would invest $15 million establishing a state-of-the-art composite fibre manufacturing plant in Queensland. This will initially produce fuselage parts and fittings for Eurocopter's Tiger and MRH90 helicopter global supply chains. There is also potential to use this facility for other programs.

Airborne Early Warning and Control (AIR 5077)

The six Wedgetail Airborne Early Warning & Control (AEW&C) aircraft ordered by the RAAF under Project Air 5077 (Wedgetail) will be force multipliers for the air defence and strike capabilities of its Hornets, Super Hornets and (later) F-35 Joint Strike Fighters.

However, this project, which applied many of the lessons of earlier defence acquisition programs, has encountered significant technical difficulties and is now running about 28 months behind its original schedule. The first two aircraft were due for delivery to the RAAF in November 2006; deliveries have now been put back to March 2009, with the remainder due to be delivered between April and July of that year.

Australia is the launch customer for the Wedgetail aircraft, which is based on Boeing's 737-700 twin-engined airliner fitted with an innovative, Multi-role Electronically Scanned Antenna (MESA) radar developed by Northrop Grumman. At a cruising altitude of approximately 30,000ft the radar will have a range of more than 400km and will have the ability to detect certain types of hard to see targets such as cruise missiles at longer ranges than current RAAF radars.

Wedgetail will allow more effective detection, identification and tracking of targets, and better control of fighters in combat, bestowing a significant and possibly decisive tactical advantage. Using similar technology to that employed in the radar it is building for the F-35, Northrop Grumman's MESA radar is an Active Electronically Scanned Array (AESA) sensor with a steerable beam. It provides 360 degree coverage and is able to track air and sea targets simultaneously. It can track high-performance aircraft while continuously searching for other targets.

While the Aircraft's primary role will be surveillance and airspace control over Australia's

Air/Sea gap, it can perform a range of other tasks including over-the-horizon targeting, battlefield surveillance, search and rescue and civil support operations. The AEW&C system is a crucial force multiplier for the Australian Defence Force as a whole.

The current total project cost of Air 5077 is $3.8 billion (January 2008 dollars). Boeing's Integrated Defense Systems sector was chosen as prime contractor and its prime contract, signed in December 2000, is worth $2.9 billion.

The Wedgetail system consists of several elements: the aircraft with its radar and airborne mission system; and the ground-based AEW&C Support Facility (ASF), Operational Mission Simulator (OMS), Operational Flight Trainer (OFT) and Mission Support Segment (MSS), all of which are located at RAAF Williamtown, where the aircraft will be based. 2 Squadron RAAF has been reactivated as part of the Surveillance and Response Group to operate the Wedgetail.

The greatest challenge in this program is the integration of the radar and mission system software. The Wedgetail program embodied many of the lessons learned by the DMO and Boeing on earlier (often unsuccessful) defence acquisition projects involving a significant level of software development and integration.

Early progress on Project Air 5077 was good. The first two aircraft were built in Seattle by Boeing and flight testing of the airborne mission system began in July 2005. However, significant problems subsequently emerged in both flight testing and the laboratory with the radar, Electronic Support Measures (ESM – a surveillance system) and tactical data link (TADIL) systems.

Partly because the radar is too powerful for full power testing on the ground, many of its sub-systems were still immature at the start of flight testing. In particular, there were problems integrating the side-facing and fore-and-aft-facing antennas of the MESA radar. Also, the TADIL was required to handle orders of magnitude more data and messages than on previous aircraft of this type, making integration with the mission system very complex. And the ESM suite, based on that of the RAAF's AP-3C Orion maritime patrol aircraft, needed to be adapted and upgraded to suit the Boeing 737 platform.

A five-month 're-baselining' exercise in May-November 2006 resulted in a new completion plan and schedule. Notwithstanding steady progress during 2007, Project Air 5077 still faces significant sub system performance and technical issues. While the Commonwealth is working closely with Boeing to resolve them, there still remains some residual schedule (and possibly cost) risk. Operational Test & Evaluation of the Wedgetail system as a whole – aircraft and ground elements – is expected to start in Australia in late-2009.

Recent project achievements include the delivery of all four 'green' B737s to RAAF Base Amberley for conversion into Wedgetail aircraft, with the first completed in January 2008. This aircraft has returned to the US to participate in the sub system integration test program, leading up to Acceptance Testing.

In August 2008 the OFT, or cockpit simulator, will be commissioned at RAAF Williamtown, the Wedgetails' operating base. The OMS for the radar and sensor operators will be made available to support training in early-2009. New facilities at RAAF Base Tindal to support forward deployments of Wedgetail aircraft have been approved by the Federal Parliament's Public Works committee.

To provide 2 Squadron's initial cadre of trained AEW&C crews the RAAF has, for more than a decade, posted aircrew to established and operational AEW&C squadrons in both the US and UK. The Wedgetail crew is made up of two RAAF Pilots, five RAAF Air Combat

Officers, One RAN Air Intercept Controller and one RAAF Airborne Electronic Analyst. With the help of DSTO, 2 Squadron personnel have carried out modelling and simulation exercises to gain an understanding of operational and tactical employment before delivery of the aircraft.

The major element of risk in the program at present remains the technical maturity of the radar, communications and EW systems, and the integration of these with the airborne mission computing system.

Australian Industry Involvement (AII)
The project's AII program was intended to develop the capability within Australian industry to carry out through life support of the AEW&C system. Though not specified, the local content program represents about 18% of the contract price.

Boeing Australia Ltd and BAE Systems Australia Ltd are the main local companies involved in an AII program that now comprises some $474 million in local content and over $900 million in Strategic Industry Development Activity (SIDA). BAE Systems Australia provides the ESM and electronic warfare self-protection systems, OMS, AEW&C Support Facility (ASF) and MSS.

The Commonwealth's initial decision to acquire just four aircraft meant that all of them would be fitted out by Boeing in Seattle. The decision in May 2004 to acquire an extra two aircraft (at an additional cost of just $225 million) led to four of the six aircraft now being converted to Wedgetail configuration in Australia by Boeing Australia Ltd. This involves replacement of key fuselage sections; installation of the radar antenna and all radar, processor and display hardware; installation of aerial refueling receptacles; and installation and integration of ESM systems, their antennas and a range of communications and other equipment. Boeing Australia has reportedly carried out this extremely demanding, high-precision engineering task on its first aircraft to a very high standard.

The decision to buy two additional aircraft has created around 170 new jobs in Brisbane, increased AII by some $80 million, and increased SIDA by $99 million.

International Engagement with AEW&C user Countries
The decision by Turkey and South Korea to procure Boeing 737-based AEWC aircraft has provided an opportunity for Australia to pursue cooperative arrangements with respect to standardisation and interoperability of military equipment, fleet sustainment and capability enhancements. The UAE is also seeking to acquire an AEWC capability and is currently assessing bids from several competitors, one of which is Boeing, offering its B737 AEW&C. Bilateral agreements between the Australian, Turkish, Korean and UAE governments which would underpin such cooperative arrangements are currently under development.

2 CRU/3 CRU Replacement (Project Air 5333 - Vigilare)

Project Vigilare is a key component of the ADF's emerging air combat capability, along with the acquisition of new combat aircraft and enablers such as early warning and in-flight refueling aircraft.

However, it has encountered significant delays and is now some 36 months behind schedule. The project will see the replacement of the RAAF's ageing air defence command and control system, which consists of two Control and Reporting Units (CRU) located at RAAF Bases Tindal (2CRU) and Williamtown (3CRU). These form the heart of the ADF's Northern and Eastern Regional Operations Centres (NORTHROC and EASTROC).

The introduction of the Vigilare system, along with the introduction of the Wedgetail AEW&C system and the RAAF's fleet of new KC-30B aerial refueling tankers (both reported separately), are key projects related to RAAF's air combat capability, including retirement of the F-111 strike aircraft in 2010. These interlocking elements will underpin the strike and air defence capabilities of the RAAF's fleets of Super Hornets and upgraded 'classic' Hornet fighters pending the probable introduction of the F-35A Joint Strike Fighter during the next decade, and will then support the F-35A in a fully network-enabled air combat force through to the middle of this century.

As well as replacing obsolete processors, displays and communications equipment, Project Vigilare will also fuse 2CRU and 3CRU into an extended command and control network. It will receive, process and share sensor data in real, or near-real, time from JORN, the Wedgetail AEW&C aircraft,civil and military air traffic control radars and the Navy's Hobart-class Air Warfare Destroyers. The upgraded CRUs will fuse this sensor data with intelligence information from a variety of sources to help compile the ADF's Recognised Air Picture (RAP) across Australia's area of interest, which stretches from the mid-Indian Ocean to the western Pacific.

The Vigilare system is designed to support three critical defence capabilities:

- Surveillance, through its interfaces with a wide variety of external sensors and agencies and its ability to correlate, track and display target data
- Battlespace management, through its communications switching system, including satellite and Tactical Data Links (TADIL)
- Training, through its ability to simulate air defence operations and record and play back real operations for subsequent analysis and instruction

The Vigilare system will also interface with new sensors, TADILs and other defence and government agencies as they come on line. And that includes agencies using legacy data and communications formats and protocols.

Boeing Australia Ltd (BAL) signed the Vigilare prime contract on 1 March 2004; this contract is worth $132.4 million at January 2008 prices. The company also signed a five-year Logistics Support Contract worth $12.6 million, again at January 2008 prices.

Technical delays mean the Critical Design Review (CDR), originally scheduled for December 2005, began in December 2007. But this milestone won't finally be passed until about mid-2008 when the final CDR-related design artefacts are delivered to the Commonwealth. Final delivery of Vigilare was originally expected within 45 months of contract signature, in December 2007; the anticipated delivery date is now December 2010, a 36-month slippage, but Defence and BAL are looking for ways to recover some of this.

Vigilare has been blighted by delays since its inception. A $30 million contract signed with ADI Ltd in 1993 was terminated and re-tendered, with a revised and expanded scope, in 1996. BAL was named preferred tenderer in 1998, but it took a further six years before BAL and the DMO could sign a contract worth over four times the original amount but with a still further enlarged scope.

Several reasons exist for the delay. One was BAL's original plan to use the processors and displays from its American parent company's Wedgetail AEW&C aircraft in order to provide a common human-machine interface, software, training and support regime. The cumbersome US defence export licensing regime made these synergies too elusive and caused significant delay. Meanwhile, a separate project, Air 5333 Phase 2, to provide the external communications links for the Vigilare system was amalgamated into AIR 5333 Phase 1 to provide efficiencies and ensure that both elements were developed concurrently.

As a result, BAL and Defence undertook a Pre-Contract Systems Requirements Analysis (PCSRA) to develop a detailed joint understanding of the requirements of the project, the associated technology demands and the considerable levels of risk – and how best to mitigate and assign them. These studies also delayed prime contract signature.

Two of the key areas of risk for Project Air 5333 are communications and data fusion. Vigilare involves some 250 separate communications links, including the technically demanding Link 16 TADIL. The PCSRA addressed the many interfaces between the CRUs and the sensors feeding into them and the establishment of a robust communications system to link these operational elements. It also contributed to a detailed and highly complex Operational Concept Document (OCD) to ensure BAL and the RAAF had a clear understanding of the system-level design of the RAAF's emerging surveillance and air space control organisation before contract signature.

Faced with these delays Defence carried out two interim upgrades of 2 and 3 CRU. Adelaide-based Daronmont Technologies installed US firm Raytheon Solipsys' Multi-Source Correlator/Tracker (MSCT) and Tactical Display Framework (TDF) to generate a correlated air picture from the various sensor inputs to the CRUs. This interim solution was successfully implemented in 2004 and has been adopted as part of the final Vigilare solution.

Under the original schedule the upgraded NORTHROC facility was to be commissioned at Tindal in March 2007. Decommissioning work began there in March 2008 and installation of the new system is expected to begin in May. The Tindal upgrade is expected to be completed in October 2009, allowing the EASTROC facility at Williamtown to be de-commissioned and upgraded in turn with final completion in December 2010.

These delays haven't caused any degradation of actual or relative capability because the interim upgrade included some growth capacity to cope with potential project delays. And defence confirms that the delays won't result in component obsolescence and unplanned equipment or configuration changes with the interim system.

Although not a particularly costly project in dollar terms, the sheer complexity of Vigilare is attested to in part by the delays it has encountered. In particular, the many different types of communications interface, the 250 actual communications links involved and the complexity of the associated switching system means the whole system is vulnerable to delays caused by even minor technical problems.

Nevertheless, all parties have also acknowledged they underestimated the activities required to complete the project; the ramp-up of contractor staff has been slow; delivery of some Government Furnished aspects of the project has been slow, and sub-contractors have been delayed by the slow flow-down of requirements from the prime. Australia's current engineering skills shortage also meant the Commonwealth and BAL experienced difficulties recruiting suitably qualified staff.

Australian Industry Involvement (AII)
This project is being undertaken within Australia, by Australian engineers and project managers employed by Boeing Australia Ltd and its suppliers and sub-contractors. These include Daronmont Technologies Pty Ltd which was contracted to design and develop key interfaces to cummunications and sensor systems.

Bridging Air Combat Capability (Project Air 5349)

In December 2006 the then Minister for Defence, Dr Brendan Nelson, announced that the Government would acquire a squadron of 24 F/A-18F Super Hornet Block II multi-role

aircraft to provide a so-called 'Bridging Capability' between the retirement of the F-111 in 2010 and the entry into service of the F-35A Lightning 2 from 2015.

The potential for delays in delivery of the F-35A meant the RAAF's upgraded Hornets might have to carry the strike and air defence burden for longer than anticipated. This scenario, along with the compounding risks caused by delays in essential enabling capability projects such as Air 5077 – Wedgetail, Air 5333 – Vigilare, Air 5402 – Aerial Refuelling (all reported separately) and Air 5398 – Follow-On Stand-Off Weapon, triggered the Bridging Air Combat Capability Project, Air 5349. First and second pass Government approvals were granted in March 2007 and a US Foreign Military Sales agreement was signed in May 2007.

The F/A-18F Super Hornet Block II is an enlarged and more capable version of the 'classic' F/A-18A and –B Hornets operated by the RAAF since the 1980s. It is a two-seat aircraft, the rear seat being occupied by an Air Combat Officer ('Navigator' in the old parlance) whose task is to manage the sensor suite and guided weapons, particularly during strike missions. It employs an Active Electronically Scanned Array (AESA) radar similar to that being developed for the F-35, has 'stealth' features to reduce its head-on radar signature that are described as 'tactically significant', and capable of collecting and passing large amounts of data to each other, and to provide JDAM targeting coordinates to the 'classic' Hornets.

The decision to acquire the Bridging Air Combat Capability was reviewed and subsequently confirmed early in 2008 under Part A of the Air Combat Capability Review commissioned in February by the new Minister, Joel Fitzgibbon. Part B of the Review will examine the ADF's long-term air combat capability requirements. Any decisions on the RAAF's New Air Combat Capability (NACC) program, including the purchase of the F-35A, will be made in the light of this Review.

Under Air 5349 the RAAF will replace its F-111s with the Super Hornets in 2010. They will serve until at least 2020 at a total cost of $5.7 billion (January 2008 dollars), of which $3.4 billion represents the direct cost of the aircraft, weapons, facilities upgrades and aircrew training. (The total approval for the project is $6.6 billion in January 2007 dollars.) The Super Hornets are being acquired 'off the shelf'; they will provide additional strike, maritime strike and air defence capabilities pending the arrival of the F-35A. Their AESA radars and networking capabilities bestow high levels of individual and collective situational awareness and will provide the RAAF with an introduction to the superior sensor and communications capabilities inherent in the F-35A.

To reduce schedule and capability risk, the aircraft will be essentially identical to the then-current US Navy Super Hornets and will be equipped with the same weapons and infra red/laser targeting systems. The first aircraft will be delivered in 2010 and used for test and evaluation in the USA before transferring to RAAF Base Amberley in the second quarter of 2010, with Initial Operational Capability achieved by the end of that year. They will equip the RAAF's 1 Squadron.

Phase 1 of Air 5349 incorporates acquisition of the aircraft, support systems such as flight simulators and in-service support. Under Phase 2, which runs concurrently, the RAAF will acquire new F/A-18F weapons and explosive ordnance under separate FMS agreements.

Although the RAAF's upgraded 'classic' Hornets and US Navy's Super Hornets are superficially similar, they carry different suites of missiles and sensors. In RAAF service the Super Hornet will use standard US Navy weapons: the AIM-9X heat-seeking air-air missile and the Joint Stand-Off Weapon (JSOW), neither of which are in-service with the 'classic' Hornets. Similarly, the RAAF will not seek to integrate the 'classic's' AIM-132 ASRAAM heat-seeking air-air missile and there are no current plans to integrate the Joint Air-Surface Stand-off Missile (JASSM). However, the 'classic' and Super Hornets will both employ the

AIM-120 AMRAAM medium-range air-air missile, the Harpoon anti-ship missile and the same laser and GPS-guided bombs.

The long-term plans for the Super Hornets once the F-35A is fully operational are not yet determined. At present no disposal plan for the Super Hornets has been drawn up. The Air Combat Capability Review will determine the RAAF's air combat force structure out to 2045, and it is possible that Part B of the Review will recommend acquiring more Super Hornets, possibly including a small batch of EA-18G 'Growler' Electronic Attack (EA) variants, export permissions allowing.

In an essentially low-risk program, the major risks facing the project are: the timeframe for getting Third Party Transfer Agreements (TPTA) through the US State Department's licensing system - this could impact on the RAAF's ability to employ local contractors to support the aircraft; and acquiring and establishing the required training simulators and facilities in time to enable initial operational capability.

Australian Industry Capability
The Australian Industry Capability Program was established within the framework of the March 2007 Defence and Industry Policy Statement to address critical industry capability issues associated with major capability acquisitions. However, rapid acquisition of the F/A-18F Super Hornet through the FMS mechanism has precluded the prior development of an industry strategy consistent with the 2007 Industry Policy.

Independently, The Boeing Company and DMO established an AIC Plan for the Boeing C-17 program as a response to the *Defence and Industry Policy Statement 2007.* It is intended to amend the C-17 arrangement to include the Super Hornet project in order to maximise Australian industry participation on a value-for-money basis.

Hornet Upgrade (Project Air 5376)

Project overview and key issues
Project Air 5376 is a wide-ranging upgrade of the RAAF's fleet of 71 F/A-18A/B Hornet fighters. This will see the aircraft equipped with new sensors, mission computers, self-defence systems and weapons as well as undergoing a structural upgrade.

Under the upgrade program, the Hornets will receive additional strike capabilities, as well as upgrading their capabilities in the fighter role. The Hornets additional strike capability, in conjunction with the Super Hornets, will provide the RAAF's strike capability after retirement of the F-111, until the F-35 Joint Strike Fighter enters operational service from about 2015 onwards. The Hornet fleet is currently scheduled to retire between 2015 and 2018, but the RAAF leadership has acknowledged it could remain in service as late as 2020, if required.

The total value of the Hornet Upgrade Program, which also includes some associated minor projects, is $3.323 billion. With a few exceptions, the upgrade program is based on similar avionics and structural upgrades undertaken previously or concurrently by the US Navy and Canadian Forces.

Most elements of the upgrade are being acquired from the US Navy through a US Foreign Military Sales (FMS) agreement, with the design, prototyping and testing of the various modifications primarily the job of Boeing Integrated Defense Systems, the Hornet's original designer and manufacturer. The majority of production work is being carried out in Australia, by Australian industry.

The Hornet can carry short and medium range air to air missiles for air combat operations and a wide range of 'dumb' bombs, laser and satellite-guided 'smart' bombs and stand-off missiles for strike and attack operations. The Hornet is equipped with a suite of Electronic Warfare Self Protection (EWSP) systems and a multi-mode fire control radar which enables both air to air and air to ground operations.

The overall goal of the Hornet Upgrade Program is to structurally refurbish at least part of the fleet; improve the Hornet's sensor detection and targeting ranges, its ability to resist electronic attack (i.e. the jamming of its radar and radio) and its ability to identify and engage targets. The upgrade will also bestow greater 'connectivity', enabling Hornet pilots to exchange data with other ADF elements and coalition forces and so enhancing their situational awareness and combat effectiveness. There are no plans to integrate weapons unique to the Super Hornet, such as the AIM-9X and JSOW missiles, with the RAAF's 'classic' Hornets.

Phase 1, which was completed at a cost of $290 million, saw the Hornets equipped with upgraded radios, mission computers, Global Positioning System (GPS) navigation system, upgraded Identification Friend or Foe (IFF) and an extra data bus enabling the aircraft to operate the AIM-120C AMRAAM medium range air to air missile and AIM-132 ASRAAM short range air to air missile.

Phase 2.1, which is also complete, saw the Hornet's original Raytheon APG-65 radar replaced with Raytheon's more modern APG-73 radar in a program worth $485.7 million. Aircraft which had undergone the Phase 1 and 2.1 upgrades deployed to the Gulf in 2003 as part of the US-led coalition against Iraq.

In Phase 2.2, which has a budget of $588 million, the Hornets are currently being fitted with a secure Link 16 Tactical Digital Information Link (TADIL), full colour cockpit displays and digital moving map system, an upgraded Counter-Measures Dispensing System (CMDS) for decoy flares and chaff, and the US-developed Joint Helmet-Mounted Cueing System (JHMCS).

The latter is a vital feature of the ASRAAM missile – it allows the pilot merely to turn his head to select and designate a target which the missile will then pursue once it is launched, even when the aircraft and missile are pointing in the opposite direction. By the end of April 2008, 59 out of 71 Hornets had undergone the Phase 2.2 upgrade, with the remainder due by the end of 2008.

Phase 2.3, with a budget of $702.4 million, will see the Hornet equipped with a new Electronic Warfare Self-Protection (EWSP) suite to enhance survivability in high-threat operating environments. Design work is complete with flight testing due to begin in July 2008. The new suite will comprise Raytheon's ALR-67(V)3 Radar Warning Receiver, the Saab Systems BOL counter-measures dispensing system (CMDS) and the IAI ELTA EL/L-8222 active radio frequency jammer. Defence is currently negotiating contracts for the BOL CMDS and EL/L-8222; Final Operational Capability is scheduled for late-2011.

Phase 2.4, has a budget of $143 million and is introducing an enhanced laser and infra red targeting pod that provides a day and night precision targeting capability for the Hornets. Delivery of the Northrop Grumman Litening Pods is complete; in June 2008 Defence will start integrating a data link with the pods; this will be complete by January 2009.

In 2006, Phase 2 also acquired a new flight simulator that reflects the Phase 2.1 configuration of the upgraded Hornet. Ongoing enhancements will ensure the simulator reflects configuration and functional enhancements introduced in Phases 2.2, 2.3 and 2.4.

Phase 3.1 involves relatively minor structural modifications to 69 Hornets to maintain the fleet's fatigue life through to its planned withdrawal date, or the implementation of additional modification under Phase 3.2, if this is deemed necessary. Phase 3.1 began in January 2004 and should be complete by early 2012, at a cost of $124.5 million. By April 2008 some 40 aircraft, or 58 per cent of the fleet, had been upgraded.

On current plans, Phase 3.2, with a budget of $861 million, will see up to 49 Hornets undergo a further structural refurbishment involving replacement of the centre fuselage ('centre barrel') to ensure the fleet as a whole remains operationally effective until its eventual replacement by the F-35 Joint Strike Fighter. Factors such as the actual withdrawal date of the Hornet and fatigue accrual rates will determine exactly how many aircraft undergo this upgrade. A review is due in mid-2008.

Under two minor capital projects, MIS0855 and MIS0920, respectively, the RAAF is acquiring a Night Vision Capability and an Air Combat Manoeuvring Instrumentation (ACMI) system for its upgraded Hornets. MIS0855 is now essentially complete and MIS0920, which enables realistic air-air combat training, should be completed by June 2008.

The Hornet Upgrade Program should keep the F/A-18 fleet operationally effective until its current planned withdrawal date of 2015-2018. But if deliveries of the F-35 are delayed for any reason, the Hornet will be able to serve beyond this date, though in gradually reducing numbers depending on the number of aircraft which undergo the centre barrel replacement.

Generally, the RAAF Hornet Upgrade Program is exploiting capability enhancements previously developed by the US Department of Defence and Canadian Forces. However, some aspects, especially the integration of the Electronic Warfare Self Protection subsystems through Phase 2.3, are unique to Australia. The hardware and software integration requirements under Phase 2.3 represent a significant challenge.

These challenges are being mitigated through an incremental development and test program, maximum use of OEM and USN advice and testing, and the on-site resident project team established at the US Navy's Advanced Weapons Laboratory in California, which supports a progressive test and evaluation program. This team also supports other Hornet related integration activities, including weapons programs.

Production delays may also arise due to ageing aircraft issues. If aircraft are found to be in poor condition on induction into Phase 3, any resulting unscheduled demand for spares could cause delays if they are not readily available.

Australian Industry Involvement (AII)

Incorporation of many Phase 2 and Phase 3 modification elements are being carried out at RAAF Base Williamtown by Boeing Australia Ltd and BAE Systems Australia. Canadian company L-3 Communications MAS (formerly part of Bombardier, which undertook a major structural refurbishment program for Canada's Hornet fleet, including Centre Barrel Replacement), is conducting the core specialised Centre Barrel Replacement work in Mirabel (Canada) on the first ten aircraft. The teardown and rebuild of the Centre Barrel Replacement aircraft is being conducted in Australia by BAE Systems Australia.
Further, Boeing Australia Ltd and BAE Systems Australia have been provided with additional repair work to address corrosion (and other ageing aircraft issues) exposed during the upgrade activities.

ADF Air Refuelling Capability (Project Air 5402)

This project aims to provide the RAAF with a fleet of five new, state of the art KC-30B Multi-Role Tanker Transports (MRTT) based on the Airbus A330-200 airliner. This will replace the RAAF's previous fleet of four Boeing 707 tankers, the last of which is due to retire from service in mid-2008.

The KC-30B is expected to enter service at RAAF Base Amberley from 2009 and will be a key component of the RAAF's Air Combat Group. It will increase considerably the range and endurance of the RAAF's Hornets, Super Hornets and, eventually, the F-35A Joint Strike Fighters. When not required for aerial refuelling duties, the KC-30B will also perform a vital role as a strategic transport aircraft

Along with the Wedgetail AEW&C system, the Vigilare air defence command and control system and stand-off weapons now being acquired, the new tankers will enable the Hornet, Super Hornet and JSF to deliver the strategic strike capabilities currently provided by the RAAF's fleet of F-111s and to maintain persistence on station. Unlike the RAAF's Boeing 707s, the KC-30B will be able to refuel all of Australia's current and planned combat aircraft and those of its allies, making it a very versatile and sought-after asset.

The RAAF selected the KC-30B in 2004 in preference to Boeing's KC-767. The approved cost of Project Air 5402 is $1.7 billion (all prices in January 2008 dollars); Spanish contractor EADS CASA signed the $1.477 billion prime contract in December 2004. The deliverables under this contract include the five modified aircraft, a full flight simulator, initial in-service support and the establishment of a Contractor Support Organisation in Australia. Initial Operational Capability (IOC) is scheduled for late-2009, comprising delivery of two aircraft, completion of qualification testing and issue of the military airworthiness certificate.

The KC-30B is a large, twin-engined, wide-bodied jet with a maximum take-off weight of 233 tonnes. Its standard wing tanks can carry up to 111 tonnes of fuel - some 45,000 litres more than the Boeing 707. The KC-30B will not have the cargo door and strengthened floor to enable carriage of outsized cargo on the upper deck. Nevertheless, it can carry over 42 tonnes of cargo (depending on range and fuel load) consisting of both military and commercial air cargo pallets. It can also carry up to 270 passengers in a two class configuration compared with 152 on the Boeing 707. In this configuration a single KC-30B would be able to refuel six Hornets in a non-stop flight from Darwin to Butterworth in Malaysia while carrying the detachment's ground crew and support equipment and spares.

The modifications necessary to convert the A330-200 into a tanker consist of under-wing refuelling pods similar to those currently used on the RAAF's Boeing 707, an Aerial Refuelling Boom System (ARBS) mounted on the lower rear fuselage, and the necessary pumps and piping between this and the aircraft fuel tanks.

The ARBS will be controlled remotely by an Air Refuelling Operator (ARO) in a dedicated two-man control station adjacent to the flight deck; refuelling operations and liaison with the cockpit crew will be managed by a Mission Coordinator (MC) alongside. The aircraft will also be equipped with a suite of Electronic Warfare Self-Protection (EWSP) systems provided by US firm Northrop Grumman and military communications, navigation and data link systems provided by Thales and integrated by EADS CASA.

The under-wing refuelling pods are incremental developments of those currently in RAAF service and the aircraft's wings only require straightforward structural and fuel system modifications to accommodate them. But the ARBS is an all-new system designed by EADS CASA for which the RAAF is launch customer, and its certification program is running

approximately 12 months behind schedule, though this has not impacted on the delivery schedule of the completed aircraft.

Schedule is important for both the RAAF and EADS CASA. For the RAAF a robust aerial refuelling capability to support its Super Hornets and upgraded Hornets is a necessary condition for the retirement of its ageing F-111 strike aircraft in 2010.

The ARBS began its flight test program in March 2006, installed on a modified Airbus A310 airliner test bed. Flight trials have seen successful fuel transfers to a Portuguese F-16 receiver aircraft.

The first RAAF KC-30B made its maiden flight with refuelling equipment installed in June 2007. The first phase of flight testing was completed in mid-Feb 2008, meeting all the objectives required for civil certification of the structural modifications to the aircraft, and has validated all the engineering projections so far. Flight testing for final qualification and certification of the ARBS handling qualities, and for testing of the new operator station and visual system, will form part of the second phase of flight testing. This is due to begin in the third quarter of 2008.

The project schedule made allowance for delays such as those which have afflicted the ARBS. The A310 test bed and KC-30B are conducting parallel test and certification activities to achieve the RAAF's in-service date, but the contingency allowance built into the schedule has been eroded.

The KC-30B flight test and certification program is being conducted by EADS CASA under the auspices of the European Aviation Safety Agency (EASA) and the Spanish Military Airworthiness Authority (INTA). This program forms part of the Commonwealth's Type Acceptance Test and Evaluation Program. Final testing of the new tanker with RAAF receiver aircraft will be conducted in Australia in mid 2009.

Modification of the remaining four aircraft in Australia by Qantas will commence in the third quarter of 2008 and take approximately seven months per aircraft. The first of these aircraft will arrive at Amberley in June.

EADS CASA selected Canadian firm CAE Inc in March 2006 to supply a full flight and mission simulator for the KC-30B, a new training facility, and a mission systems trainer under a contract worth $46 million. The simulator will be delivered to Amberley in 2010. CAE has also signed an initial agreement directly with Defence to provide five years of engineering support and flight crew training.

EADS CASA has a greatly expanded customer base to satisfy: in February 2008 the US Air Force selected the KC-30 – which it designates the KC-45 – as its replacement for the ageing KC-135 tanker; its current requirement is for up to 179 aircraft, ordered in successive batches. And in March 2008, the UK Ministry of Defence signed a 27-year Private Finance Initiative (PFI) contract with prime contractor AirTanker for 14 A330-200 tankers, to enter service from 2011. While these programs will not impact on the schedule for Air 5402, the project and the RAAF's capability generally is expected to benefit from the greatly increased customer base.

The two primary sources of project risk are qualification of the new refuelling boom system, and the integration of the military avionics systems. Although there has been substantial progress with qualification of the new boom system on the A310 Demonstrator, the DMO assesses this risk as 'medium' due to its developmental nature and the ongoing testing required of the boom operator console and visual system on the KC-30B. Similarly, there has been substantial progress of the military avionics software development and completion of

sub-system and system-level testing on a range of test benches. This risk is also assessed as 'medium' due to the complexity of the overall integration effort, hardware installation (consisting of over 400 new wiring harnesses and 1600 connectors) and aircraft-level functional testing.

The DMO says the delays thus far place additional schedule pressure on the remaining activities necessary for delivery of the first aircraft as planned in the 2nd quarter of 2009.

Australian Industry Involvement (AII)
The AII goal for Project Air 5402 was for local content and Strategic Industry Development Activities (SIDA) amounting to 10 per cent of the prime contract value. Much of the prime contract value is in the A330-200 airliners, leaving relatively little scope for a major local contribution.

The first of the five aircraft is now being modified in Madrid. The remaining four will be modified by Qantas at its Brisbane facility and Qantas will also provide in-service support through the life of the aircraft, a spectrum of activity worth an estimated $500 million over their life of type. Thales Australia is supporting development of the KC-30B mission systems including development, manufacture and design and integration activities under subcontract to its European parent and EADS CASA; Australian Aerospace is assisting with technical documentation and support of the fuel system; and Pennant Australia is supporting the logistics analysis.

The current SIDA target is approximately $162 million, comprising a range of activities for export sales orders from Airbus and General Electric; R&D; and training and skills transfer to Qantas and EADS' local subsidiary, Australian Aerospace.

EW Self Protection for Selected Aircraft (AIR 5416 Ph 2)

AIR 5416 (Project Echidna) was established to redress the electronic warfare self-protection (EWSP) limitations of a number of ADF aircraft. Echidna had its genesis in two projects, one concerned with upgrading the EW capabilities of the F/RF-111 fleet and the other with equipping ADF transport aircraft with EWSP systems. These projects were restructured to create AIR 5416, with short-term action taken to upgrade EWSP suites on C-130H and F-111 aircraft to meet operational needs.

Echidna's first phase had three stages. The first was for the full scale engineering development (FSED) of the indigenous radar warning receiver, the ALR-2002 by BAE Systems, as a key element of the Echidna EWSP suite. Under project funding, four initial production ALR-2002 systems were built by BAE Systems over the period 2006/2008. In 2007 a $31m full rate production contract was awarded to BAE Systems Australia for 31 additional ALR-2002 RWR systems.

The second stage, completed in 2002, provided for separate 18-month funded Initial Design Activities (IDA) conducted by Tenix Defence Systems and BAE Systems for the design and costing of a common EWSP suite. The third stage is for the provision of ballistic protection measures for the Black Hawk helicopter, which is on-going.

Under the current Echidna Phase 2, EWSP systems and ballistic protection measures are being acquired for selected ADF aircraft under the following sub-phases:

- Phase 2A - Black Hawk and Chinook helicopters
- Phase 2B - C-130 H tactical transport fleet
- Phase 2 C - Ballistic protection measures for the RAN Sea King fleet

(subject to the retirement plans for the aircraft giving an adequate return on investment).

Phase 2A is bringing to production the design commenced in Phase 1 for the helicopter fleets. A $121.5 million contract was signed with BAE Systems in February 2005 for the design, development, integration and installation of an EWSP capability for Black Hawk and Chinook Aircraft.

The proposed EWSP suite comprised the EADS AAR-60 Missile Warning System (MWS), BAE Systems ALR-2002 Radar Warning Receiver, Thales VICON 78 Counter-Measures Dispensing System (CMDS), BAE Systems SIIDAS (Sensor Independent Integrated Defensive Aids Suite) EW controller, and a human-machine interface with a multi-function display.

Although the Chinook detailed design is nearing completion, an aircraft has not been available for the planned first article modifications due to high operational demands, and these are unlikely to be carried out in 2008. (All six Chinooks were modified in late 2005 and early 2006 under a Rapid Acquisition program to prepare them for service in Afghanistan, when they received the AAR-60 MWS and the ALE-47 CMDS.)

Phase 2A now includes responsibility for the implementation of an Army Minor Project (Black Hawk Interim EW) which provides for interim early delivery of the MWS and CMDS of the Echidna 2A capability and their installation onto 12 Black Hawk aircraft. The first aircraft has received the interim EW modification and entered flight-testing in early 2008. Detailed planning for fleet modification, and therefore Initial operational capability (IOC), is pending further progress with the first modified Black Hawk.

With factory acceptance of the EW suite and final versions of EW software successfully completed, there are no unresolved integration risks. There remain serious schedule risks associated with the ongoing non-availability of Chinook aircraft for their Phase 2A modifications.

Phase 2B, a $25 million contract for the integration and installation of the EWSP capability on the C130H fleet was signed in December 2004 with Tenix Defence Aerospace Division, prime contractor for the previous installation. The first eight of the 12 C-130H aircraft to be modified under this project were completed on schedule between November 2006 and November 2007. The schedule for the full modification program is now complete with all 12 aircraft modified and returned to service.

Approved expenditure for Phase 2 is $303 million, of which estimated cumulative expenditure to June 2007 is $129m and expenditure for the year to June 2008 is now estimated at $49m. This is $20m less than earlier anticipated due to reduced spending on the ALR-2002 element of the program and the effect on expenditure of incorporating the Black Hawk Interim EW project.

Echidna Phase 3 relates to enhancing the EWSP capability of the F-111 to ensure its operational effectiveness to the planned 2010 retirement date of the aircraft. This phase is in production and should be completed in 2008.

Phase 4A comprises two capability enhancements for the C-130J fleet; installation of countermeasures dispensing and missile warning systems, together with the incorporation of ballistic protection in all aircraft. This phase has been completed and minor enhancements to the mission support system at the Joint Electronic Warfare Operational Support Unit (JEWOSU), now finalised.

Australian Industry Involvement (AII)
No specific AII target has been set for AIR 5416 although there are AII objectives for Echidna Phase 2 related to flow down of the strategic industry development and sustainment requirements set out in the Defence Electronics Sector Strategic Plan. In this respect, Phase 2A industry activities are in close accordance with the development of those industry capabilities seen as critical for Australia's defence self reliance, including military systems integration and electronic warfare systems.

The Australian technology content of the ALR-2002 radar warning receiver and the SIIDAS Electronic Warfare Controller is considerable. Both Australian design systems include most of the software, 80 per cent of the hardware piece parts with 30 per cent of the ALR-2002 provided through Micreo for RF components. All design, production and testing is carried out in Australia.

New Air Combat Capability (Project Air 6000)

The New Air Combat Capability to be acquired under Project Air 6000 will be Australia's most expensive defence procurement to date, with an anticipated budget of $11.5-15.5 billion according to the 2006 Defence Capability Plan. The project will see the acquisition of up to 100 F-35A Joint Strike Fighters (JSF) which are intended to replace the RAAF's F-111 strike aircraft and upgraded F/A-18 Hornet fighters.

However, the Australian government commissioned an Air Combat Capability Review in February 2008 to examine Australia's air power options out to 2045, including the ADF's air power needs, threats likely to face the RAAF over the next 40 years, and the arguments for and against pursuing the acquisition of the Lockheed Martin F-22A Raptor, which has just entered US Air Force service.

The Review was scheduled for completion at the end of April and will inform the new Defence White Paper, to be published around the end of 2008. Subject to the outcome of the Review and broader White Paper considerations, 2nd Pass Approval for Air 6000 is now likely to occur early-2009 (formerly October 2008). The budget provision for Project Air 6000 is being reviewed as part of the development of the 2009 Defence Capability Plan, and the actual amount to be spent will be subject to 2nd Pass Approval.

Australia joined the System Development and Demonstration (SDD) phase of the JSF program in October 2002. In December 2006, Australia and the other eight partner nations signed the JSF Production, Sustainment and Follow-On Development (PFSD) Memorandum of Understanding (MoU) which marked the formal start of production development of the JSF.

The JSF is a so-called 5th generation stealthy, single-seat, single engine, multi-role aircraft. It is being developed simultaneously in Conventional Take-Off and Landing (CTOL), Short Take Off Vertical Landing (STOVL) and carrier (CV) variants (respectively F-35A, B and C) by US company Lockheed Martin.

The variants have common avionics, sensors and engines to reduce development, production and maintenance costs. Differences in the structure and configuration have been kept as low as possible (allowing for the markedly different roles), though this has complicated the design and development process.

The F-35's avionics enable the fusion of target, threat and friendly force data generated by onboard and off-board sensors to provide pilots with unprecedented levels of individual and

shared situational awareness. This, with the aircraft's stealth, holds out the prospect of very high levels of combat effectiveness and survivability in a high-threat environment.

The F-35A CTOL will be used for both air defence and strike operations and is intended to maintain Australia's regional air combat superiority throughout its 30-year life of type. The JSF will be part of a matrix of combat capabilities including new long-range strike and anti-ship missiles, and the Wedgetail AEW&C aircraft (Project Air 5077), aerial refuelling tankers (Project Air 5402) and enhanced command and control system (Project Air 5333).

At Second Pass Government will be presented with options for acquiring all JSF in one tranche or an initial tranche with a later decision on additional aircraft when the life of the Super Hornet is determined. Delivery of the first RAAF aircraft was slipped at First Pass by a year to 2013 for cost and schedule risk reasons with first delivery now part of the 5th Low Rate Initial Production (LRIP) batch. The RAAF's first F-35 squadron will undertake its initial training in the USA before standing up formally and achieving Initial Operational Capability (IOC) in Australia in 2015. Full Operational Capability (FOC), when all squadrons are combat-ready is planned for 2018-2020, depending on how many aircraft are actually acquired.

The current SDD phase will see flight testing of 12 F-35s in all three variants (plus seven ground test aircraft) followed by LRIP of approximately 350 aircraft and then Full Rate Production (FRP) of thousands more for the US, various partner nations and other export customers.

Criticism of Australia's commitment to the F-35 hinges on the fact that the production aircraft had yet to make its maiden flight when the decision was taken, the flight test and integration program for the highly complex and integrated avionics and sensor suite had yet to begin, the performance of the aircraft (including its essential stealth capability) had not been verified, and the price the RAAF will pay for the F-35 is still uncertain. However, 2nd Pass Approval and the negotiation of a formal order for the F-35A is now expected in 2009, by which time several F-35s will be involved in the flight test program and some of the technical and schedule risks will have been retired.

The JSF program was delayed by over a year for a weight reduction program which was critical for the STOVL version. However, the critical design reviews for the CTOL and STOVL variants were completed successfully in early-2006. The maiden flight of an F-35A manufactured under the SDD program was in December 2006. An electrical problem in mid-2007 caused a five-month hiatus in the test program, but resumption of flight testing has been smooth and the aircraft has since demonstrated great reliability. The second aircraft to join the flight test program, a STOVL variant and the first to have the weight reduction modifications, will fly in mid-2008.

In April 2007 the US Under Secretary of Defense for Acquisition, Technology & Logistics authorized the start of F-35 Low-Rate Initial Production. Full Rate Production is due to begin in 2015. Under the SDD program the software for the F-35's avionics and sensor suite is being developed gradually in successive 'Blocks', with Block 3 representing the full intended combat capability. If development of Block 3 software is delayed, the RAAF could still declare IOC with Block 2, which it still considers superior in most respects to the F-111 and upgraded Hornet in both air-to-air and air-to-ground modes. The US Marines currently plan to declare IOC with Block 2 in 2012.

The JSF program as a whole will see the development of 18.7 million software lines of code, which includes all software for flight controls, mission systems, prognostics and health management, offboard planning, autonomic logistics and training. As of April 2008 just over half of the total code had been completed.

The most basic software block, Block 0.1, is 100 per cent complete and flying successfully on the test aircraft, demonstrating high levels of reliability and maturity, albeit without the operational sensors and mission systems. Block 0.5, which will provide the initial mission system capability and will fly in early-2009, is currently 60% complete (against a plan at this stage for 58%).

The inherent risks associated with software development and integration are being addressed through the use of a Cooperative Avionics Testbed (CAT), a converted Boeing 737 airliner equipped with a full suite of F-35 avionics, sensors and processors for airborne test and integration. This began testing the JSF communications, navigation and identification systems in early-2008. Every component of the F-35's avionics has been tested already on 'surrogate' aircraft elsewhere and will be progressively integrated on the CAT aircraft over the next two years before being installed and tested aboard the F-35.

Notwithstanding recent progress, Project Air 6000 still faces several major risks. The JSF will be one of the most software-intensive weapons systems in the world and software development and systems integration is considered the largest remaining technical challenge. This is being mitigated by the use of the CAT aircraft. Also, the JSF flight test program includes as many flying hours as the original Hornet, Harrier and F-16 fighter projects combined.

The Department of Defence considers the biggest cost risk is stability in the buy profile. If the US Congress orders a reduced acquisition rate for any reason, or if the US services acquire fewer aircraft in the first years of production, this will increase the costs for all JSF partners (see below).

For sustainment, the biggest challenge is to develop a global sustainment system overseen by Lockheed Martin that delivers the cost benefits of a global system balanced with the sovereign sustainment needs of all partners (see below).

F-35A pricing

There has been much confusion over the price Australia will pay for its F-35A. According to US Government figures, the procurement cost of the JSF (averaged over total production and all variants) has increased by 37% since 2002. It is likely that the cost of the CTOL aircraft has increased by a slightly smaller amount.

The production rate, which significantly affects the price of the F-35, will be set by Congress, which traditionally orders aircraft on a year by year basis, increasing the production rate progressively. Under this model, aircraft ordered early in the production run will be considerably more expensive while later ones, ordered and built in larger batches with the benefits of production efficiency improvements (the 'learning curve'), will be cheaper. However, Lockheed Martin is investigating a level-line pricing model to provide a more representative 'average' price that is more attractive to the JSF international partners.

Lockheed Martin expects the price of the F-35A to fall to the average URF price around 2017, so Australia's early aircraft, which will be delivered from 2013, are expected to cost more than this average. The actual total project cost Australia pays will also include training, spares, support equipment, and facilities. On current figures, the total project cost to Australia per aircraft will be approximately US$110-130 million (Jan 2008 dollars).

Australia will not sign a contract with Lockheed Martin for the JSF. The US Department of Defense, under the terms of the PSFD MoU, will negotiate with the company on behalf of all the partner nations. In the early production years this will occur on an annual basis. As noted above, however, Lockheed Martin and the JSF Joint Program Office in Washington DC are

studying an alternate arrangement where Australia and other international partners order all of their aircraft in multi-year block purchases using some variant of the mooted 'level line' pricing model in order to achieve economies of scale and a lower price.

Entry into the PSFD MoU commits Australia to a pro-rata contribution for shared production tooling costs and management fees. The final amount remains subject to final negotiation, but Australia's share will be about 3% of the total shared costs.

As a Partner in the PSFD phase, Australia will have increased representation in the JSF Program Office and so will be involved in defining the scope of the first upgrades to the aircraft after the current development phase is complete. Upgrades, mainly to the avionics and software, will be made every two years to enhance performance, improve affordability and meet future threats. Discussions about the Block 4 configuration have already begun, but the aircraft configuration and capabilities probably won't be known until 2010. The NACC project office's aim is to keep Australia's aircraft common with the core JSF program for both affordability and interoperability reasons.

Australian Industry Involvement (AII)

One important reason for joining the SDD phase of the JSF program was to provide opportunities for Australian companies to participate in the largest military aircraft project ever undertaken. The Australian government invested US$150 million to become a Tier 3 participant in the program. Other benefits of involvement include waiving of the usual Foreign Military Sales (FMS) costs of acquisition and participation of Australian personnel in the project office, allowing access to detailed information as the program matures.

To date, 24 Australian companies have won JSF contracts worth approximately A$160 million in the SDD phase. Manufacturing contracts won in this phase generally position the contractor to carry out the same work on the 350-aircraft LRIP phase and subsequent 2,000+ aircraft FRP phase. But fresh opportunities for Australian companies are likely to emerge when Lockheed Martin and its principal partners and suppliers seek second sources for F-35 components and sub-assemblies as production ramps up.

The NACC Integrated Project Team (comprising Defence and the Department of Innovation, Industry, Science & Research) has worked with Lockheed Martin and its industry partners as well as the two engine manufacturers Pratt & Whitney and Fighter Engine Team (GE and Rolls Royce) to develop Industry Participation Plans that identify good long-term outcomes for Australian industry over the life of the Program.

In November 2007 Lockheed Martin and its principal industry partners, BAE Systems and Northrop Grumman, announced that Australian companies will have access to manufacturing, supply and sustainment opportunities worth over A$10 billion, as well as access to follow on development opportunities, over the life of the JSF program. Contracts will be awarded on a best value for money basis - there are no firm guarantees. More sober industry estimates of Australia's share of the JSF program are between $3 billion and $4 billion.

Opportunities include the possible manufacture of 200 upper and lower wing skins, the manufacture of some 700 vertical tail structures and associated tooling for Lockheed Martin and its partner, BAE Systems, and various components for Northrop Grumman and other major JSF contractors. Australian engineering firms will also be able to bid for over $1 billion dollars worth of high-speed, precision machining work on critical airframe and engine components, while Lockheed Martin is considering a proposal to source high-technology infra red decoy flares from a new manufacturing plant near Melbourne.

Sustainment
To support the global JSF fleet in service, Lockheed Martin is establishing a JSF Autonomic Logistics Global Sustainment (ALGS) system, supported by an Autonomous Logistics Information System (ALIS) which will record and analyse the behaviour and health of each F-35 aircraft, providing logistics and fleet management information for every F-35 operator globally. Lockheed Martin activated the F-35 ALIS in 2007 at Fort Worth to support the JSF flight test program.

A key aim of the ALGS is to optimise the use of Original Equipment Manufacturers (OEMs) to minimise support costs. Essentially, Lockheed Martin will be responsible for providing in-service support for the global F-35 fleet to a level negotiated with the individual customers and subject to sovereign self-reliance considerations.

The ALGS could include regional support centres (RSCs) in strategic locations around the world. Self-reliant support of the F-35 in Australia is a requirement of the RAAF, but logistics support for the JSF is a complex issue. New technologies in the JSF, including stealth, and anticipated improvements in the reliability of components and systems mean the JSF's support demands may be quite different from those of legacy aircraft.

In January 2008 Lockheed Martin, in conjunction with BAE Systems Australia, completed a study to specify the in-country support capabilities needed to satisfy Australia's strategic requirements, and the timeline for establishing key parts of it. The study is helping to determine whether Australia can build a business case for a competitive RSC. The key factor in determining the viability of an RSC in Australia will be when other countries in the region buy the JSF, and the extent to which the US operates the JSF in our region. This will not be known for some years yet, according to the NACC, but the development of Australian support arrangements will take into account the potential to expand to meet regional demand as well.

Maritime Surveillance & Response (AIR 7000 Phases 1B & 2B)

AIR 7000 has two distinct phases. Phase 1B is for the acquisition of High Altitude Long Endurance Unmanned Aerial Systems for maritime patrol and other surveillance to complement the capabilities of manned systems to be acquired under Phase 2B. The capability is currently provided by AP-3C Orion aircraft. While the project as a whole will be focused on the acquisition of maritime patrol and response capabilities, it will also support electronic and land surveillance roles.

Phase 1B is in the process of considering options leading to the acquisition of a high altitude long endurance Multi-mission Unmanned Aerial System (MUAS) that can perform all-weather, long endurance surveillance and reconnaissance tasks over maritime and land environments. The MUAS will play a significant role in the patrolling of such areas as the Northwest Shelf, the sea-air gap to the North and Australia's Antarctic territories. This capability is an essential adjunct to the manned aircraft to be acquired under Phase 2B.

First Pass approval was granted in July 2006 for Phase 1B, allowing Defence to commence formal negotiations to participate with the United States Navy in the development of a MUAS capability. In January 2007, Australia entered into a reported 18-month, $15 million cooperative agreement with the USN to participate in the pre-system development and demonstration processes for the BAMS UAS program. Three Australian personnel were posted to the MUAS program office. They were DSTO's head imaging radar specialist, software and aeronautical engineers. It can be assumed that their contribution has been slanted to Australian objectives in BAMS-related of issues such as radar capabilities, modeling and simulation, human interfaces and tri-band satellite communication.

The BAMS UAS program

In mid-March 2007 the USN (NAVAIR) released the final Request for Proposal for the BAMS Unmanned Aerial System (UAS) program which included the Australian requirement as a subset. The solicitation closed on 30 April 2007. According to the RFP's preamble, the BAMS UAS will provide a persistent maritime, intelligence, surveillance, and reconnaissance (ISR) data collection and dissemination capability to the USN fleet, serving as a force multiplier for the Joint Force and Fleet Commander.

Australian BAMS UAS options provide for the expansion of the System Development and Demonstration (SDD) program to include the design, development and demonstration of a solution that meets Australia's objectives. For the purposes of the Australian objectives, In Service Date (ISD) is defined as the year in which the first elements of the capability are planned to enter service, though not necessarily be ready for operational deployment.

The first elements of capability consist of an air vehicle, a fully populated payload, communication suite, mission planning, simulation and mission control system. ISD will be achieved in 2013. The Australian IOC for the UAS is defined as one base unit with sufficient assets, technical data, training systems, and enough spares and support equipment to operationally support three periods of 24 hr surveillance per week and is planned for 2015.

Australia's multi-mission interest in MUAS capabilities is likely to be broad ranging. While the system will be used for warfighting in both land and maritime environments, it is also being evaluated for coastline protection against such activities as drug trafficking, human smuggling and illegal fishing. A second-tier capability is for the intelligence, surveillance and reconnaissance (ISR) of remote airfields in northern Australia, in part to monitor for drug trafficking. Unmanned aircraft are well suited to these missions due to their persistence.

On 22 April 2008 the US Navy awarded Northrop Grumman an 89-month, US$1.16 billion contract to begin system development and demonstration (SDD) of the BAMS UAS program. Northrop Grumman's RQ-4N, a marinised version of the RQ-4 Global Hawk unmanned air vehicle, will be the platform for the BAMS UAS suite of maritime surveillance sensors and communications systems.

This decision represents a significant milestone in the development of Australia's future multi-mission unmanned aerial system (MUAS). The previous government stated in July 2006 that, following the US Navy's decision on BAMS, it would consider whether or not to officially join the BAMS SDD program. A business case will now be developed by Defence for Intermediate Pass approval (mid-2008 or later), which is expected to lead to:

- A go-ahead (or otherwise) to exercise the Australian option
- Signing of a MOU with the USN to join the SDD program (which will probably include Australian technical representation on the BAMS IPT)
- Selection of the Australian Industry Capability Partner (see below).

The cooperative development of the UAS may provide important global supply opportunities for Australian industry as well as influence in the development of the BAMS program. The Australian Government will evaluate these benefits when making a decision on whether or not to enter into a cooperative program with the US Navy. It is anticipated that Second Pass approval, which will herald the start of the Australian acquisition phase, will be granted in 2011 to coincide with initial production in the US.

In an RFT issued on 14 March 2007, Defence sought responses for an Industry Capability Partner (ICP), and for the initial contract for the design of the Australian-unique elements of the MUAS. The ICP's main focus will be in developing the Integrated Ground Environment

(IGE), and the provision of in-service support and integration of airborne systems not provided via BAMS. The project is expected to provide significant opportunities for Australian industry. Defence intends to engage closely with Australian industry on the development of an Integrated Ground Environment for UAS control and fusion of sensor information.

The Industry Capability Partner and its team of Australian subcontractors will work directly with the US prime contractor and subcontractors in bidding for global supply opportunities for the BAMS unmanned system. They would also need to negotiate integration and other opportunities for the incorporation of Australian unique elements such as radar, IFF and so on.

There should be opportunities for Australian industry in the development of the IGE for MUAS control and fusion of sensor information. The IGE's many elements including UAS mission control, mission analysis, planning and replay, an intelligence support and dissemination facility, as well as part task simulators.

AIR 7000 2B

Phase 2B is intended to provide the manned component of the ADF maritime patrol capability, and may involve upgrade or replacement of the AP-3C Orion aircraft. Life-of-type considerations for the AP-3C include the increasing cost of addressing airframe fatigue and corrosion, aircraft system supportability (including engines, hydraulics, electrical and fuel systems) and mission system obsolescence. Although mission system obsolescence is being addressed under Project AIR 5276, a further upgrade may be required to extend its useful life. In December 2006 Defence signed a nine-year contract worth $201 million with Australian Aerospace for deeper maintenance of the AP-3C fleet through to the planned withdrawal of the aircraft from 2015 to 2018, after nearly 30 years of service.

Australia has been closely following the USN's P-3 replacement program. Following an exhaustive examination of available options, the USN chose Boeing to develop the P-8A MMA based on its B737 commercial aircraft. The P-8A MMA offers a modern, highly reliable, commercially-proven airframe, with the latest maritime surveillance and attack capabilities.

The P-8 has been designed to operate in conjunction with the BAMS unmanned aerial system, so participation in the manned component of the BAMS program would seem logical if the US unmanned aerial system meets AIR 7000 requirements.

The Australian Government announced on 20 July 2007 that the P-8A MMA had been selected as the preferred aircraft to replace the RAAF's AP-3C fleet. With the granting of First Pass approval, Defence commenced formal negotiations with the USN to participate in the cooperative development of the P-8A Multi-mission Maritime Aircraft (MMA).

Initial low rate production is scheduled to start in 2008 and full scale production, at a rate of 12 to 18 aircraft per year, in 2012. The planned Initial Operational Capability (IOC) date is 2013. As yet no decision has been made as to the numbers of aircraft required to replace the capability delivered by the AP-3C but the RAAF and DSTO have been undertaking Force Mix studies to determine the numbers of each platform type that will be needed.

Australian Industry Opportunities

Both phases are expected to offer significant opportunities for Australian Industry Involvement (AII). Defence says it intends to engage closely with Australian industry on the development of an Integrated Ground Environment (IGE) for MUAS control and fusion of sensor information. Operator training, including through simulation training together with long term support of Unmanned Aerial Systems, are among other opportunities for local industry involvement.

The manned component of AIR 7000 is expected to provide opportunities on a par with those currently enjoyed by industry in the support and upgrade of the current AP-3C fleet, including the supply and integration of Australian unique requirements such as EWSP.

Amphibious Assault Ship (LHD) (JP 2048 Phase 4A/B)

Joint Project 2048 seeks to replace the capability of the current range of ADF amphibious platforms and the afloat support ship HMAS *Success*. Phase 4A/B will replace the heavy lift ship HMAS *Tobruk* and one of the two LPAs (HMAS *Manoora* or *Kanimbla*) with two Amphibious Landing Ships (LHDs: Landing – Helicopter – Dock). Phase 4C will replace the remaining LPA with a sealift capability by 2016-18. The two ships, to be named HMAS *Canberra* and *Adelaide*, are scheduled to enter service with the RAN from 2012.

A survey conducted in 2003 established that there were only two designers with existing LHD designs that met Defence's criteria: Armaris of France (representing DCN and Thales), with the 22,000 t *Mistral* design and Navantia of Spain, with the 27,000 t Strategic Projection Ship.

A Request for Information (RFI) was issued to the two designers in February 2004 to determine whether their designs met the Outline Function and Performance Specifications for the requirement. The information received was inconclusive, so both designers were invited to participate in a Risk Reduction and Design Study to provide more detailed commercial, technical and cost information. Four Australian shipbuilders, ADI (now Thales Australia), ASC, Austal/Raytheon and Tenix, were also contracted to advise on ship construction and through-life support issues, and an independent cost estimator was employed.

To confirm the information provided in the study and to inform the designers of the preferred contracting model, Requests for Quotation (RFQ) were issued to the designers and to the shipbuilders in January 2005. Responses were received in March 2005. This activity also aimed to establish a 'sail-away price' estimate for two ships built in Australia, and their life cycle costs. Under the Kinnaird procurement reforms it was also a requirement to compare the prices for local construction with prices for overseas construction, to quantify the 'cost premium' for local construction. This information was needed to support the Initial Business Case for First Pass approval.

First Pass approval for the project was received in August 2005, when $29.8 million was committed for 1st – 2nd Pass activities, including the Design Development Activity phase (September 2005 – March 2006), during which Defence worked with the designers in their respective locations in France and Spain to further develop the designs for the vessels. This process incorporated the necessary Australian environmental and technical requirements. It also reduced risk by laying a firm technical basis against which Australian tenderers could cost their proposals with a high degree of certainty.

Due to the perceived disparity between overseas and local build costs (believed to be of the order of 30 per cent) and the government's stated preference to build the ships in Australia, an acquisition strategy was approved at First Pass which:

- allowed Australian shipbuilders to bid either or both designs
- did not specify any particular level of AII, and
- sought innovation to reduce the cost of an Australian build.

This saw the schedule extended to allow Australian shipyards to better familiarise themselves with both overseas designs and to compete with the very attractive bids made by Navantia and Armaris for their designs/production package.

Defence sought to contract on a fixed-price basis with a single prime, which was expected to team with the designers and develop commercial relationships with Australian systems houses. Prices were also sought from the designers for overseas build, to be retained as the 'off-the-shelf' option for presentation to government at Second Pass. Tenix teamed with Navantia to offer an 'Australianised' variation of Navantia's 27 000 tonne BPC, and Thales Australia joined with Armaris to propose a similarly-varied adaptation of the Armaris 22 000-tonne *Mistral* class.

A Request for Tender (RFT) was released to Australian shipbuilders on 2 May 2006 (instead of late 2005 as originally proposed), inviting tenders for either or both of the two designs. The tender documentation allowed bidding companies to:

- submit fixed price bids,
- bid through life support (TLS) solutions,
- provide innovative solutions to improve price and schedule, and
- submit an extra option (outside the selection criteria) which would increase Australian industry content at a premium to the tendered price.

Tenders closed on 16 October 2006. On completion of the tender evaluation, an Offer Definition Activity was conducted with both tenderers to obtain the necessary level of detail for the Second Pass Capability Submission. Second Pass approval for the Tenix/Navantia solution was obtained on 19 June 2007. With the completion of contract negotiations with Tenix, the contract between the DMO and Tenix was signed on 9 September 2007, the effective date being 23 November.

The Tenix solution comprises two Navantia designed Helicopter Landing Dock ships with a fully integrated SAAB 9LV 454 Mk3E combat management system and onboard interfaces to external operational and support elements. The core of the solution proposed by Tenix is that the LHD hulls will be built by Navantia at the Ferrol and Fene Shipyards (Spain). Each hull will be transported to Australia as a single lift on a Heavy Lift Ship (HLS). Construction of the superstructure and its integration with the hull will be conducted by Tenix in the Williamstown Shipyard in Victoria. The superstructure contains the high level Combat and Communications Systems equipment that will need to be maintained and upgraded in Australia. Tenix will also undertake the final fit-out, set-to-work, docking and trials. The combat system, a variation of Saab's evolved 9LV combat management system, will be supplied and integrated by Saab Systems Australia.

Each ship will have the ability to transport a combined arms battalion group of around 1000 personnel, six helicopter landing spots and provision for a mix of troop lift and armed reconnaissance helicopters. It will also be able to transport up to 150 vehicles, including M1A1 Abrams tanks and other armoured vehicles. Each ship will also be equipped with medical facilities, including two operating theatres and a hospital ward.

Estimated total project cost is $3.1 billion (out-turned dollars). Contract price at signature was $2.268 b. Actual project expenditure to 30 June 2007 was $24 m. Estimated expenditure for the year to 30 June 2008 is $223.55 m. Total project expenditure from commencement to June 2008 is $247.55 m. (Note: in January 2008 Tenix agreed to sell its defence businesses to BAE Systems Australia. The sale is subject to Foreign Investment Review Board (FIRB) approval, to which Defence has input.)

Australian Industry Involvement (AII)

Australian industry was briefed on the first pass outcomes for this project including overseas versus local build costs. The RFT issued in April 2006 incorporated a strategy that aimed to maximise Australian content within budgetary guidance, based on:

- mandating Australian products as costed options
- options to substitute Australian materials and minor equipment
- through-life support by Australian industry.

Aside from construction, it is anticipated that there will be considerable Australian industry involvement in the high-value and leading technologies, in 'smart' skills such as the installation, design and integration of combat and communications systems, and in the provision of equipment and fittings to meet Australian requirements. The AII component for the build phase is expected to be of the order of $500 million, or 23 per cent.

The main opportunities for Australian industry will be through in-service support which, over the ship's life, is typically four or five times the cost of acquisition. It is intended to support the ships within Australia and from Australian resources. The LHDs are expected to provide the opportunity for Australian companies of up to 40 years of steady demand, regardless of wider economic conditions. A request for proposal for an initial support contract is expected to be released in 2010.

Lightweight Torpedo (Joint Project 2070 - Djimindi)

Project overview and key issues
Joint Project 2070 aims to upgrade the anti-submarine capabilities of the ADF by replacing its obsolescent Mk46 lightweight torpedo with a new-generation weapon, the EuroTorp MU90/Impact.

The new lightweight torpedo will arm the RAN's FFG and ANZAC frigates, and Seahawk helicopters and the RAAF's AP-3C Orions. It will also arm the helicopter selected to replace the cancelled Super Seasprite. The MU90 is being acquired in a three-phase program worth $616.5 million (all prices in January 2008 dollars).

Integrating a new weapon with four, and possibly five, separate maritime and airborne platforms is inherently complex and risky; Defence and industry agreed that an alliance approach was the most flexible, efficient and economical way to handle such a complex program. The Djimindi Alliance contract was signed by Defence and the Australian industry stakeholders in 2000, after the selection of the MU90/Impact.

The MU90 has greater performance and lethality than the Mk46 and requires less logistic support. It is 3m long, weighs 300kg, has a range of more than 10km and is designed to track and attack quiet-running submarines at depths ranging from 25m to more than 1,000m.

Phase 1 was a Project Definition Study. Phase 2, with a $330 million budget, will see initial acquisition of the MU90 and associated logistic support (under a contract with the Djimindji Alliance team worth $174.7 million) and the integration of the weapon onto the ADF platforms. Maritime platform integration is nearly complete but air integration has been held in abeyance until new strategic direction for air delivery platforms is forthcoming in the new Defence White Paper. Phase 3, with a budget of $281.5 million, will acquire war stocks, with deliveries from an Australian final assembly line starting in 2010. The production contract is worth $226.5 million and is due for completion by June 2012.

Under Phase 2, all eight Anzac frigates are now capable of launching MU90 torpedoes. Recently completed ships had the capability from the outset while older ones were retrofitted. Installation of the launchers aboard the RAN's FFG frigates and modifications to the ships' magazines and combat systems is being carried out in conjunction with the FFG Upgrade project (reported separately). All platforms integrated with the MU90 will also remain capable of firing the Mk46 torpedo.

Acceptance Test and Evaluation (AT&E) firings of the MU90 were originally scheduled for 2006 but minor technical issues slowed delivery of the initial batch of 20 weapons. These arrived in Australia in early 2008 and the AT&E program is now under way with test firings due to start in June in the ADF's Western Australia Exercise Area.

The schedule for air integration T&E activities will be determined in large part by the still to be determined way ahead for naval helicopters. Depending on the path chosen, detailed design and integration onto the Seahawks could occur as part of the Seahawk Mid life Upgrade and Life Extension..

Similarly, if endorsed in the White Paper, the DMO's Maritime Patrol Systems Program Office (MPSPO) at RAAF Base Edinburgh will manage the integration of the MU90 on the RAAF's AP-3C Orions on behalf of the JP2070 project office. The integration work will be undertaken through the P3-Accord, a joint DMO-Industry team comprising the MPSPO, Tenix Defence and Australian Aerospace.

However, if the White Paper results in the acquisition of the maritime variant of the MRH90 helicopter to replace the Super Seasprites (and possibly even the Seahawks,) contingency plans also exist to integrate the MU90 with the MRH90/NFH90 platform. Preliminary work thus far includes development of a cross platform integration strategy for integration into all air platforms. This involves the design and manufacture of a Common Torpedo Control Unit, allowing integration into all aircraft using the aircraft's own data system. If appropriate, this cross platform integration strategy will be used on any aircraft selected to replace the Super Seasprite.
Weapons acquired under Phase 2 are being manufactured in Europe. However, this phase is also establishing an in-country MU90 Torpedo Final Assembly Facility at HMAS Stirling in WA, which will be commissioned in late-2008. This will also be used to assemble torpedoes acquired in Phase 3 and to support and upgrade the torpedo through its life of type. It is already being used to prepare torpedoes for the AT&E test firings in June 2008 and to train Commonwealth and industry maintainers. This new facility is part of the existing Torpedo Maintenance Facility which maintains the RAN inventory of Mk46 and Mk48 torpedoes, and a commercial in-service support agreement for the MU90s is currently being developed.

The main risks to the project's schedule and achievement of contracted capability are the availability of platforms for integration (to some extent determined by other upgrade programs and operational tasking) and difficulties in transferring overseas supplier skills and technical knowledge for a complex weapon system into Australian industry under Phase 3. The DMO says the latter risk is being managed—the maintenance facility is already being used for preparation of MU90 torpedoes and for training courses for maintainers, and this is building a competent body of experience prior to Phase 3 deliveries.

Alliance Contracting and Australian Industry Involvement (AII):
Alliance contracting is designed to create a formal partnership between Defence, the DMO and industry in order to make the acquisition process cheaper, faster and more outcome-focused. It also helps share risk and integrate the efforts of the project players in highly complex projects. The multi-platform integration program for JP2070 made it a logical candidate for the Alliance approach.

The Djimindi Alliance was established to deliver the new lightweight torpedo capability; its partners are the Commonwealth of Australia, Thales Underwater Systems Pty Ltd and EuroTorp itself, a joint venture between French firms Thales and DCN and Italian torpedo manufacturer Whitehead Alenia Sistemi Subacquei. Thales Australia Pty Ltd is a sub-partner, manufacturing MU90 components and contributing significantly to integration with the FFG frigates.

As a ‘pathfinder’ for alliance contracting, the Djimindi Alliance attracted scrutiny and criticism due to early delays in finalising the contract for Phase 2. These have been attributed to lack of experience in Australia of this new contracting regime, but delays in the introduction of capability have sprung to a significant degree from minor technical problems with the torpedoes (now resolved) and platform integration and availability issues outside the control of the Alliance.

However, the original Djimindi Alliance Agreement was substantially renegotiated in 2005-06 to incorporate lessons learned and to better allocate work share and risk and is now proving to be an appropriate mechanism for this project.

Thales Underwater Systems (TUS) in Sydney is the sole source of MU90 homing head transducers and electronic boards for European customers. It will also assemble the torpedoes acquired under Phase 3 of this project. This assembly facility will provide a sustainable, local through-life support and upgrade capability for the MU90.

The ANZAC Alliance (Commonwealth of Australia, Tenix Defence and Saab Systems) and the Djimindi Alliance formed an integrated project team to successfully integrate the MU90 onto the Anzac-class frigate. Another alliance team, the P3 Master Accord, comprising the Commonwealth, Tenix Defence and Australian Aerospace, will undertake MU90 integration on the AP-3C Orion, if endorsed by government.

JP 2072 Battlespace Communications System (Land)

The goal of Joint Project 2072 is to provide the Land Force with a deployable and integrated Battlespace Communications, with connectivity across all component systems such as C2, intelligence, offensive fire, logistics, ground based air defence and sensor-linked weapon systems. The project involves the upgrade of existing equipment and the acquisition and integration of new communications equipment.

JP2072 is an especially significant project in that it will be developing the foundation architecture for the ADF’s overarching Network Centric Warfare (NCW) capability. BCS-L was the first major project on the NCW Roadmap, which set out Defence's goals for NCW through a series of targets. By 2010 the Roadmap envisages the ADF having established an information distribution architecture with which all capital projects (including selected legacy systems) would need to comply.

The first phase comprised two elements, system design and initial acquisition. It was expected to assist in achievement of the ADF's Interim Land Combat Force NCW milestone. Defence saw this first phase as an opportunity to examine new technologies and architectures in an operational environment prior to introducing them more widely throughout the ADF. Thus Phase 1 also included definition studies for Phase 2 as well as capability demonstrators for candidate technologies.

The contracted Prime Systems Integrator (PSI) for Phase 1 would not only be responsible for fashioning much of this architecture but, assuming satisfactory performance, would continue the systems integration role for subsequent phases of JP2072, including as developer and maintainer of the information architecture.

A Request for Tender (RFT) for the PSI was released on 6 February 2004, closing nearly three months later. General Dynamics Canada, with partners Tenix Defence Systems and ADI Limited, was selected as preferred tenderer.

GDC was contracted to establish an objective architecture providing the framework for effects-based, network-centric operations in support of the ADF and then addressing a number of specifically identified current operational deficiencies. The company planned to manage JP 2072 using the same management model used on the UK BOWMAN program, claiming that this model capitalised on the experience gained by GD Canada and would also build on local industry capability.

When GD Canada was awarded what in effect was part of the Phase 1 contract in late 2005, it had a number of tasks ahead of it, which included:

- the definition and design of the 2015 tactical communications system architecture
- planning for implementation of the system over three phases
- identification of potential technical solutions for the high priority capability shortfalls for Phase 1.

This part of the Phase 1 contract, worth some $28 million, may have been followed by a contract amendment to cover 'Phase 1 Orders', to acquire and introduce new equipment, as well as to enhance existing capabilities according to the PSI's implementation plan. With its acquisition of mostly overseas-sourced radios and communications infrastructure, Phase 1 Orders was expected to use up the balance of the Phase 1 budget of $97m.

To identify potential equipment solutions, the PSI undertook a Market Survey in mid-2006 to enable it to make recommendations on its proposals to address the most urgent capability deficiencies, for the evolving JP2072 system architecture, the implementation plan (matching capabilities against phases), and the equipment and capabilities to be procured under Phase 1 Orders,

The Market Survey sought information on a combat radio subsystem; local area subsystem; trunk subsystem; tactical data distribution subsystem; communications management subsystem; and batteries and alternate energy sources. It was made clear to survey respondents that it was up to the Commonwealth to determine what was to be procured under Phase 1 based on the recommendations of the study and associated report. Procurement was scheduled to occur in 2007 for delivery and installation throughout 2008.

By early 2007 it was evident that the project was in trouble. There had been delays, seemingly an endemic aspect of highly complex projects such as JP2072, and there were suggestions that related programs might pursue their own acquisitions should JP2072 slippage affect their rollout schedule. At that time the PSI was finalising the System Requirements Review for the BCS-L, which in effect transforms the top level user needs of the Operational Concepts Document into a system function and performance specification as part of the Systems Definition Review.

If the study and implementation plan had received approval (with or without modification) by Defence, the original contract with the PSI could have been changed, providing the balance of funds from the amount initially set aside for Phase 1, to enable the acquisition to proceed. However, following delays with the project, and an unsatisfactory Systems Engineering Review by the Commonwealth and GDC, the contract was terminated.

Current status

JP2072 Phase 1 involves integration with most platforms and a wide range of communications capabilities. Priority requirements are:

- Communications support for dismounted voice, dismounted and mounted BMS data for battle group and below

- Communications support for the Battlefield Command Support System (BCSS) and other wideband users
- 'Communications on the move'
- Communications solutions to support other priority upgrades under BCS (L).

To overcome delay in acquisition through JP2072, the high priority Battle Management System (BMS) communications solution was included in an RFT issued for the Land 75 and Land 125 Battle Group Command, Control and Communications (BGC3) projects. This requirement will be funded by JP2072.

JP2072 continues as a multi-phased project to progressively define and acquire significant portion of BCS(L). Under the revised acquisition strategy, the DMO Project Office is accepting responsibility for the role of PSI and is now undertaking to acquire the BCS(L) in an incremental manner using an evolutionary acquisition approach. Phase 1 supports the Networked Battle Group (NCW 2009). Phase 2 ($450-600m) YOD 08/09 supports the Networked Brigade (NCW 2012) while Phase 3 ($200-250m) YOD 09/10-11/12 supports the Networked JTF (NCW 2015).

Estimated total expenditure to June 2008 is $18.72 million. A total of $12m has been received by Defence as damages. Estimated expenditure for the year to June 2008 is $1.76m.

Australian Industry Involvement
Although most equipment will be procured from overseas sources, there is also scope to acquire equipment from Australian industry. The main industry requirements are based around developing and maintaining sufficient capability within Australian industry to undertake the full range of through-life maintenance and support through TLS sub contracts.

Obituary - ANZAC Ship Helicopter (SEA 1411) 1996-2008

Until March this year Australia was in the process of acquiring 11Kaman SH-2G(A) Super Seasprite helicopters for its eight ANZAC Class frigates. However, due to difficulties and subsequent delays in the integration of specific Australian requirements, including the helicopters' advanced mission systems, considerable uncertainty had been building as to whether this project would continue or be cancelled in favour of an alternative solution.

This uncertainty was resolved when the Minister for Defence announced the Government's intention to cancel the project on 5 March 2008. A further statement on 20 March was to the effect that a satisfactory conclusion to the Seasprite project had been agreed with the contractor, Kaman Aerospace, and that the project had been cancelled on mutually agreed terms. These included the return of all project deliverables to Kaman for sale on the open market, with the Australian Government and Kaman sharing in the profits of subsequent sales.

Project background
It was originally intended to equip the Anzac class frigates with Sea Hawk helicopters. However, during the mid-1990s, there was a strong possibility that Australia might replace the Fremantle Class patrol boats with a new class of Offshore Patrol Combatant (OPC). Their acquisition would be based on a common Royal Malaysian Navy/RAN requirement, with the promise of significant economic advantages if a joint build program eventuated.

In light of these developments, it was decided to select a common helicopter to meet both ANZAC and OPC requirements, and by late 1996 the choice of OPC/ANZAC helicopter was firmly focussed on the Kaman Seasprite. Earlier, Sikorsky had proposed that the RAN

maintain fleet commonality through the acquisition of eight lesser-capability Sea Hawks fitted for, but not with, the ASW system.

Sikorsky argued that the Sea Hawks would cost no more than either of the two intermediate helicopters (Super Seasprite and Super Lynx) under consideration for the OPC/ANZAC ship requirement, because of the development costs associated with the latter and the cost of supplying a prototype for trials. In the case of the Seasprite, life-cycle costs would be similar, since the same engines and avionics were involved.

The Malaysians finally opted for a German-designed OPV rather than the Australian OPC, and the acquisition of intermediate helicopters was now limited to those required for the ANZAC ships. The decision was made in January 1997 to continue with the Kaman Super Seasprite and a contract was signed in June that year. They were to be equipped with radar and other sophisticated sensors, torpedoes and anti-ship missiles. Flight simulator and support facilities were also being acquired.

With a highly sophisticated software driven flight and tactical suite and armed with the Kongsberg Penguin anti-ship missiles, the Super Seasprite was envisaged as a very capable aircraft and formidable weapons platform, filling a range of roles including surface surveillance, surface attack, anti-submarine warfare, naval gunfire support and other operations.

Deliveries of fully compliant aircraft were to have commenced in March 2001 and be completed by August 2001. This was delayed by the failure of major subcontractor Litton Integrated Systems to successfully develop the Integrated Tactical Avionics System (ITAS), the integrated software package necessary to run the sensors, avionics and weapons. CSC Australia and Northrop Grumman Information Technology took over the major software sub-contract abandoned by Litton, with both companies providing systems engineering and software development and support.

Although progress had been made with the integration of radar, datalink and Penguin missile with the mission control system, formal qualification testing of the integrated software was not due for completion until late 2007. In another setback, the Super Seasprite fleet was grounded in March 2006 due to in-flight incidents that raised serious safety concerns with the Automatic Flight Control System (AFCS).

As a result, a two-phase remediation plan was developed. Phase 1, which was completed and tested, would have allowed the RAN to recommence flying with Flight Test crews in late 2007. Under Phase 2 Kaman proposed a two-year, US$37.7m upgrade to meet the new airworthiness standards. This primarily involved the development and installation of a second flight control computer, capable of monitoring and, if necessary, overruling commands issued by the primary computer.

In May 2007 the then Defence Minister Nelson announced that the Super Seasprite helicopter project would go ahead.

However, in late 2007 the incoming Rudd Labor Government initiated a review of the project, in line with the promises made prior to the November election, and that review led to the cancellation of the project earlier this year. To ensure that the Navy maintains an effective naval aviation capability, the Government announced that it had decided on two measures. First, an interim approach will focus on improving the operational availability of the current Seahawk fleet. Second, the Government will investigate the planned replacement of the Seahawk during its White Paper deliberations.

Defence contracted significant Australian specific requirements with only a small production run. The risk of incurring significant development costs and delays was thus realised,

although it is understood that Kaman had hoped to sell more of the Seasprites and no doubt saw the effort in designing the composite main rotor blades and the Integrated Tactical Avionics System as a loss leader for other markets.

The original project budget was $745.6 million in February 1996 dollars and currently stands at $1108m in January 2008 dollars. Cumulative expenditure to June 2007 was $947m, with spending for the year to June 2008, originally estimated at $15m, revised upward to $20m, an increase of $5m due to the earlier decision to go ahead with the project, which included a real cost increase for the flight control system remediation. Cumulative expenditure to June 2008 is now estimated at some $967m.

Australian Industry Involvement (AII):
Kaman was teamed with CSC Australia, Scientific Management Associates and Safe Air NZ. The contracted total AII obligation stands at some $345m in today's dollars. Kaman previously reported $387m in AII and had expected to complete the project having committed $492m in AII.

SECTION 9 –THE FINANCIAL STATEMENTS EXPLAINED

Section 9.1: Defence Resourcing

Total Defence Resourcing has been clearly summarised in Table1.2.1 in the PBS. While much of the Defence budget can be understood without recourse to the financial statements, it is through the financial statements that the key financial aspects of the budget are consolidated, including the impact on future years. Therefore it is useful to understand the relationship between Total Defence Resourcing as presented in the PBS and the budgeted financial statements.

Table 1.2.1 [PBS p.14] shows that Defence receives funding in a number of different ways. The government purchases some 17 Output Groups from Defence, which are consolidated into three Outcomes. Included within Output Group 1.14 are administered appropriations.

The price government pays for these Outputs is the Output Appropriation. Additional funding for the Outputs comes from Defence's own source revenues. Defence also receives funds to invest in capital assets. This comes from the government's equity injection and from net capital receipts, being the proceeds of sales of existing assets after capital withdrawal by government.

PBS Table 1.2.1: Total Defence Resourcing

Serial	2007-08 Estimated Actual $'000		2008–09 Budget Estimate $'000	2009–10 Forward Estimate $'000	2010–11 Forward Estimate $'000	2011-12 Forward Estimate $'000
	Departmental					
1	19,693,267	Revenue from Government for Price of Outcomes	19,392,037	20,686,982	21,126,678	21,664,050
2	524,315	Equity Injection	2,365,736	3,550,623	4,247,986	4,740,822
3	64,174	Appropriation for previous years outputs	-	-	-	-
4	**20,281,756**	**Current years appropriations**	**21,757,773**	**24,237,605**	**25,374,664**	**26,404,872**
5	-14,174	Drawdown of appropriations carried forward	55,000	60,000	65,000	32,382
6	**20,267,582**	**Funding from Government**	**21,812,773**	**24,297,605**	**25,439,664**	**26,437,254**
7	53,974	Net Capital Receipts (s31 receipts)	65,662	66,314	75,791	52,476
8	857,671	Own-Source Revenue (s31 receipts)	811,892	832,956	844,554	874,014
9	**911,645**	**Funding from other sources (7+8)**	**877,554**	**899,270**	**920,345**	**926,490**
10	**21,129,277**	**Total Defence Funding (6+9)**	**22,690,327**	**25,196,875**	**26,360,009**	**27,363,744**
	Administered					
11	2,807,352	Administered special appropriations	2,943,338	3,058,554	3,176,524	3,296,457
12	26,800	Appropriation for specific purpose payments	23,300	-	-	-
13	**2,834,152**	**Total administered funding**	**2,966,638**	**3,058,554**	**3,176,524**	**3,296,457**
14	**24,013,379**	**Total Defence Resourcing (10+13)**	**25,656,965**	**28,255,429**	**29,536,533**	**30,660,201**

The key sources of funding for Defence are explained in more detail as follows:

Revenue from Government for Price of Outcomes (Outcomes Appropriation): In 2008–09 the government will appropriate $19,392 million towards the price of the Defence Outputs. This is the 'Price to Government of Defence's Outcomes'. In 2007-08 the projected appropriation for outputs is $19,693 million. It appears as Revenue from Government in the Budgeted Departmental Income Statement PBS Table 1.7.8.

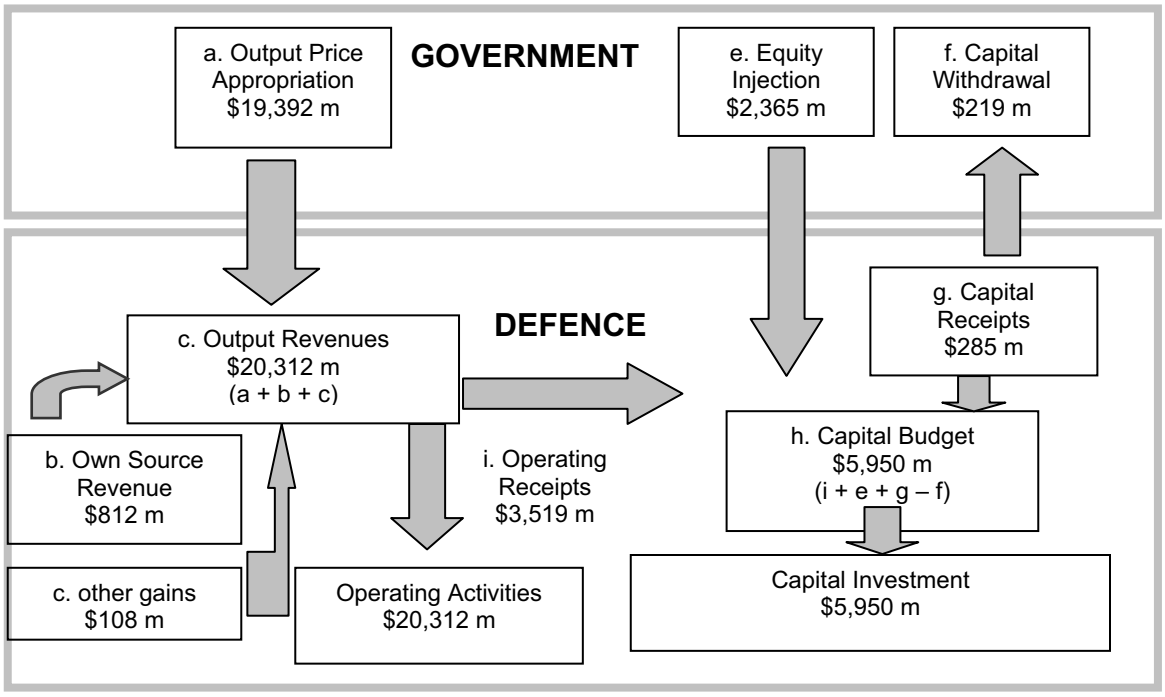
Equity Injection: In 2008–09 the government will appropriate $2,365 million to supplement investment in specialist military equipment ($4,644 million), infrastructure, plant and equipment ($396 million), and land and buildings ($909

million). The equity injection is shown in the Budgeted Departmental Statement of Cash Flows (PBS Table 1.7.10) and also appears in the Capital Budget Statement (PBS Table 1.7.12).

Own Source Revenue: In 2008-09 Defence has budgeted to raise $812 million of 'own source' revenue which is made up of sale of goods and services ($766 million) and other revenue ($46 million). In 2006–07 a total of $770 million was raised including $7 million in rental income, $57 million in excise refunds, $16 million in settlement of damages, $16 million in other revenue, $369 million of revenue from other government agencies and $305 million from sales of other goods and services. Own source revenue is included as Revenue in the Budgeted Departmental Income Statement PBS Table 1.7.8.

Net Capital Receipts: In 2008–09 Defence have budgeted to receive $285 million in capital receipts from the sale of assets (mainly property, plant and equipment). The capital receipts appear as cash receipts from investing activities in the Budgeted Departmental Statement of Cash Flows PBS Table 1.7.10 and within the Departmental Capital Budget Statement PBS Table 1.7.12. Defence will only retain about $66 million of these sales, after the government takes $219 million through a capital withdrawal in 2008-09. Figure 9.1.1 shows the flows of these resources between the government and Defence. This illustrates the linkage between output revenues (inclusive of assets now recognised ($100 million) and other gains ($8 million)) and the capital budget via operating receipts. These operating receipts include the left over cash from output revenue (price) due to non-cash expenses like depreciation and inventory consumption.

Figure 9.1.1 Defence Funding Schematic



Accrual Accounting

Accrual accounting is *activity* driven. It accounts for all resources when they are consumed and not necessarily when the corresponding cash is transacted. This can result in non-cash expenses such as depreciation and inventory which represent the consumption of resources previously paid for. Accrual accounting also includes expenses associated with unpaid obligations like creditors and employee entitlements.

The first step to understanding accrual accounting is to understand the language used. Some of the terms are obvious but others are not.

At the most basic level is the **resources** that are used in Defence. This includes **cash**, **inventory** (e.g. bullets, soap and uniforms), **capital assets** (e.g. tanks, buildings, and even software), the labour of staff and goods and services from the market place.

The earning of income is called **revenue**. Defence earns revenues through sales and the output appropriations from the government. The consumption of a resource is called an **expense**.

Some resources are paid for and used within the accounting period (eg salaries); other non-cash expenses arise through the use of resources previously paid for called **assets** such as **inventory**, which is consumed. Another non-cash expense arises when **capital assets** are consumed through their **depreciation** in value over time. This yields an annual expense roughly equal to the value of the capital asset divided by its economic life. The difference between **revenues** and **expenses** is called the **net operating result**. A positive operating result is a profit, and a negative result is a loss.

The subtraction of expenses from revenues is done in the **Budgeted Departmental Income Statement** [PBS Table 1.7.8]; more commonly called the Operating Statement or Profit and Loss Statement. Resources that are presently owned are called **assets**. These can be either financial (e.g. cash, investment or monies owed) or non-financial (e.g. capital assets, inventory). Obligations to pay for resources in the future are called **liabilities** (e.g. accumulated employee entitlements and bills to be paid). This includes liabilities associated with non-cash related expenses such as increases in employee entitlements (long service leave) which have arisen through the use of resources which have not been paid. The difference between **assets** and **liabilities** is the **net assets** or **equity**.

The subtraction of liabilities from assets to calculate equity (net assets) occurs on the **Budgeted Departmental Balance Sheet** [PBS Table 1.7.9]. The balance sheet captures resources not yet used (**assets**) and resources used but not yet paid for (**liabilities**).

Even in the accrual framework cash is important. The **Budgeted Departmental Statement of Cash Flows** [PBS Table 1.7.10] often called the cash flow statement tracks the flow of cash through Defence. It reports on the cash received and used for the **operating activities** that deliver the Defence outputs. It also reports on the cash used for **investing activities** like the purchase of tanks, buildings and other capital assets, as well as the cash received from the sale of assets. Finally it reports on the **financing activities** that include cash received from, and paid to, government. This includes the equity injection and capital withdrawal. These peculiar artefacts of the framework are explained on the next page.

The Defence financial statements also include a Capital Budget [PBS Table 1.7.12] that reports the **expenditure** of cash on capital assets. It also reports on how the capital assets are funded and reports on the cash **receipts** gained from the sales of capital assets and the various payments to and from government associated with capital investment. As with the cash flow statement, all the entries refer to cash transactions. The Capital Budget provides insight into the investing and financing aspects of the Statement of Cash Flows.

9.2 Budgeted Financial Statements Explained [PBS Chapter 7]

The financial statements provide some insight into the planned financial performance of Defence for the 2008-09 year as well as the impact on future years.

While public sector agencies such as Defence do not have a profit imperative, it is still useful to discuss the financial statements as if Defence was a profit-making company. Defence, as an organisation, must manage such issues as 'what is the net cost to the government for the delivery of services (outputs)' and 'what is an appropriate level of capital to hold in the business to sustain operations', just as a profit-making company must.

The financial statements in Chapter 7 of the 2008–09 PBS detail an estimate of the current year result, the planned financial performance for the next 12 months and 'forward estimates' for the next 3 years. Revised estimates of budgeted performance are published later in the year in the PAES, and the actual financial performance is reported in October in the Annual Report.

The Defence PBS essentially provides four sets of budgeted financial statements:

- The 'departmental' statements [PBS Table 1.7.5 to 1.7.13] for the Department of Defence. These describe the resources that the department controls to deliver outputs. In the ordinary sense, these are the revenue and costs associated with running Defence.
- The 'administered' statements, referred to as schedules, [PBS Table 1.7.14 to 1.7.17] for the funds administered on behalf of government primarily used for military superannuation schemes.
- Financial statements for the Defence Materiel Organisation (DMO) [PBS Part 2]. The DMO became a prescribed agency on 1 July 2005 and as such have prepared separate budgeted statements which are not consolidated into the Defence financial statements. The DMO will continue to provide services to Defence through a range of Materiel Acquisition Agreements ultimately managed by a Memorandum of Arrangements. The financial statements for the DMO are not analysed in this Brief.
- Financial statements for the Defence Housing Authority [PBS Part 3]. The Defence Housing Authority which forms part of the Defence Portfolio is not consolidated into the Defence financial statements and its budget forecasts are not analysed in this Brief.

We explain the departmental statements below. The departmental financial statements include:

- Budgeted Departmental Income Statement (also known as the Operating Statement or Profit and Loss Statement – records revenues and expenses) [PBS Table 1.7.8];
- Budgeted Departmental Balance Sheet (records assets, liabilities and equity and shows the financial position of the agency) [PBS Table 1.7.9];
- Budgeted Departmental Statement of Cash Flows [PBS Table 1.7.10];

- Departmental Statement of Changes in Equity – Summary of Movement (this statement is designed to show the movement of the Commonwealth's interest in Defence. The statement has been prepared for the 2008-09 financial year to show the net operating result, movements in reserves and additional capital injections from the Commonwealth) [PBS Table 1.7.11]; and
- Departmental Capital Budget Statement (shows the budgeted spend on capital and the source of funding) [PBS Table 1.7.12].

In addition to the key statements and notes, a *summary of movement of non-financial assets* which shows the movements in property, plant and equipment and specialist military equipment is also included. [PBS Table 1.7.13].

The departmental financial statements only report at the most aggregate level, and refer to the total financial performance of Defence as a whole. There is no information on the individual outputs, services or the Defence groups in these statements. However, at PBS Chapter 6 Planned Outcome Performance, prices to government are given for each of the Government Outcomes and their associated Outputs, including a profile of the associated revenue and expenses for each Outcome and Output and performance targets.

An important part of the financial statements are the accompanying notes [PBS pp.136-142]. Note 1, provides an explanation of the accounting policies adopted in preparing the financial statements; however no further information is available by way of note disclosures (excluding special accounts). The Defence Annual Report provides a much more extensive set of notes that break down many of the items in the financial statements into sub-categories. If you want to understand the budgeted financial statements it helps to have a recent copy of the annual report at hand so that you can refer to the notes to the financial statements.

Revenues and expenses in the Budgeted Departmental Income Statement are calculated using the accrual basis of accounting. Appropriations to fund expenses therefore include amounts to cover both cash and non-cash expenditure items.

The Budgeted Departmental Income Statement – The Operating Statement [PBS Table 1.7.8]

The Statement of Financial Performance reports on the accrued revenues and expenses involved in the delivery of the Defence Outputs during the financial year. It does not include what is spent on the investment in capital assets – except for R&D, project studies, design work, specialist and professional advice and project office overheads as operating expenses. Capital assets held are reported in the Budgeted Departmental Balance Sheet PBS Table 1.7.9.

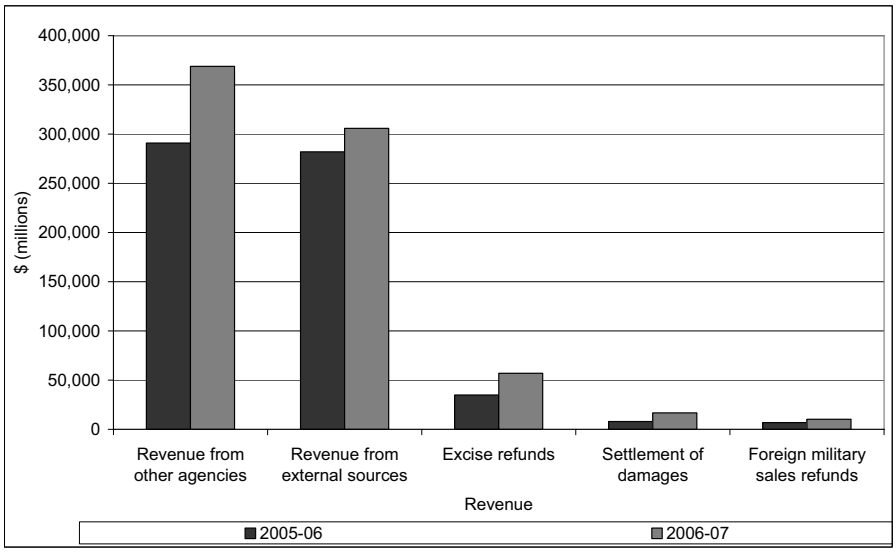
In simplest terms, the Statement of Financial Performance subtracts Defence's total expenses from its total revenues to calculate the net operating result (profit or loss) for the financial year. For the 2008-09 Budget, this is represented as:

NET OPERATING POSITION ($0 million)	=	REVENUES $20 312 million	–	EXPENSES $20 312 million

Budgeted Revenues, or income, for 2008-09 broadly comprises:

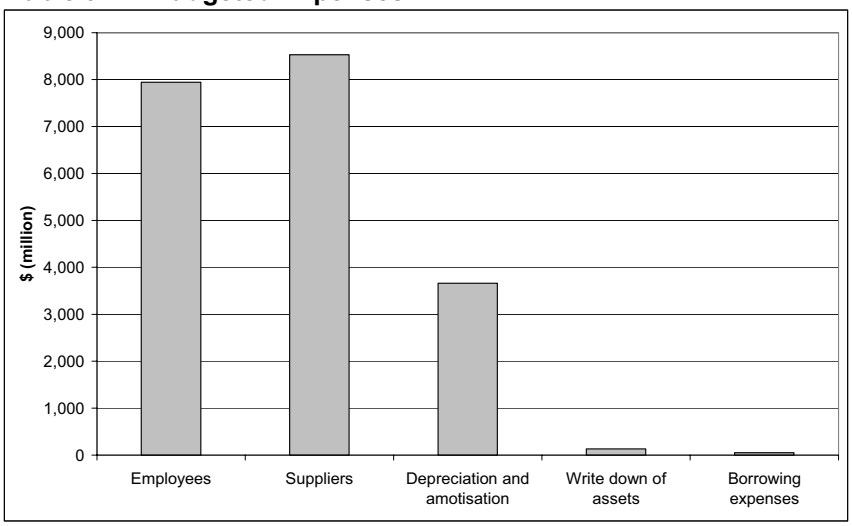
- **Appropriations from Government** ($19,392 million) includes the Price for Outputs Appropriation and funds the operational expenses of Defence. This appropriation, together with revenue from other sources (such as sale of goods and services and other revenue), covers both cash-related (e.g. employee expenses and suppliers) and non-cash-related expenses like depreciation. Explanations for variations to budget for revenue (including appropriations) are provided at PBS pp.120-121 in Chapter 7 2008-09 Explanatory Tables and Financial Statements.
- **Sales of Goods and Services** ($766 million) includes revenue from goods and services provided to organisations other than the agreed outputs to government. A detailed breakdown is not provided; however, the nature of these revenues is demonstrated using the two financial years (2005-06 to 2006-07) actual revenue in Table 9.2.1. It should be noted that the format of the financial statements for the 2006-07 financial year has been changed from prior years (including amending prior year comparative data and categories of income) prohibiting any further comparison with prior financial years.

Table 9.2.1 Revenue from Sales of Goods and Services



- **Assets Now Recognised** is the revenue associated with corrections in accounting for assets found or recognised and not previously recorded. The Budget for 2008-09 is $100 million against actual results of $456 million in 2006-07 and a projected result of $415 million for 2007-08.
- **Other Revenue** ($46 million) includes foreign military sales refunds, excise refunds, settlement of damages and other miscellaneous items.
- **Budgeted Expenses** for 2008-09 broadly comprises the five components in Table 9.2.2.

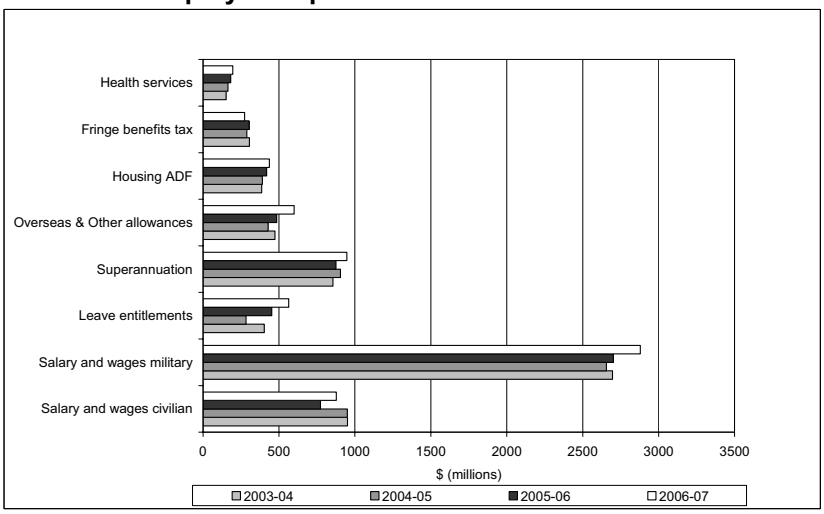
Table 9.2.2 Budgeted Expenses



The key components are:

- **Employees** represent all costs associated with the employment of military and civilian personnel. A detailed profile of the components of this expense is not provided however the nature of these costs is well demonstrated using the four financial years (2003-04 to 2006-07) actual costs in Table 9.2.3.

Table 9.2.3 Employee Expenses

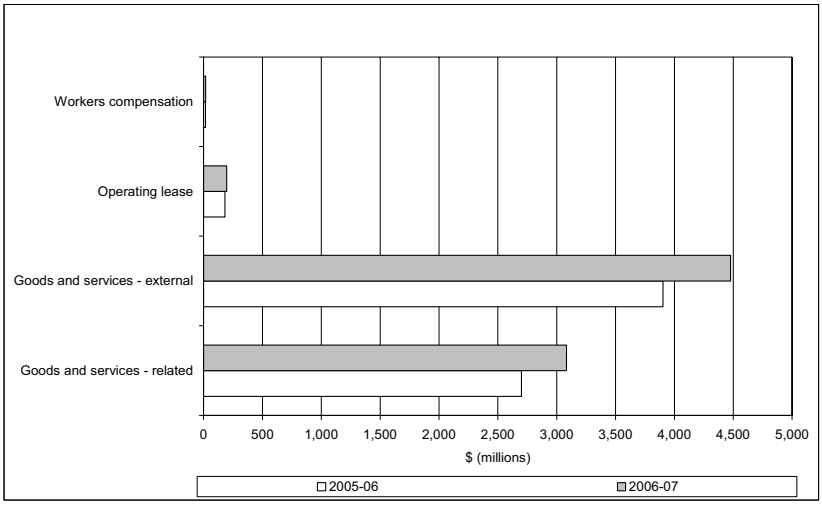


It should be noted that as a result of DMO becoming a prescribed agency on 1 July 2005, Defence have reclassified civilian employee expenditure to supplier expenses. This represents Defence's funding of DMO's civilian workforce.

- **Suppliers** include all costs associated with the supply of goods and services to Defence for use in delivering the Outputs. The expense has decreased from the previous estimate due to the identification of savings and efficiencies, the removal of planned budget measures, a revision to pricing parameters, and reprogramming of certain projects to outer years. The supplier expense has been steadily increasing since 2005-06, however the format (including categorisation of expenses) of the financial statements for the 2006-07 financial year has been changed from prior years (including amending prior year comparative data)

prohibiting a more detailed comparison of expenses. The actual supplier expenses disclosed in the 2006-07 financial statements appear in Table 9.2.4.

Table 9.2.4 Suppliers Expenses



- **Depreciation and amortisation** represents the annual cost of using up assets over time – it approximates the asset value divided by remaining life.
- **Write down of Assets** is the reduction in the value of assets which are no longer used or exist such as specialist military equipment and inventories which are obsolete.

The 2006-07 Defence Annual Report provides more detailed information on actual expenses and revenues.

Net Operating Result

The net operating result shows the net financial impact on Defence's resources of the operating activities undertaken during the year. Defence is budgeting for a break even operating result for 2008-09, which is consistent with the previous estimate. The estimated actual deficit for 2007-08 financial year is expected at $209 million. It should be noted that the 2008-09 expense budget has decreased by $493 million in expense budget measures (PBS pp.18).

The Budgeted Departmental Income Statement PBS Table 1.7.8 is demonstrated on the following page.

The Budgeted Departmental Income Statement [1]
[PBS Table 1.7.8]

The price of outputs

Revenues
Income earned through the delivery of Defence's Outputs and

2007-08 Estimated actual $'000		2008-09 Budget estimate $'000	2009-10 Forward estimate $'000	2010-11 Forward estimate $'000	2011-12 Forward estimate $'000
	INCOME				
	Revenue				
19,693,267	Revenue from Government	19,392,037	20,686,982	21,126,678	21,664,050
719,479	Sale of goods and services	766,347	786,859	798,984	827,441
138,192	Other revenue	45,545	46,097	45,570	46,573
20,550,938	**Total revenue**	**20,203,929**	**21,519,938**	**21,971,232**	**22,538,064**
	Gains				
415,026	Reversals of previous asset write downs	100,000	100,000	100,000	100,000
–	Sale of assets	–	–	–	–
7,700	Other gains	7,700	7,700	7,700	7,700
422,726	**Total gains**	**107,700**	**107,700**	**107,700**	**107,700**
20,973,664	**Total income**	**20,311,629**	**21,627,638**	**22,078,932**	**22,645,764**
	EXPENSES				
7,491,807	Employees	7,941,313	8,458,546	9,024,612	9,485,323
8,355,223	Suppliers	8,528,758	9,295,596	9,295,932	9,663,204
18,911	Grants	1,556	1,575	1,594	1,629
3,611,350	Depreciation and amortisation	3,660,134	3,681,038	3,564,273	3,301,443
31,639	Finance costs	48,925	59,956	61,583	63,206
1,672,797[2]	Write-down and impairment of assets	130,000	130,000	130,000	130,000
852	Other expenses	943	927	938	959
21,182,579	**Total expenses**	**20,311,629**	**21,627,638**	**22,078,932**	**22,645,764**
-208,915	Surplus (Deficit) attributable to the Government	–	–	–	–

Note: 1. Cross reference to Table 1.7.5 in Chapter 7 – Explanatory Tables and Financial Statements

Expenses
Resources consumed in the process of delivering the Defence Outputs to government. This is largely employee expenses, suppliers (including inventory use) and depreciation

The Budgeted Departmental Balance Sheet – The Balance Sheet
[PBS Table 1.7.9]

The Budgeted Departmental Balance Sheet projects a snapshot of Defence's assets, liabilities and equity (net assets) at the end of the financial year. This is calculated by

subtracting the total liabilities from the total assets to arrive at net assets. For 2008-09 this is represented as:

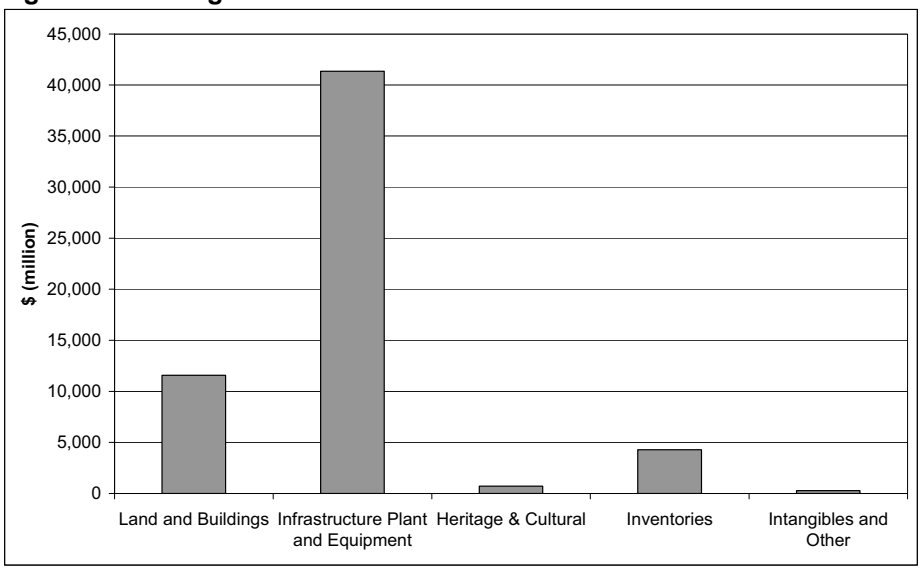
NET ASSETS $56 billion	=	ASSETS $60 billion	–	LIABILITIES $4 billion

Budgeted assets for 2008-09 comprise:

- **Financial Assets** of $429 million is essentially made up of cash and receivables.
  - **Cash and cash equivalents** are estimated to be $32 million in 2008-09 and this remains unchanged for the three forward years to 2011-12.
  - **Receivables** in 2008-09 ($333 million) which includes cash reserves held as an appropriation receivable ($159 million). Defence is able to use the appropriation receivable to assist in meeting employee liabilities, and other operating expenses.

  It should be noted that receivables for the 2006-07 financial year (actual results) also included an amount for GST receivable of $76 million. The total receivable disclosed in the 2007-08 financial statements was $374 million.
- **Non-Financial Assets** of $60,148 million are broken down in Table 9.2.5.

Figure 9.2.5 Budgeted Non-Financial Assets 2008-09



Non-financial assets include:

- **Land and Buildings** of $12,911 million, and **Infrastructure Plant and Equipment** of $5,646 million.
- **Specialist military equipment** of $33,935 million, which looks to have been reclassified since the PBS 2007-08 from infrastructure, plant, and equipment.
- **Intangibles** ($241 million) including software and patents, copyrights and licences.

- **Heritage & Cultural** ($764 million) including items of national heritage or cultural significance.

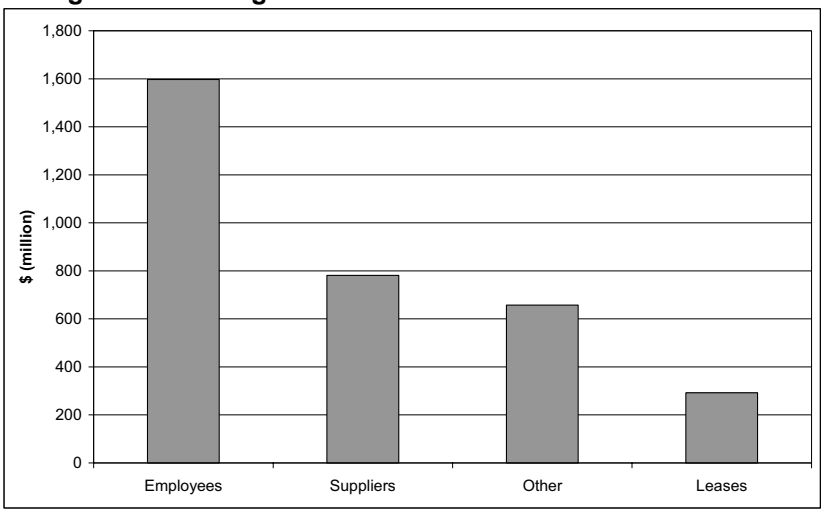
  Expenses incurred as a result of the use of these assets includes depreciation ($3,660 million) and write down and impairment of assets ($0.130 million) shown on the Budgeted Departmental Income Statement. As assets are sold the difference between the value of assets sold (expense) and the revenue from the sale of assets (revenue) represents the profit or loss on sales. It does not appear as though Defence has budgeted for any profit or loss on sale. The proceeds from asset sales are also reported in the Budgeted Departmental Statement of Cash Flows PBS Table 1.7.10.

- **Inventories** totalling $5,317 million are included in Defence's Balance Sheet.

- **Other** ($1,188 million) includes prepaid expenses.

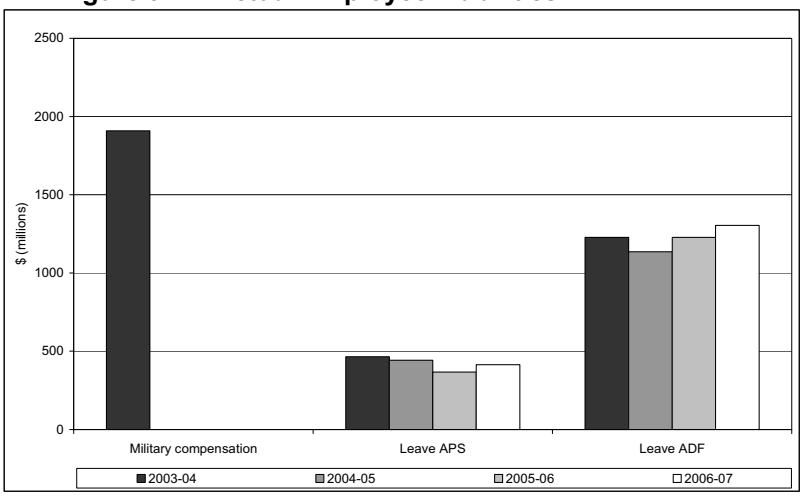
- **Budgeted liabilities** represent amounts owing to other parties and comprise three components: employee provisions, supplier liabilities, leases and other payables (which include a provision for decontamination, restoration, and decommissioning costs). These are graphed in Figure 9.2.6.

Figure 9.2.6 Budgeted Liabilities



- **Employee Provisions** is $1,843 million for 2008-09 and is the major liability for Defence. Actual employee provisions reported for the 2003-04 to 2006-07 financial years appear in Figure 9.2.7. It should be noted that the responsibility for administering military compensation was transferred to the Department of Veterans Affairs and hence no expenditure is shown for the 2004-05 financial and forward years.

Figure 9.2.7 Actual Employee Liabilities



- **Suppliers** for 2008-09 are estimated at $811 million. Actual creditors reported in the 2006–07 annual report included non-capital trade creditors ($704 million) and capital trade creditors ($60 million). Marginal increases in total suppliers and other payables are projected in the PBS from 30 June 2010 to 30 June 2012.

- **Leases** ($756 million), including a finance lease arrangement with the Defence Housing Authority for the supply of housing to ADF personnel. It should be noted that the estimated actual position for the 2007-08 financial year is $297 million; increasing to $756 million in the 2008-09 budget. The reason for the increase is not detailed.

- The **Net Assets** also represent the **Total Equity**. The total equity represents the government's overall owner interest in Defence. In the Equity part of the Statement of Financial Position the total **equity** is broken down into three somewhat artificial categories:

    - **Contributed Equity** ($9,506 million) is the accumulated result of equity injections since 1999 less capital withdrawals. Capital withdrawn relates to the government's share of the proceeds from property sales.

    - **Reserves** ($11,900 million) which result from the revaluation of assets. For accounting purposes, where the value of assets has been revised and increased, Defence is required to account for these increases through increasing the asset as well as a special 'revaluation reserve'; and

    - **Retained Surpluses** is the accumulated results from previous years plus the initial value of net assets (or equity) when accrual reporting was introduced. Retained surpluses have also been adjusted for changes to accounting policies resulting from the adoption of Australian Equivalents to International Financial Reporting Standards.

Finally, on the Budgeted Departmental Balance Sheet PBS Table 1.7.9 the assets and liabilities are broken down into current and non-current. Current assets and liabilities are those which are expected to be realised within the next twelve months, whereas non-current ones are expected to be realised beyond that time. The Budgeted Departmental Balance Sheet is demonstrated on the following page.

Budgeted Departmental Balance Sheet [1] [PBS Table 1.7.9]

Assets (what Defence owns)
(resources that will bring future benefit)
The financial and non-financial assets budgeted to the end of the financial year.

Liabilities (what Defence owes)
(resources that have been used but not paid for) Payments that Defence is required to make at some time in the future.

:

2007-08 Estimated actual $'000		2008-09 Budget estimate $'000	2009-10 Forward estimate $'000	2010-11 Forward estimate $'000	2011-12 Forward estimate $'000
	ASSETS				
	Financial assets				
32,007	Cash and cash equivalents	32,007	32,007	32,007	32,007
213,802	Appropriation Receivable	158,802	98,802	33,802	1,420
174,517	Other receivables	174,517	174,517	174,517	174,517
63,539	Other financial assets[2]	63,539	63,539	63,539	63,539
483,865	**Total financial assets**	**428,865**	**368,865**	**303,865**	**271,483**
	Non–financial assets				
12,189,330	Land and buildings	12,911,350	13,497,791	14,112,251	14,753,161
5,788,544	Infrastructure, plant and equipment	5,646,537	5,413,214	5,236,438	5,081,428
32,024,885	Specialist military equipment	33,934,604	36,925,533	40,680,533	44,919,464
244,745	Intangibles	241,320	237,921	234,568	231,263
764,244	Heritage and cultural	764,244	764,244	764,244	764,244
4,978,822	Inventories	5,317,236	5,741,059	6,046,736	6,488,322
144,375	Assets held for sale	144,375	144,375	144,375	144,375
1,201,600	Other[3]	1,188,133	1,064,397	940,661	762,123
57,336,545	**Total non–financial assets**	**60,147,799**	**63,788,534**	**68,159,806**	**73,144,380**
57,820,410	**Total assets**	**60,576,664**	**64,157,399**	**68,463,671**	**73,415,863**
	LIABILITIES				
	Payables				
787,565	Suppliers	810,899	834,233	857,567	880,901
120,979	Other payables	120,979	120,979	120,979	120,979
908,544	**Total Payables**	**931,878**	**955,212**	**978,546**	**1,001,880**
	Interest bearing liabilities				
297,180	Leases	755,528	714,588	672,933	630,711
2,254	Other interest-bearing liabilities	2,254	2,254	2,254	2,254
299,434	**Total interest bearing liabilities**	**757,782**	**716,842**	**675,187**	**632,965**
	Provisions				
1,714,899	Employees	1,843,251	1,984,323	2,205,900	2,468,206
587,556	Other provisions [4]	587,556	587,556	587,556	587,556
2,302,455	**Total provisions**	**2,430,807**	**2,571,879**	**2,793,456**	**3,055,762**
3,510,433	**Total liabilities**	**4,120,467**	**4,243,933**	**4,447,189**	**4,690,607**
54,309,977	**NET ASSETS**	**56,456,197**	**59,913,466**	**64,016,482**	**68,725,256**
	EQUITY				
7,337,769	Contributed equity	9,505,547	12,979,363	17,101,435	21,810,209
11,900,863	Reserves	11,900,863	11,900,863	11,900,863	11,900,863
35,071,345	Retained surpluses or accumulated deficits	35,049,787	35,033,240	35,014,184	35,014,184
54,309,977	**Total equity**	**56,456,197**	**59,913,466**	**64,016,482**	**68,725,256**
1,850,253	Current assets	1,938,453	2,053,037	2,190,837	2,349,308
55,970,157	Non-current assets	58,638,211	62,104,362	66,272,834	71,066,555
2,380,074	Current liabilities	2,793,677	2,877,387	3,015,194	3,180,232
1,130,359	Non-current liabilities	1,326,790	1,366,546	1,431,995	1,510,375

Note: 1. Cross-reference to Table 1.7.6 in Chapter Seven – Explanatory Tables and Financial Statements

Net Assets = Total Equity
This is simply the difference between the assets and the liabilities and represents the value of the owner's interests. Note that capital is net of capital withdrawals.

Here the equity (net assets) are broken up in terms of the source or nature of equity.

The Budgeted Departmental Statement of Cash Flows [PBS Table 1.7.10]

The Budgeted Departmental Statement of Cash Flows reports the actual receipt and expenditure of cash in Defence. It is, however, just as complex as any of the other statements.

The cash flows are broken into three categories and the net impact of cash movements for each category is then brought together to literally show the net impact on Defence's bank account at the end of the financial year. In broad terms the 2008-09 budget shows the movements in cash as follows:

Change to cash	=	Net cash from/to operating activities	+	Net cash from/to investing activities	+	Net cash from/to financing activities
$ nil		$5,024 million		-$7,131 million		$2,107 million

Net Cash from/to Operating Activities is the net cash remaining after the delivery of the Defence outputs. As is shown, from the total cash received from operating activities of $20,696 million about $7,813 million is spent on employees and $7,419 million is spent on suppliers. The composition of these amounts are similar to the corresponding *expenses* in the Budgeted Departmental Income Statement – although the numbers will differ slightly due to the GST and timing differences between when expenses are incurred and when the cash is paid. The total unused cash from operating activities is around $5,024 million.

Movements to and from the Official Public Account relate to the implementation of an 'as required' cash drawdown arrangement. Cash reserves can be drawn down through an appropriation receivable.

Net Cash from/to Investing Activities is the difference between the gross receipts from the sale of assets and cash used, including the purchase of specialist military equipment ($4,644 million), land and buildings ($909 million), other infrastructure, plant and equipment ($396 million), and inventory purchases ($1,417 million). Broadly speaking, the specialist military equipment includes the major and minor capital equipment programs, while other infrastructure, plant and equipment include much of the capital facilities program.

Investing activities consume $7,131 million more cash than they generate from capital receipt activities. The difference is funded from the excess operating activities cash and equity appropriation. It is possible to see how much of the excess operating cash is used to purchase capital items by looking at PBS Table 1.7.12 Departmental Capital Budget Statement. Of the $5,024 million net operating cash, $3,519 million is budgeted to be used as funding for capital, referred to as 'operating receipts' within Total Capital Funding. This amount represents funding in the output appropriation for depreciation and other non cash amounts that is being applied to buy assets.

Net Cash from/to Financing Activities is mainly concerned with accounting for the various cash transactions between Defence and the government related to capital investment.

Net cash from/to financing activities $2,107 million	=	Equity injection $2,366 million	–	Capital withdrawal $220 million	–	Repayment of debt $39 million

Finally, the three net cash changes over the financial year are brought together to project the cash held by Defence on 30 June 2009 on the basis of the starting balance at 1 July 2008.

Cash held 30 June 2008 $32 million	=	Cash held 1 July 2007 $32 million	+	Change to cash $nil

The Budgeted Departmental Statement of Cash Flows is demonstrated below.

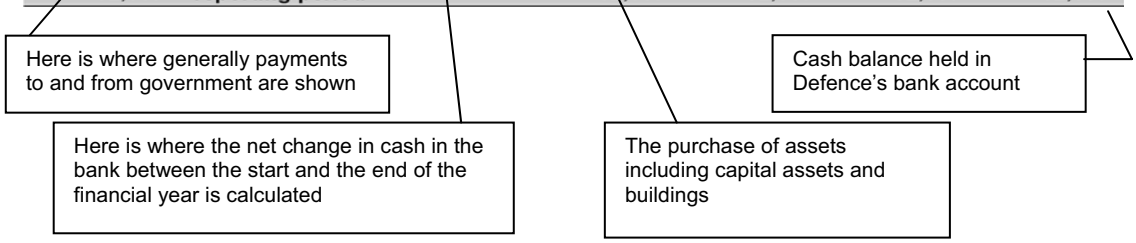
The Budgeted Departmental Statement of Cash Flows [PBS Table 1.7.10]

The *cash* received for operating activities is the collection of the *revenues* on the Statement of Financial Performance. The difference is due to timing of transactions.

The *cash* used for operating activities is less than the *expenses* recorded for operating activities on the Statement of Financial Performance because of non-cash expenses (eg depreciation)

2007-08 Estimated actual $'000		2008-09 Budget estimate $'000	2009-10 Forward estimate $'000	2010-11 Forward estimate $'000	2011-12 Forward estimate $'000
	OPERATING ACTIVITIES				
	Cash received				
719,479	Goods and services	766,347	786,859	798,984	827,441
18,120	GST Receipts from customers	18,655	19,206	19,774	20,357
19,693,267	Appropriations	19,392,037	20,686,982	21,126,678	21,664,050
404,603	GST received from the Australian Taxation Office	418,658	433,201	448,248	463,818
138,192	Other cash received	45,545	46,097	45,570	46,573
50,000	Cash transfer from the Official Public Account (receivable)	55,000	60,000	65,000	32,382
21,023,661	**Total cash received**	**20,696,242**	**22,032,345**	**22,504,254**	**23,054,621**
	Cash used				
7,377,270	Employees	7,812,961	8,317,474	8,803,035	9,223,016
7,384,313	Suppliers	7,419,221	8,180,647	8,278,932	8,649,026
422,723	GST payments	437,313	452,407	468,022	484,175
18,911	Grants	1,556	1,575	1,594	1,629
852	Other cash used	943	927	938	959
15,204,069	**Total cash used**	**15,671,994**	**16,953,030**	**17,552,521**	**18,358,805**
5,819,592	**Net cash from (used by)**	**5,024,248**	**5,079,315**	**4,951,733**	**4,695,816**
	INVESTING ACTIVITIES				
	Cash received				
147,511	Proceeds from sales of property, plant and equipment	285,178	159,668	220,761	84,524
147,511	**Total cash received**	**285,178**	**159,668**	**220,761**	**84,524**
	Cash used				
602,669	Purchase of land and buildings	908,507	1,246,863	1,336,226	1,019,429
4,093,196	Purchase of specialist military equipment	4,643,777	5,476,066	6,148,283	6,623,836

2007-08 Estimated actual $'000		2008-09 Budget estimate $'000	2009-10 Forward estimate $'000	2010-11 Forward estimate $'000	2011-12 Forward estimate $'000
256,268	Purchase of infrastructure, plant and equipment	396,255	362,610	394,072	313,561
1,964	Purchase of intangibles	1,989	2,015	2,061	2,109
1,395,737	Purchase of inventory	1,416,959	1,507,802	1,291,630	1,424,751
31,639	Borrowing costs	48,925	59,956	61,583	63,206
6,381,473	**Total cash used**	**7,416,412**	**8,655,312**	**9,233,855**	**9,446,892**
-6,233,962	**Net cash from (used by)**	**-7,131,234**	**-8,495,644**	**-9,013,094**	**-9,362,368**
	FINANCING ACTIVITIES				
	Cash received				
524,315	Appropriations – contributed equity	2,365,736	3,550,623	4,247,986	4,740,822
524,315	**Total cash received**	**2,365,736**	**3,550,623**	**4,247,986**	**4,740,822**
	Cash used				
16,408	Repayment of debt	39,234	40,940	41,655	42,222
93,537	Return of contributed equity	219,516	93,354	144,970	32,048
109,945	**Total cash used**	**258,750**	**134,294**	**186,625**	**74,270**
414,370	**Net cash from (used by)**	**2,106,986**	**3,416,329**	**4,061,361**	**4,666,552**
–	**Net increase (decrease) in**	**–**	**–**	**–**	**–**
32,007	Cash at the beginning of the reporting period	32,007	32,007	32,007	32,007
32,007	**Cash at the end of the reporting period**	**32,007**	**32,007**	**32,007**	**32,007**



The Capital Budget [PBS Table 1.7.12]

The Capital Budget Statement [PBS Table 1.7.12] is largely a restatement of the Budgeted Departmental Statement of Cash Flows relating to capital investment. It spells out where the funding for the capital budget comes from.

The **Capital Expenditure** is presented just as it is in the Budgeted Departmental Statement of Cash Flows. The **Capital Receipts** are also sourced from the Budgeted Departmental Statement of Cash Flows and the calculation of the **Net Capital Receipts** simply subtracts the Capital Withdrawal from this cash received for investing activities. The interesting part of the statement is the calculation of the **Total Capital Funding**.

The **Total Capital Funding** shows the three separate sources of cash funding for capital investment. This includes the equity injection, or equity appropriation, from the government ($2,365 million), and the net capital receipts of $66 million, being the proceeds from the sale of assets after the capital withdrawal by government. Finally, the Operating receipts provide the balance of the capital funding of $3,519 million from what is *in effect* cash from operating activities.

Capital funding $5,950 million	=	Equity injection $2,365 million	+	Operating receipts $3,519 million	+	Net capital receipts $66 million

Further details on the Capital Budget can be found in PBS Table 1.7.12.

Capital expenditure as given in the Statement of Cash Flows

Table 7.5: Departmental Capital Budget Statement

2007-08 Estimated actual $'000		2008-09 Budget estimate $'000	2009-10 Forward estimate $'000	2010-11 Forward estimate $'000	2011-12 Forward estimate $'000
	CAPITAL EXPENDITURE				
602,669	Purchase of Land and Buildings	908,507	1,246,863	1,336,226	1,019,429
4,093,196	Purchase of Specialist Military Equipment	4,643,777	5,476,066	6,148,283	6,623,836
256,268	Purchase of Infrastructure, Plant and Equipment	396,255	362,610	394,072	313,561
1,964	Purchase of Intangibles	1,989	2,015	2,061	2,109
4,954,097	**Total capital expenditure**	**5,950,528**	**7,087,554**	**7,880,642**	**7,958,935**
	Funded from:				
524,315	Equity injection	2,365,736	3,550,623	4,247,986	4,740,822
4,375,808	Operating receipts	3,519,130	3,470,617	3,556,865	3,165,637
53,974	Net capital receipts	65,662	66,314	75,791	52,476
4,954,097	**Total capital funding**	**5,950,528**	**7,087,554**	**7,880,642**	**7,958,935**
	CAPITAL RECEIPTS				
110,988	Proceeds from the sale of land and buildings	249,252	123,310	184,656	48,313
36,523	Proceeds from the sale of infrastructure, plant and equipment	35,926	36,358	36,105	36,211
93,537	Less capital withdrawal	219,516	93,354	144,970	32,048
53,974	**Net capital receipts**	**65,662**	**66,314**	**75,791**	**52,476**

This is where the **net capital receipts** are calculated by subtracting the capital withdrawal from the receipts from the sales of property plant and equipment

This is the interesting bit where the various sources of funding for capital investment are brought together.

ABOUT THE AUSTRALIAN STRATEGIC POLICY INSTITUTE

The Australian Strategic Policy Institute (ASPI) is an independent, non-partisan policy institute. It has been set up by the government to provide fresh ideas on Australia's defence and strategic policy choices. ASPI is charged with the task of informing the public on strategic and defence issues, generating new ideas for government, and fostering strategic expertise in Australia. It aims to help Australians understand the critical strategic choices which our country will face over the coming years, and will help government make better-informed decisions.

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Strategy and International Program: This program covers ASPI's work on Australia's international security environment, the development of our higher strategic policy, our approach to new security challenges, and the management of our international defence relationships.

Operations and Capability Program: This program covers ASPI's work on the operational needs of the Australian Defence Force, the development of our defence capabilities, and the impact of new technology on our armed forces.

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Outreach Program: One of the most important roles for ASPI is to involve the broader community in the debate of defence and security issues. The thrust of the activities will be to provide access to the issues and facts through a range of activities and publications.

GLOSSARY

ADF	Australian Defence Force
AES	Additional Estimates Statements
AEW&C	Airborne Early Warning & Control
ANAO	Australian National Audit Office
APS	Australian Public Service
CDF	Chief of the Defence Force
CIOG	Chief Information Officer Group
CSP	Commercial Support Program
CUC	Capital Use Charge
DAR	Defence Annual Report
DCP	Defence Capability Plan
DFRB	Defence Force Retirement and Death Benefits
DHA	Defence Housing Authority
DMO	Defence Materiel Organisation
DRP	Defence Reform Program
DSG	Defence Support Group
DSTO	Defence Science and Technology Organisation
EWSP	Electronic Warfare Self Protection
FADT	Foreign Affairs Defence and Trade
FBT	Fringe Benefits Tax
FMA	*Financial Management and Accountability Act 1997*
GDP	Gross Domestic Product
GST	Goods and services tax
MSBS	Military Superannuation and Benefits Scheme
PAES	Portfolio Additional Estimates Statements
PBS	Portfolio Budget Statement
SES	Senior Executive Service

Notes

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