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The Cost of Defence

ASPI Defence Budget Brief 2016–2017

$88,717,652.05 $88,717,652.05 $88,717,652.05 $88,717,652.05 $88,717,652.05 $88,717,652.05 $88,717,652.05 $88,717,652.05

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Note on title:
The figure of $88,717,652.05 represents one three-hundred-and-sixty-fifth of net defence funding for 2016–17. This does not include funds appropriated to the Defence Housing Authority, nor those administered by Defence for military superannuation schemes and housing support services.

Contents

Executive Director's introduction

This is ASPI's fifteenth 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. We've added a new chapter entitled *Defence Contracting,* which analyses more than 250,000 Defence contracts from 2007 to 2015. There's also a new section we've called *Where the Money Goes,* examining the allocation of funds across Defence, and the discussion of national security spending has been expanded to allow a closer look at the Australian Security Intelligence Organisation.

Acknowledgements are due. The not inconsiderable task of preparing the document for publication has been ably taken care of by Janice Johnson. Many others have helped by providing comments, offering advice, and checking facts. Andrew Davies proofread most of the document. Three ASPI interns, Annaliese FitzGerald, Dione Hodgson, and Lachlan Wilson, each made important contributions.

Also, Defence was kind enough to look over a preliminary draft of this Brief and provide valuable comments. That 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 Mark Thomson, who is ASPI's Senior Analyst for Defence Economics, 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 Mark 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 nine thousand, eight hundred and seventy-two dollars and eighty-eight cents ($9,872.88) per day. Details can be found in our 2014-15 Annual Report.

Peter Jennings
Executive Director

Executive summary

And so it begins. Not with a bang but with a whimper. Despite the fanfare accompanying the release of the 2016 Defence White Paper, defence spending will decline by 0.5% in real terms next year and the GDP share will drop from 1.94% to 1.88%.

It's not that the government has abandoned its commitment to increase defence spending to 2% of GDP—far from it. In this year's budget, the Turnbull government delivered every cent it promised in the White Paper. Instead, funding growth has had to be deferred because Defence is unable to accommodate the boost.

Defence Budget 2016

Defence funding 2016-17:	$32.4 billion
Share of GDP:	1.88%
Share of Commonwealth spend:	7.3%
Real growth on prior year:	-0.5%

Expenditure shares

Investment:	$10.8 billion	(33.5%)
Personnel:	$11.6 billion	(35.7%)
Operating:	$10.0 billion	(30.8%)

Cost of deployments

Afghanistan & Middle East:	$735 million
Border protection:	$23 million

Key budget measures

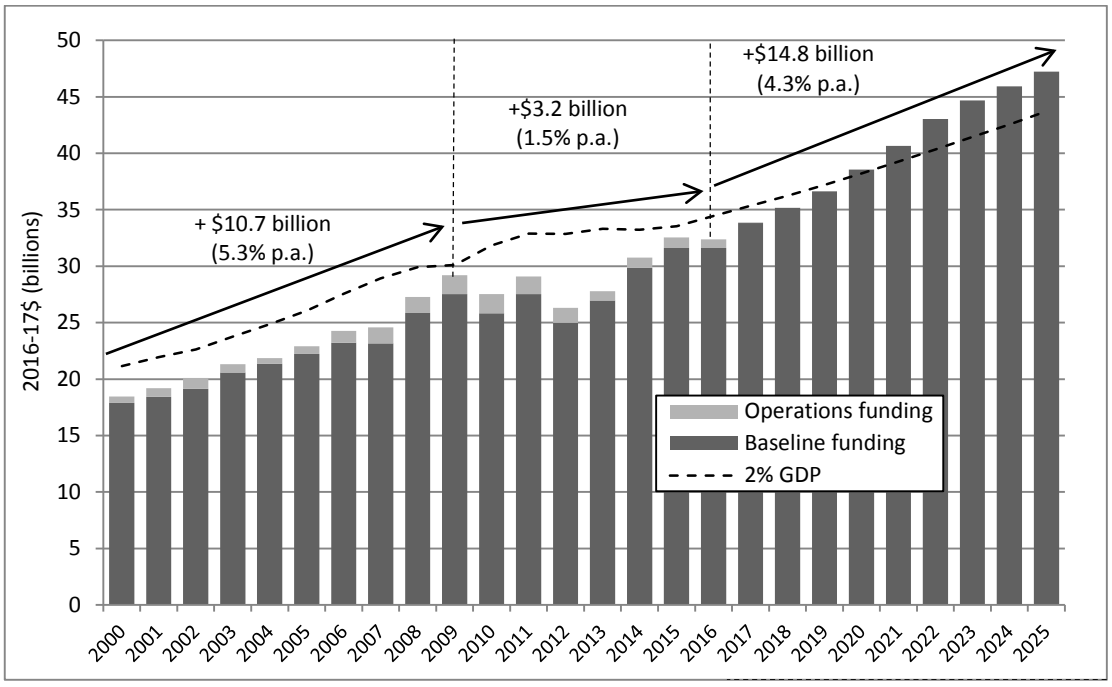
$1.1 billion adjustment for foreign exchange

$1.4 billion for White Paper funding

The challenge of delivering capability

The new Defence White Paper was released in February this year. In addition to affirming many existing plans for the ADF, it added a number of new capabilities and expanded the scale of others. If all goes to plan, the defence force will grow in size and sophistication over the next two decades. To pay for the expanded defence force, the White Paper included an explicit funding commitment for the next decade.

Defence spending per the White Paper is planned to grow from $32.4 billion in 2016-17 to $47.2 billion in 2025 (measured in 2016-17 $); an increase of $14.8 billion over the decade, representing 4.3% annual compounding growth. In contrast, over the past eight years, the net increase in defence spending was only $3.2 billion, representing 1.5% growth. And although the percentage rate of increase for the period 2000 to 2009 was higher at 5.3% per year, the absolute increase will be greater this time; $14.8 billion versus $10.7 billion.



In terms of GDP share, the defence budget is planned to hit 2% of GDP in 2020-21, three years earlier than promised. However, that's probably not a sign of deepening commitment by the government. The early attainment almost certainly reflects the impact of foreign-exchange supplementation (due to depreciation of the Australian dollar) and falling GDP growth projections subsequent to the funding envelope being fixed for planning purposes in early 2014. If today's growth projections hold true, defence spending will plateau at just below 2.2% of GDP in 2023.

The last time a sustained increase in defence spending was attempted was following the 2000 White Paper. In the years that followed, spending was repeatedly deferred because the money simply couldn't be spent. Between 2000 and 2008, Defence underspent its budget on four occasions and close to $1 billion worth of unspent funds (very quietly) accumulated in DMO's intra-government account. Over the same period, net deferrals of capital investment reached $7.9 billion, with an average project delay in excess of 4 years.

In some ways, Defence is better placed today than it was back in the 2000s. Greater care has gone into the preparation of the financial aspects of the new White Paper, and Defence's financial management is now on a much firmer footing than it was previously. Nonetheless, Defence is projected to underspend by between $400 million and $500 million this financial year, and $500 million of White Paper funding planned for next year has been deferred to the year after. While it's not an auspicious start, it should be remembered that Defence managed a 10.7% real increase in spending in 2014-15 and (most of) a 5.7% increase this year.

Irrespective of how we choose to interpret today's set back, there are clear challenges ahead. There are at least 33 projects planned for first- or second-pass approval next financial year, as well as 11 projects from the White Paper which were planned to be approved this financial year but weren't. Project approvals are critical to the delivery of the White Paper. In the major capital investment program, fully half of planned spending in four years' time (2019-20) is accounted for by yet to be approved projects.

Whether it's 33 or 44 projects slated for approval next year, the prospects aren't good; the average number approved over the past decade has been less than 18 per year. During the 2000s, the tardy approval of projects was one of the causes of investment delays, along with widespread failures by defence industry to deliver on contracts.

Even at the best of times, the approval of 33 to 44 projects in a single year would be a daunting challenge, but Defence is currently mid-way through the 'once in a generation' reforms coming from the 2015 First Principles Review. Central to the reforms is an entirely new 'capability life cycle' process and revised organisational arrangements.

In April this year, the old Capability Development Group was disbanded and its staff and functions dispersed to the three Services and the Vice Chief's group. Meanwhile, the old Defence Material Organisation has been disestablished and a new Capability and Sustainment Group has taken its place, with an entirely new top-level executive team. Amid the disruption, a new (military-led) contestability branch is being created to provide scrutiny of capability proposals—but it will be years before the embryonic function finds its feet. Even if these changes lead to better outcomes in the long term, the bedding down of new

organisational arrangements and processes while managing the wave of new projects is laden with risk.

None of this is meant as a criticism of the First Principles Review. The reforms are making good progress, with 36 of 69 recommendations now complete, and all signs are that the program is being well planned and strongly led from the top. Indeed, there's a palpable sense of buy-in across Defence about the changes underway. Nevertheless, it's hard to think of a less opportune time to fundamentally revise the arrangements for approving and delivering new capability than the first year of a Defence White Paper designed to expand the defence force.

In addition to the changes underway within Defence, the government (with the wholehearted support of the opposition) has adopted a 'buy Australian' approach to defence procurement—notwithstanding the economically rational prescripts of the Defence Industry Policy Statement (DIPS) released alongside the White Paper. It appears that every opportunity will be taken to ensure that future defence assets are built in Australia, by Australian workers, with Australian materials. One component of the new DIPS that's survived is an unashamed embrace of innovation. Indeed, the word 'innovation' appears 186 times in the document compared to just a single reference to 'off-the-shelf'.

The new-found embrace of both local production and technical innovation is predicated on creating quality jobs and inducing stronger economic growth. Even if that turns out to be the case, and let's hope it does, past experience shows that local production, developmental projects, and their fellow traveller, the dreaded 'Australian-unique requirement', are correlated with elevated costs, schedule delays and performance risk. The highly developmental Future Submarine and heavily Australianised Future Frigate are prime examples of innovation and local production being brought together.

The challenge of affording and funding capability

Past Defence White Papers have systematically underestimated the cost of acquiring and operating military capability. Mindful of past shortcomings, a great deal of effort went into assuring the costs in the 2016 White Paper. So far at least, it appears that more than adequate money has been set aside for projects in the new Integrated Investment Plan (which, in terms of information provided, is a dismal replacement for the old Defence Capability Plan). For example, the provision of $1–2 billion for two replenishment vessels seems excessive in light of the $650 million contract for the vessels signed in May. Perhaps there's been an overcorrection to avoid a repeat of past underfunded White Papers—after all, there are worse problems to have than too much money.

If capital costs are overly pessimistic, personnel costs appear to be the opposite. It is difficult to see how planned per capita employee expenditure can fall by 0.25% a year over the decade (and by 1.4% a year over the next four years). It's not that the jobs in Defence are getting any easier, as the White Paper put it: 'As Defence adopts new and more complex capabilities, the demands on the integrated workforce will increase.' Nor, on present performance, is it likely that Defence will fail to find the people it needs. After failing to grow the size of its workforce for four years in a row, Defence is projected to come in close to target this financial year.

To some extent, overestimates of capital costs will compensate for underestimates of personnel costs. Hopefully the resulting difference will be small and manageable. In any case, the principle risk to the plans in the new White Paper is the availability of funds from future governments. On the positive side, bipartisan agreement has emerged for the explicit funding guidance in the White Paper. Short of a written cross-party agreement like that in Denmark, there's no better assurance. But promises are easy when surpluses are an electoral cycle or more away; past experience shows that defence spending is most at risk when a surplus comes within reach.

In what might turn out to be a fateful coincidence, defence spending is slated to hit 2% of GDP in 2020-21, the same year that a return to surplus is anticipated. With a federal election likely in mid-2019, the temptation for the government of the day will be to budget for a surplus a year early, in 2019-20. What better way to establish economic credentials prior to going to the polls? But there are as yet unresolved pressures in health and education built into the federal budget, which will make delivering a surplus in 2020-21, let alone 2019-20, difficult.

Ultimately, the priority to fund defence will depend on events. A clash in the South China Sea or a severe recession could tip the balance quickly in different directions. Quite apart from such external events, there's a risk endogenous to Defence's situation that could change things profoundly. Few things would encourage a government to abandon its commitment more than Defence being unable to spend the money it already has. As occurred following the 2000 White Paper, we could see a situation where falling confidence in Defence's ability to spend results in large deferrals. In this way, the various headwinds pushing against the delivery of capability could eventually undermine the prospects of reliable funding.

Chapter 1 – Background

1.1 Strategic Context

We now have our third Defence White Paper in fewer than seven years. In the preceding quarter century we managed only four. The reduced shelf life of recent White Papers reflects—in part—volatility at the top. Over the same seven-year period, we've had two major reorganisations of Russell Hill, three defence chiefs, four department secretaries, five prime ministers and six defence ministers.

While there are strong threads of continuity running through the past three Defence White Papers—at least in terms of plans for the ADF—the near-continuous chopping and changing has been damaging. Not just the corrosive effect of on-again-off-again funding that's resulted in at least five 'lost years', in which plans for the defence force have been put on hold, but also due to changing government direction. For example, we've had not two, but three, distinct acquisition strategies for the future submarine over the period. Little wonder that we'll likely now have to extend the life of the Collins class.

To make matters worse, the past seven years have seen deterioration in our strategic outlook. Parts of Iraq have descended back into chaos, Afghanistan teeters on the brink, Russia has gone rogue and North Korea has an even crazier dictator. At the same time, domestic terrorism remains a live threat, and cyberattacks proliferate by the day. Most serious for our region, China has abandoned Deng Xiaoping's advice to, "hide your strength, bide your time", and has instead been brazenly asserting its claim over the South China Sea through land reclamation and militarisation. If that wasn't enough, there's a cult of personality emerging around Xi Jinping while the Communist Party propaganda machine whips up belligerent nationalism. China's dream may become our nightmare.

Precious time has been lost.

Perhaps we can now get on with the job of building a stronger ADF. Even with an election around the corner, things look favourable. We have bipartisan agreement on most aspects of defence policy, including a bipartisan commitment to the White Paper's decade-long funding plan. In contrast, in both 2007 and 2013, the opposition went to the electorate promising a new defence white paper and a comprehensive review of the Defence organisation. Thankfully, neither's in prospect this time around.

But before we congratulate ourselves for finally getting our act together, it's worth asking whether the White Paper is fit for purpose.

In terms of financial planning, this year's White Paper is more robust than any of its predecessors; it's uncharacteristically transparent about funding, and an unprecedented effort has been put into estimating costs. Similarly, the renewed emphasis on international engagement is hard to fault. Even industry seems happy, having been elevated into the hallowed pantheon of 'fundamental inputs to capability'. But none of this is worth a pinch of salt unless we have a sound strategy and the military capability to back it up.

Despite supposedly new criteria for force design—three 'equally-weighted' strategic objectives rather than a focus on self-reliant defence of Australia—the 2016 plan for the ADF force structure looks remarkably like those from 2009 and 2013. That is, modernisation across the board with moderate emphasis on bolstering air and maritime capabilities. Perhaps it's a coincidence that the answer stays the same even when the question changes. Or perhaps the question doesn't matter and the military will share the spoils irrespective of the earnest discussion of interests, objectives and tasks at the front of the document. The critical question is whether doing a little bit more of everything is adequate to mitigate the strategic risks ahead.

There are two critical judgments in the 2016 Defence White Paper. The first is that there's no risk that the United States will cease to play its 'enduring' role in the Indo-Pacific. The second, is that a regional major-power conflict is sufficiently remote (or perhaps sufficiently discretionary in terms of our involvement) that we can afford to treat it on an equal footing with tasks such as 'support the government of Papua New Guinea, Timor-Leste and of Pacific Island Countries to build and strengthen their security'. If either of those two judgments turns out to be incorrect, we'll confront a dark future under-prepared.

There's surely a risk on both counts. Anyone who thinks that the US role in the region is preordained has failed to register the support accruing to Trump and Sanders in the US presidential primaries; each candidate would substantially diminish America's role in the world. Similarly, absent complete and absolute faith in deterrence, it's hard to argue that we need to spend tens of billions of dollars on high-tech conventional platforms such as submarines and fighters, while simultaneously maintaining that major inter-state conflict is so unlikely that it can be put on a par with maintaining law and order in Honiara.

If we decided to hedge against the risk of a US retrenchment from Asia and/or major conflict in the region, we'd face a series of hard choices. There'd be winners and losers among the three services—remember what happened to the army in the 1980s—and we'd have to make some big bets about our relationships with other countries. What that might look like depends entirely on the strategy we adopt. We could go the way of Sweden and Switzerland and really get serious about self-reliance. Or we could go the way of Japan and South Korea and draw the US closer by hosting its armed forces—think B1 bombers in Tindal and Virginia class submarines in Brisbane. Probably the only thing that's certain is that we'd have to spend a lot more on both our defence force and our national resilience (for example, by re-establishing domestic oil refineries).

The 2016 White Paper defers those difficult choices to another day. In an uncertain strategic environment, that might be the right thing to do. The strategic landscape is in flux, so the longer we wait the clearer the merits and risks of various strategies will become. And it's not as if we'll be standing still: the White Paper envisages steady improvements for most of the ADF in the years ahead. Nonetheless, like a gambler watching a roulette wheel slow before placing a bet, we risk putting our chips down too late. Every year we keep our options open is a year we lose working on the option we finally choose. It doesn't help that today's plans for the ADF will play out at a glacial pace. For example, we'll not see the twelfth submarine until the late 2040s or 2050. Let's hope time is on our side.

1.2 Political Context

Key Points

The 2016 Defence White Paper has been released, including a decade-long funding plan.

Bipartisan commitment has emerged over the planned White Paper funding.

Economic issues continue to take precedence over defence in the public eye.

The electorate remains volatile and quick to express its displeasure with government.

The Abbott government came to power promising to rectify the systemic underfunding of current defence plans, including through its election promise to boost defence spending to 2% of GDP by 2023-24. The Turnbull government delivered on that promise by plotting a course to reach 2% of GDP by 2020-21 in its 2016 Defence White Paper. Not long after, the envisaged funding received bipartisan support when the opposition confirmed their intentions.

There's been less continuity when it comes to the vexed question of 'budget repair'. Tony Abbott promised to deliver a surplus of 1% of GDP in 2023-24, but the adverse public reaction to his government's 2014 Budget saw the question downplayed in the 2015 Budget. Neither the Turnbull government nor the Opposition has displayed any enthusiasm for making hard decisions about reining in the deficit, let alone paying down debt. We were treated to a long and confusing debate about tax reform—where it was never clear if the goal was increased revenue or greater efficiency—but all that did was take a number of options 'off the table'.

It's impossible to separate the issues of defence funding from broader fiscal policy; every dollar spent on defence cannot be spent on alternative services or tax reductions. The tension between balancing the budget and properly funding existing plans for defence may come to a head in the 2016 election—if only implicitly. It's too early to say where the forthcoming debate will take us on these issues.

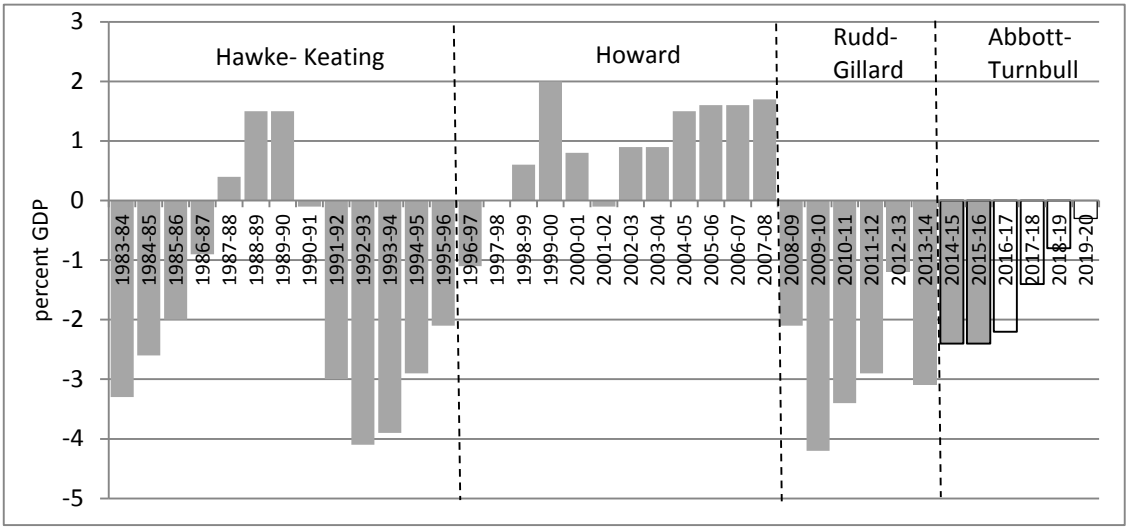
Whatever happens, it's unlikely that we'll see much of a debate on defence policy—as has been the case for a long time, we have continuing bipartisan agreement on its core elements. The underlying concepts laid out in the Fraser government's 1976 Defence White Paper have been echoed in every subsequent document. Where changes have occurred, they've been evolutionary adaptations to our changing circumstances. And while some changes have given rise to political debate at the time—such as the priority for 'expeditionary' operations—bipartisan support has eventually been found. Even the 2016 White Paper's abandonment of 'defence of Australia' as the central determinant of the structure of the ADF passed without comment outside of academic circles. The not too flattering reality is that, most of the time, governments are happy to take the advice tendered to them from the ADF leadership, tempered only by the fiscal constraints of the day.

One area where a clear difference emerged between the government and opposition is naval shipbuilding; in particular the question of whether to build submarines in Australia. It's no secret that the Abbott government actively explored the option of importing boats from Japan, while the opposition was committed to a domestic build program. However, the Turnbull government yielded to the demands of South Australia to build the submarines locally.

Politics and money

From 2009 until 2012, the Rudd and Gillard governments' commitment to defence funding was all but totally eclipsed by the political imperative to deliver a fiscal surplus—a goal embraced equally by the then Opposition. Why the rush to get out of the red? 2012-13 was the last opportunity for the Gillard government to demonstrate (not just promise) a surplus before the 2013 federal election. And how important was that? As Figure 1.2.1 shows with alarming clarity, it was very important; the last federal Labor treasurer to deliver a surplus was Paul Keating in 1989-90. Given the context, a surplus in 2012-13 was the political equivalent of the Holy Grail.

Figure 1.2.1: Underlying cash balance 1983 to 2020



Source: Treasury Papers

In this year's Budget, the Turnbull government highlighted its plan to return the Commonwealth to surplus in 2020-21—albeit without making a promise. But while there's still political capital from returning to surplus, the backlash following the 2014 Budget has tempered the approach of both the government and opposition. Deterioration in economic conditions would probably reinstate deficits and debt as a higher political priority, irrespective of who wins the next election.

Public opinion—defence and security

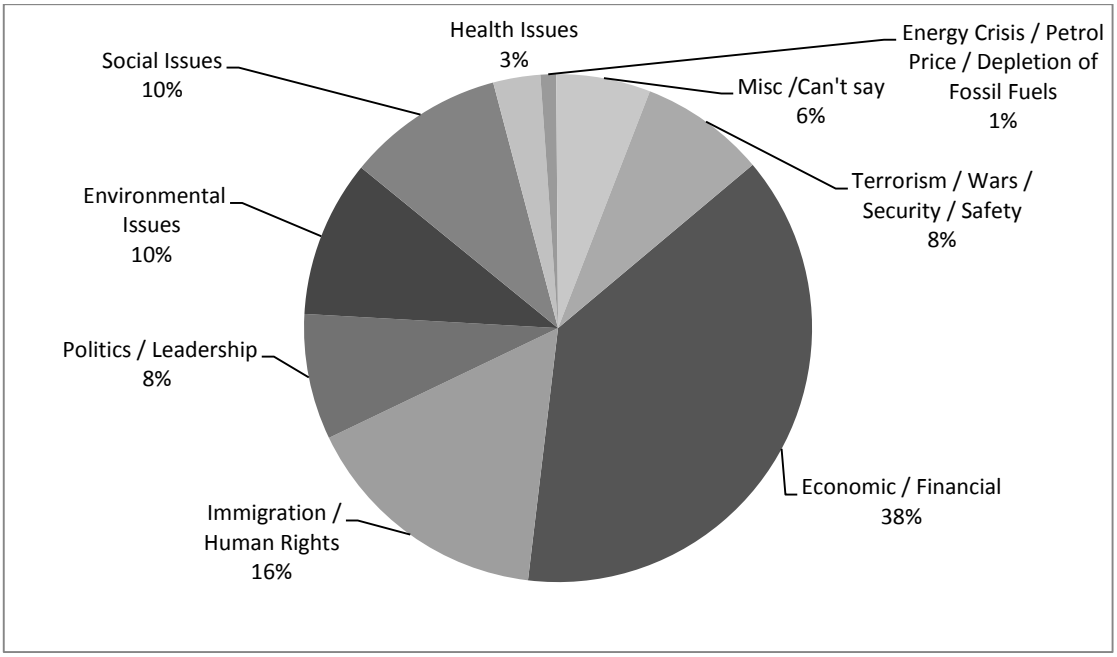
At the moment, Australians place a relatively low priority on security. Figure 1.2.2 shows the percentage of respondents who identified particular issues as the most important problem facing Australia in October 2015.

The relatively low priority currently given to defence is consistent with the downward trend in public perception of the seriousness of defence-related matters from late 2005 to mid-2014, see Figure 1.2.3. Note, however, the temporary peak in concern around the time of ISIL's rise in Iraq and the subsequent rebound follow terrorist attacks on Western targets in 2015. Naturally, perceptions of importance change as new information comes to light.

The seemingly dramatic long-term change in public sentiment in Figure 1.2.3 is at least partially an artifact of respondants being asked to identify a single 'most important' issue. It's entirely possible for defence to still be important in its own right, even if it's not the most

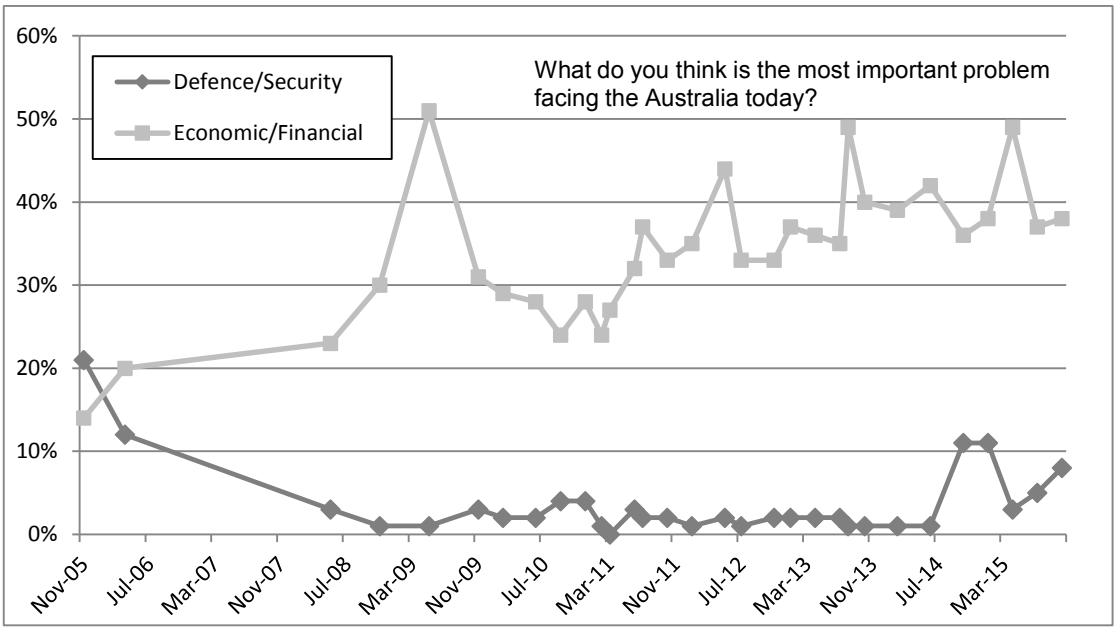
important issue of the day. With this in mind, we turn now to examine a more graduated measure of the perceived priority of defence-related issues over time. Figure 1.2.4 plots the percentage of Australians polled who rated 'national security' and/or 'the economy' as very important in the context of the question: *Would you say each of the following issues is very important, fairly important or not important on how you personally will vote in the federal election?*

Figure 1.2.2: What do people worry about?



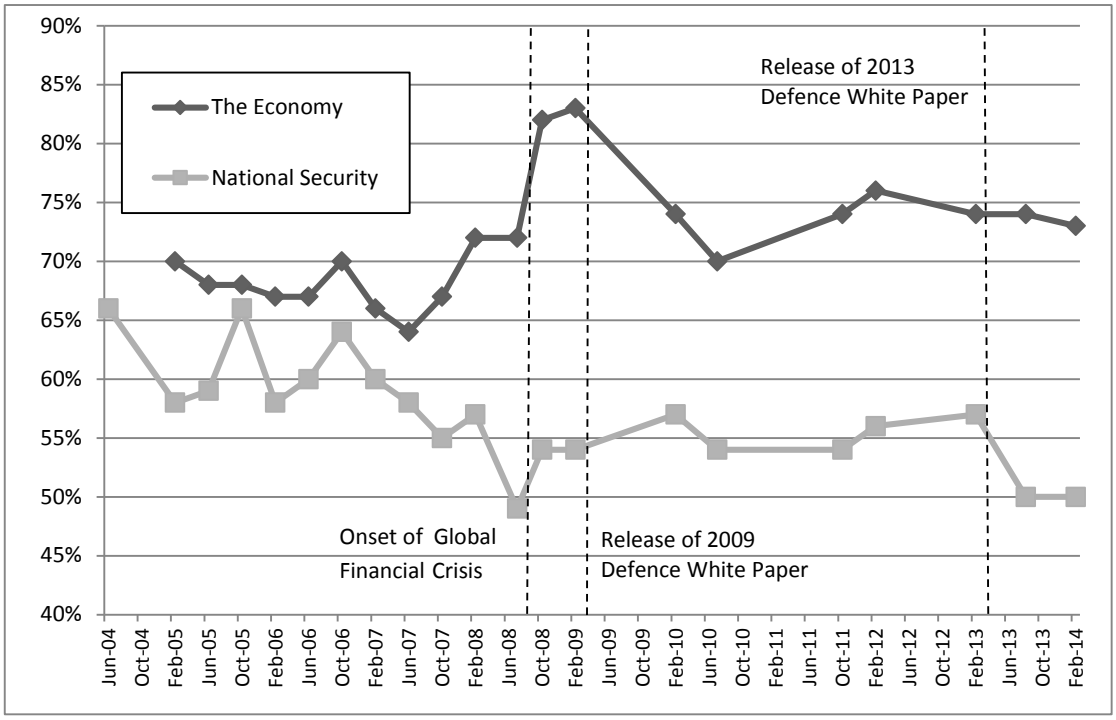
Source: Roy Morgan Research, Finding No.6543, November 2015.

Figure 1.2.3: Less important than it used to be



Source: Roy Morgan Research, Finding No.6543, November 2015.
Defence/Security includes terrorism, wars, security, safety and relations with other countries.
Economic/Financial includes economy, cost of living, interest rates, unemployment, taxation, inequality.

Figure 1.2.4: Guns versus butter



Source:Newspoll 2004 to 2014.

As expected, the falling priority for national security is less dramatic in a survey where respondents can choose more than one item from a list of possiblilities. Nonetheless, it's still clear from the data that the GFC heralded a higher priority for the economy, partially at the expense of national security. It's interesting to note that after a pronounced swing in favour of the economy around the time of the GFC, sentiment subsequently plateaued at a new level more favourable to economic issues and less favourable to national security.

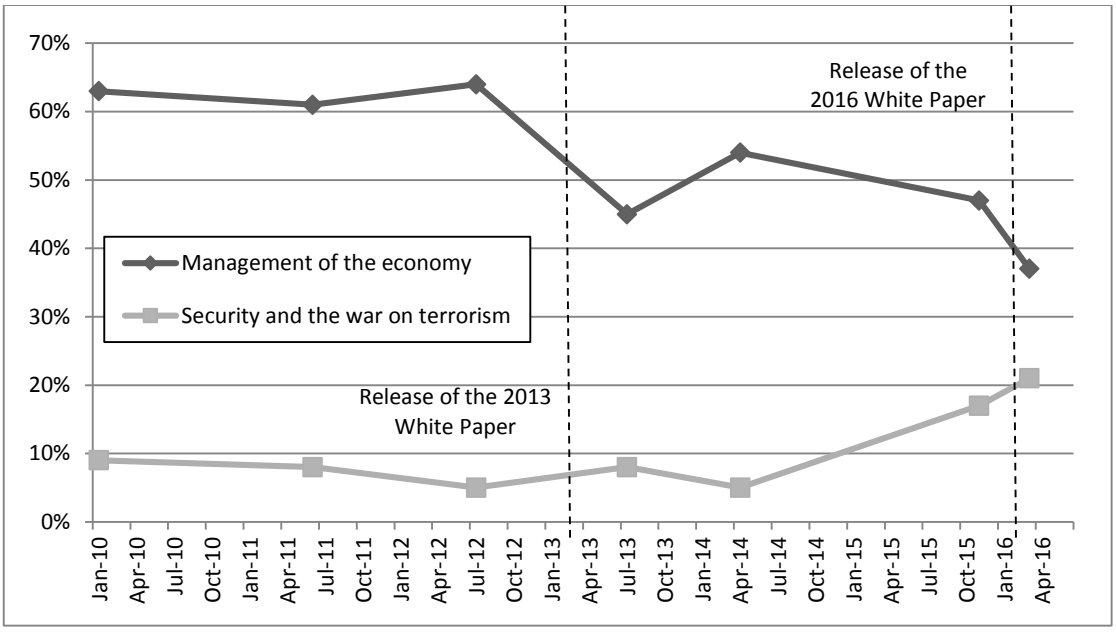
Unfortunately, the poll presented in Figure 1.2.4 has been in abeyance since 2014. To look more closely at recent trends, the best we have is a poll asking people to identify: *Which are the three most important issues in deciding how you would vote at a Federal election?* The most recent results are given in Table 1.2.1. Note that in Table 1.2.1, 'security and the war on terrorism' sits in the middle of the pack alongside political leadership and education. A time series for the categories of 'national security and terrorism' and 'management of the economy' appears in Figure 1.2.5. As expected, the priority for security issues has risen over the past two years, consistent with Figure 1.2.3.

Table 1.2.1: Three most important issues for Federal election? (March 2016)

Ensuring the quality of Australia's health system	**43%**	Protecting the environment	**13%**
Management of the economy	**37%**	Addressing climate change	**12%**
Australian jobs and protection of local industries	**35%**	Managing population growth	**10%**
Ensuring a fair taxation system	**29%**	A fair industrial relations system	**8%**
Housing affordability	**23%**	Controlling interest rates	**9%**
Ensuring a quality education for all children	**21%**	Treatment of asylum seekers	**7%**
Security and the war on terrorism	**21%**	Ensuring a quality water supply	**5%**
Political leadership	**14%**		

Source: Essential Media, 'Most important election issues', March 2016.

Figure 1.2.5: Economy verses National Security and Terrorism

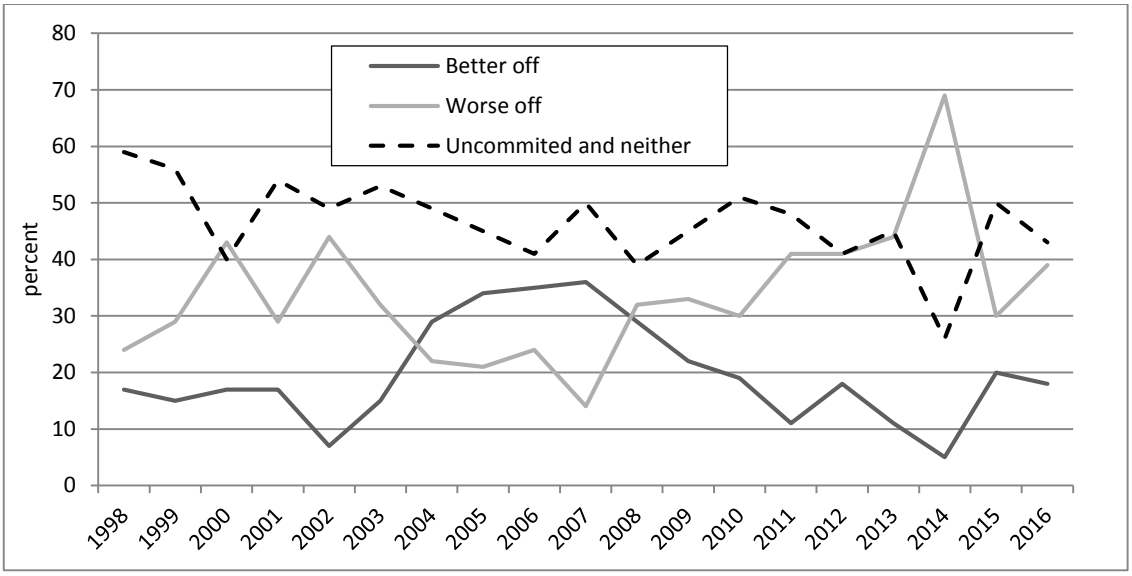


Source: Essential Media, 'Most important election issues', March 2016.

Public opinion—budgets and surpluses

After the strong adverse reaction to the 2014 Budget, the 2015 Budget was relatively well received, see Figure 1.2.6. This year's budget did not fare as well, with a 9% increase in the number of people who felt that they were left worse off. Note, however, that 43% of respondents were undecided or felt that the Budget was neutral for them.

Figure 1.2.6: Better or worse off after budget?



Source: Newspoll, Budget Poll, April 1998 to 2016

There is an unresolvable tension in achieving fiscal consolidation. Every dollar used to reduce the deficit must come from either higher taxes or reduced government spending. Nonetheless, in early 2015, more than 70% of people believe that a return to surplus is either 'very important or somewhat important', see Table 1.2.2. At the same time—i.e. prior

to the 2015 Budget—only 26% of people had confidence that the government was on the right track to do so, see Table 1.2.3.

Table 1.2.2: Importance of surplus?

Q. How important is it that the Government returns the budget to surplus?	
Very important	31%
Somewhat important	40%
Not very important	14%
Not at all important	6%
Don't know	9%

Source: Essential Report, 28 April 2015

Table 1.2.3: Confidence in return to surplus?

Q. The Government says that while the budget deficit is not likely to fall significantly in the near future, it is on the right track to return to surplus. How confident are you that the Government has an effective plan to eliminate the budget deficit?	
Very confident	9%
Somewhat confident	27%
Not very confident	28%
Not at all confident	24%
Don't know	13%

Source: Essential Report, 28 April 2015

In terms of what people think is a 'reasonable timeframe to return the budget to surplus', 6% of people said 1-2 years, 45% said 3-5 years, 24% said 6-10 years and 9% said more than 10 years; 16% of respondents did not know (Essential Media Report 28 April 2015). Faced with the choice of raising taxes or reducing spending, there was a preference for the latter over the former, see Table 1.2.4. In contrast, when the 2013 Australian Election Study (AES) asked: *If the government had a choice between reducing taxes or spending more on social services, which do you think it should do?,* 36.2% favoured reducing taxes, 40.4% favoured spending more on social services, and 33.4% said that it 'depends'. As is often the case with option surveys, quite different perspectives can emerge from ostensibly similar questions.

Table 1.2.4: Raise taxes or cut spending?

Do you think the Government should raise taxes or cut spending to reduce the national debt or should they do neither? (%)

	May 2013	August 2013	March 2014
Raise taxes	13	6	6
Reduce spending	55	45	47
Both	n/a	21	19
Neither	20	18	20
Don't know	12	10	8

Source: Essential Media Report May 2013, August 2013 and March 2014

How much is enough?

In terms of the defence budget, the fundamental polling question is whether people think we should spend more, less, or the same. Yet there is remarkably little work done on the question by pollsters and academics. However, Defence published a report entitled *Guarding Against Uncertainty: Australian Attitudes to Defence* as part of the White Paper process. The report recounts views garnered through 'community consultation' and collates pre-existing polling from external sources.

On the question of spending, the report discusses historical polling (up to 2013) and provides a reasonable explanation for the long-term decline in support for higher defence spending. In recounting the views expressed in the community consultation, the report says:

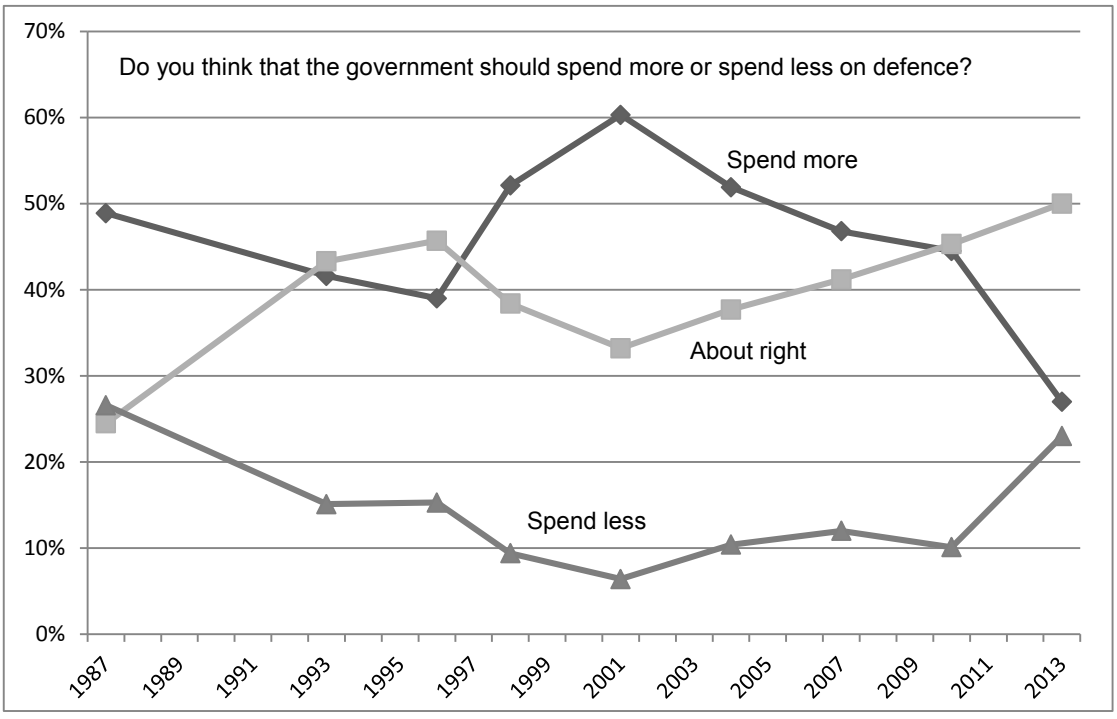
Interestingly, very few people had a problem with the general scale of Australia's defence spending. Not many queried the target of 2 per cent of Gross Domestic Product (GDP), set by both the Government and the opposition.

People occasionally queried how a government could be sure that this target is the right one. A few suggested that it was too high and risked spending at the expense of domestic policy priorities regardless of the existence of a defence strategy. A few suggested that it was too low, especially if Australia were seeking greater independent capabilities or wanted to pay a premium for domestic production of defence capabilities. Many recognised that defence spending had recently dropped to historic lows. Overall, the level of comfort with defence spending levels that the panel encountered is consistent with recent polling.

Because the community consultation involved self-selected participants, it's impossible to say how representative these views are of broader opinion. It's a pity that the consultation process chose not to commission up-to-date polling (as occurred with the 2000 White Paper).

The longest running poll on defence spending is the AES, which has been conducted coincident with (most) federal elections since 1987. The results up until 2010 appear in Figure 1.2.7 and Table 1.2.5. The report, *Guarding Against Uncertainty*, includes results from earlier surveys—albeit with varying wording of the question—going back to 1975. For consistency, we've included only the AES results. However, even then, care is required because the 2013 result represents the response to a reworded question that (1) explicitly mentioned the prospect of higher taxation and (2) implicitly reminds respondents of the potential impact on other government services.

Figure 1.2.7: How much is enough?



Sources: McAllister et al: Trends in Australian political opinion: results from the Australian Election Study, 1987-2013.

Table 1.2.5: How much is enough?

Do you think that the government should spend more or spend less on defence?' (%)

	1987	1993	1996	1998	2001	2004	2007	2010
Spend much more on defence		14.1	10.2	18.5	20.6	15.5	14.9	15.1
Spend some more on defence	48.9	27.5	28.8	33.6	39.7	36.4	31.9	29.4
About right at present*	24.5	43.3	45.7	38.4	33.2	37.7	41.2	45.3
Spend less on defence	26.6	11.3	11.2	7.5	4.7	8	8.4	7.7
Spend a lot less on defence		3.8	4.1	1.9	1.7	2.4	3.6	2.4
Don't know								

* 'Doesn't matter' 1987.

Source: McAllister et al: Trends in Australian political opinion: results from the Australian Election Study, 1987-2013.

Table 1.2.6: How much is enough (but don't forget you have to pay for it)?

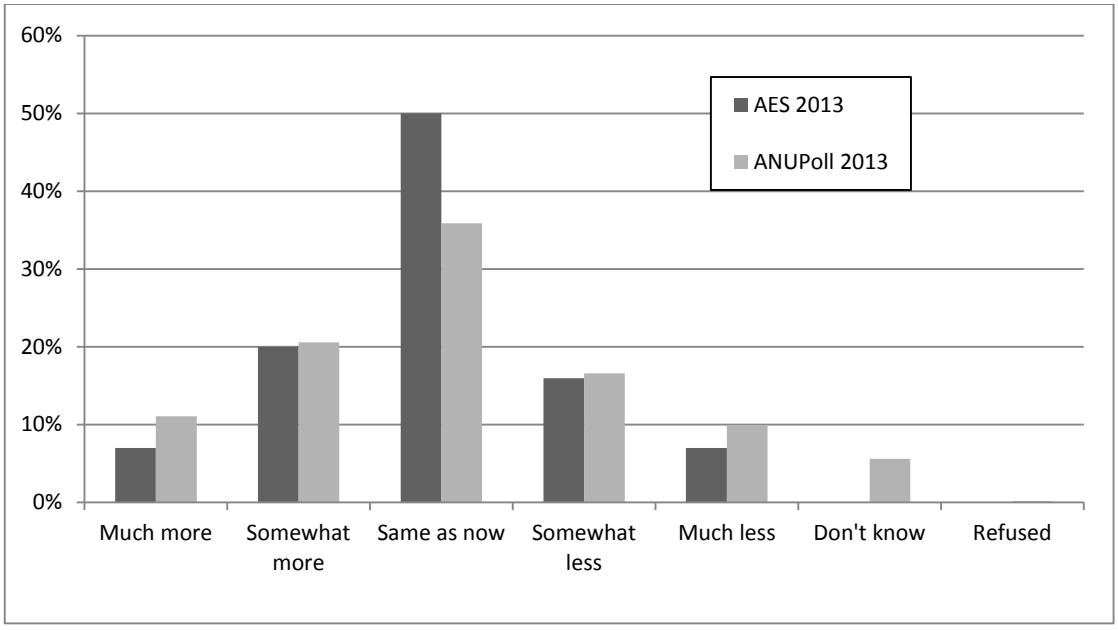
Please say whether there should be more or less public expenditure in each of the following areas. Remember if you say 'more' it could require a tax increase, and if you say 'less' it could require a reduction in those services. (%)

	Much more	Somewhat more	Same as now	Somewhat less	Much less
Health	32	46	19	1	2
Education	26	43	27	2	2
Old age pensions	22	43	31	2	2
Police and law enforcement	16	36	41	4	3
Business and industry	8	27	48	13	4
Defence	7	20	50	16	7
Welfare benefits	7	20	45	18	10
Unemployment benefits	5	14	48	22	11

Source: AES 2013.

By highlighting the opportunity cost of spending more on defence, the reworded question arguably predisposes respondents against doing so. As it happens, there are three other polls on defence spending from the same year which confirm the sensitivity to how questions are asked. The first was the 2013 ANUPoll conducted a couple of months following the 2013 AES, and reported by Ian McAllister in *Public Priorities for Government Expenditure*. Despite asking the question in a very similar format, the ANUPoll included categories of 'Don't know' and 'Refused'. The results are compared in Figure 1.2.8. Two differences are apparent. First, the respondents to the ANUPoll delivered a higher percentage of 'Much more' and 'Much less' responses. More significantly, it appears as if the absence of a 'Don't know' category in the AES poll resulted in a higher number of 'Same as now' responses. This could have implications for interpreting the high 'About right' response in the historical AES data, Figure 1.2.7. Fortuitously, the 2013 Lowy Institute Poll (conducted six months prior to the 2013 election) asked two questions about defence spending. In response to a direct and context free question about defence spending, 38% agreed that 'the government should spend more on defence', 47% agreed that 'the government is spending about the right amount on defence', 12% agreed that 'the government should spend less on defence', and 3% responded 'don't know'. Thus, in the absence of a reminder about opportunity costs, the respondents were much more favourable to increased defence spending than in the AES and ANUPoll from the same year.

Figure 1.2.8: Comparing the 2013 ANUPoll and AES results on defence spending.



Source: AES 2013 and ANUPoll 2013.

The second question in the Lowy poll further reinforces the importance of context. In response to the question:

> *Now about what the Australian government is doing about the Asian region. As the Asian region grows and becomes more significant, do you personally think it is very important, somewhat important or not important for the Australian government to do each of the following in response?*

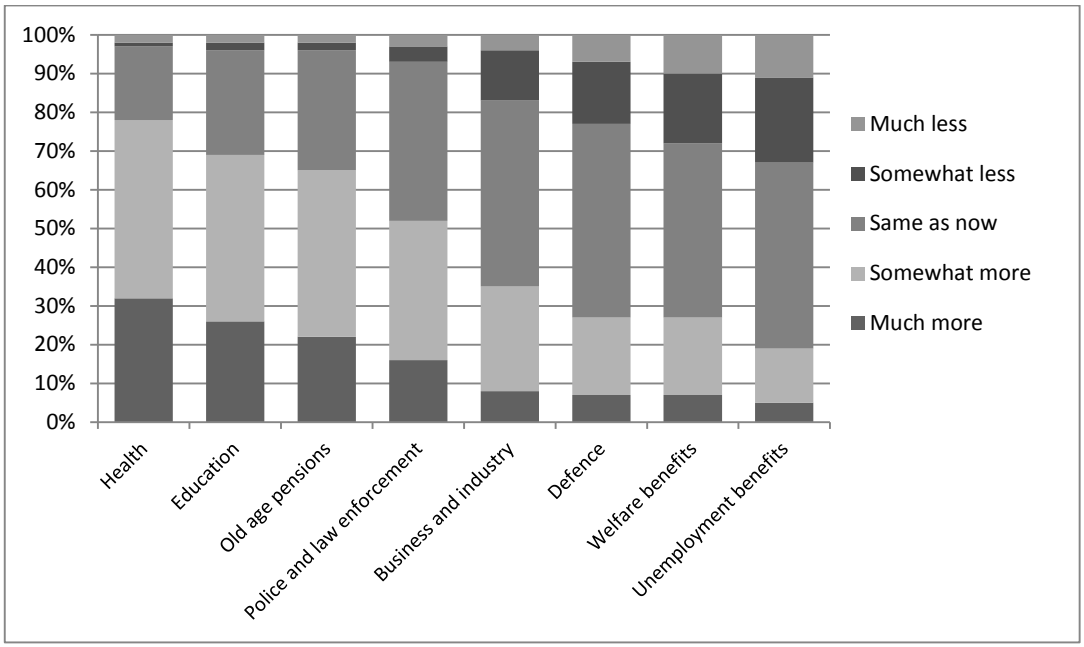
There followed six statements ranging from '*do more to attract Asian investment into Australia'* to *'Increase the number of migrants Australia accepts from Asia',* including *'increase defence spending'.* Fully 68% of respondents said that it was very important or somewhat important to increase defence spending, while only 29% said that it was not important (3% did not know).

It's difficult to know what to conclude when, in the same poll, 68% of respondents thought it was important to increase defence spending but only 38% thought the government should do so. In part, the difference probably reflects the structure of the responses offered by the two questions; one was symmetric between spending more and less, while the other was biased by having two 'spend more' options but only one 'spend less' option. More generally, the disparity shows the importance of carefully examining the format of the questions rather than accepting the results at face value. Equally, it reflects the importance of context and potentially of leadership in shaping public opinion.

In any case, the AES methodology of asking about spending in a consistent format allows a comparison of the relative importance respondents assign to the various areas. Viewed this way, see Figure 1.2.9, the priority for defence compares poorly with competing areas of social spending such as health, education, pensions and even law enforcement and police.

Figure 1.2.9: Defence verses other areas of public expenditure.

'Please say whether there should be more or less public expenditure in each of the following areas. Remember if you say 'more' it could require a tax increase, and if you say 'less' it could require a reduction in those services.'



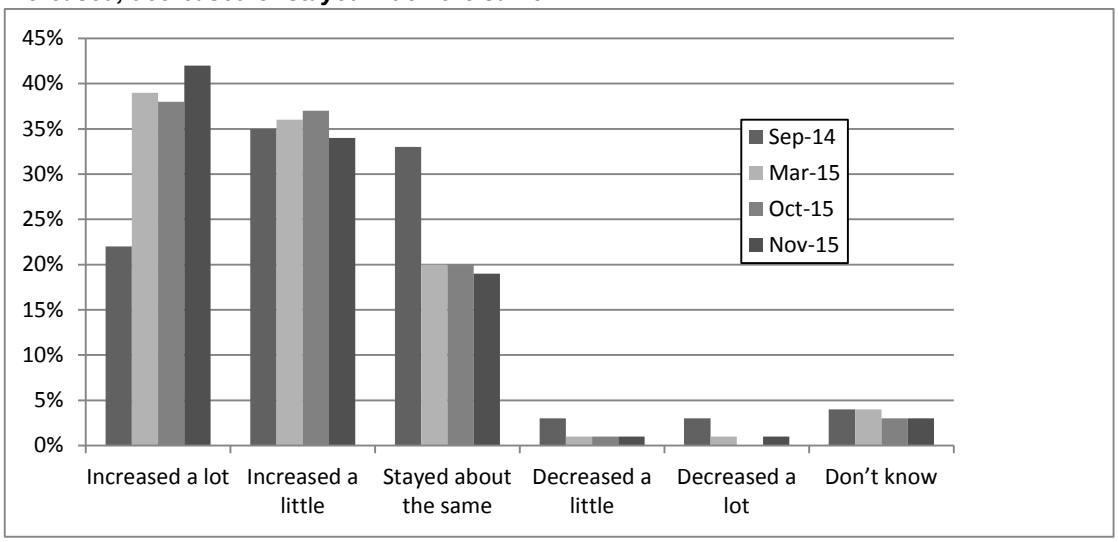
Source: AES 2013

Public opinion — Terrorism

Essential Media polls in 2014 and 2015 found an increased public perception of the threat of terrorism in Australia, Figure 1.2.10. Note the jump in perceived threat following the Lindt café siege in December 2014. Consistent with this finding, respondents were also in favour of higher anti-terrorism spending and tougher laws in early 2015 (see Tables 1.2.7 and 1.2.8).

Figure 1.2.10: Perceived threat of terrorism

'Over the last few years, do you think that the threat of terrorism happening in Australia has increased, decreased or stayed much the same?'



Source: Essential Report, 2014 to 2015

Table 1.2.7: Spend more?

Q. Do you think the Australian Government should be spending more or less on anti-terrorism measures or is current spending about right?	
Spending more	39%
Spending less	12%
Current spending about right	33%
Don't know	16%

Source: Essential Report, 3 March 2015

Table 1.2.8: Tougher laws?

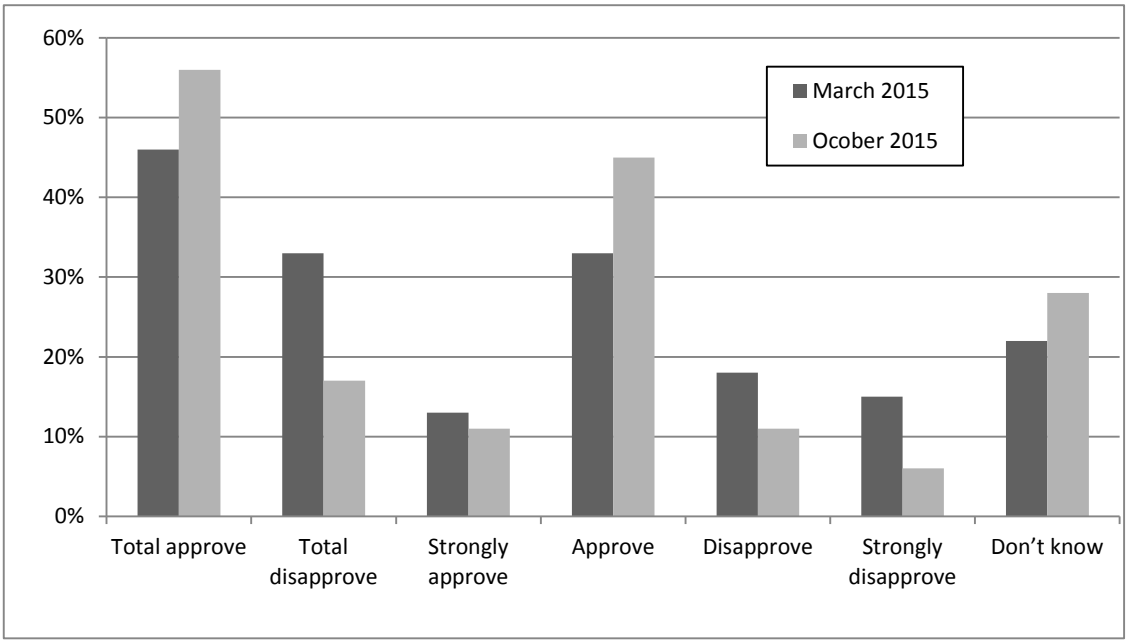
Q. When it comes to issues of national security, do you think there should be more restrictions on rights and freedom for some people so there can be more security for others or do you think our current laws strike the right balance between freedom and security?	
Should be more restrictions	56%
Strike the right balance	28%
Don't know	16%

Source: Essential Report, 3 March 2015

Public approval of the government's handling of the threat of terrorism in Australia improved significantly during 2015, as displayed in Figure 1.2.11.

Figure 1.2.11: Doing a better job handling terrorism

'Do you approve or disapprove of the way the Prime Minister Tony Abbott (March)/Malcom Turnbull (October) is handling the threat of terrorism in Australia?'



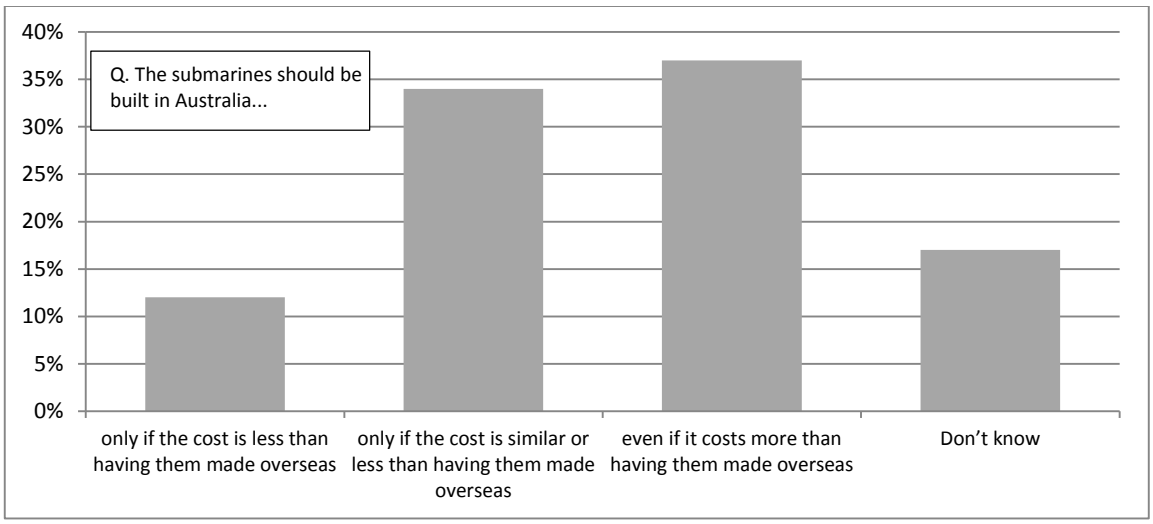
Source: Essential Report, March and October 2015

Public opinion — Submarine purchase

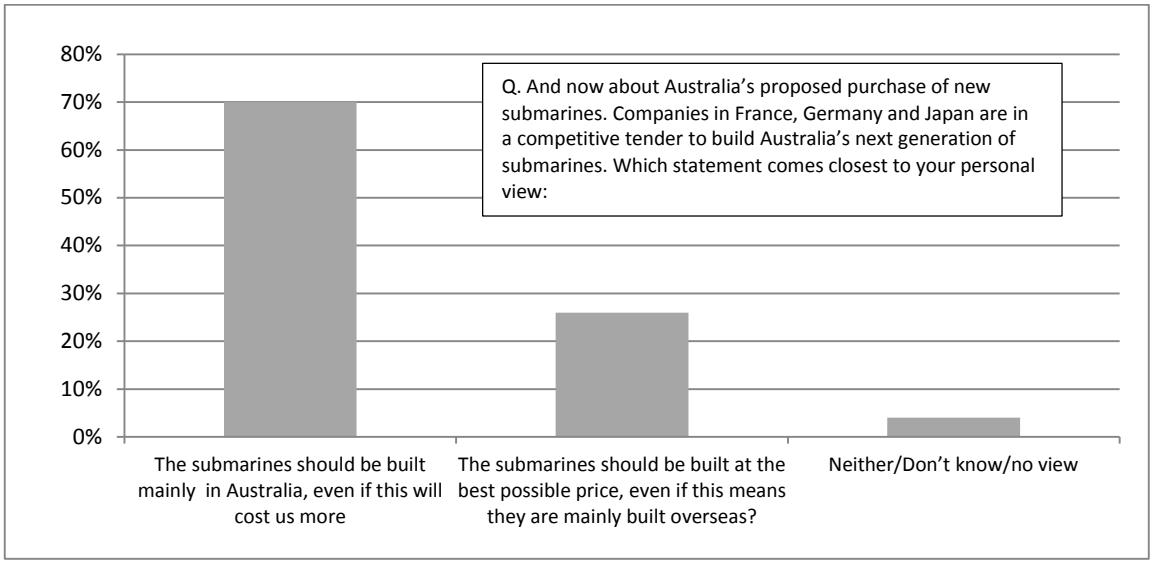
In late April, the government announced that France had won the 'competitive evaluation process' to pick a foreign design partner to help supply the next generation of Australian submarines. The three countries under consideration were France, Germany and Japan. The decision to build the submarines in South Australia was not disclosed prior to the announcement of France's selection, though speculation was that a local build would eventuate. An earlier announcement in April confirmed that the next-generation of future frigates will be built in South Australia.

Figure 1.2.12 shows the evolution of public option regarding the building of submarines in Australia. The first two polls directly addressed the question of paying more to have the vessels built locally.

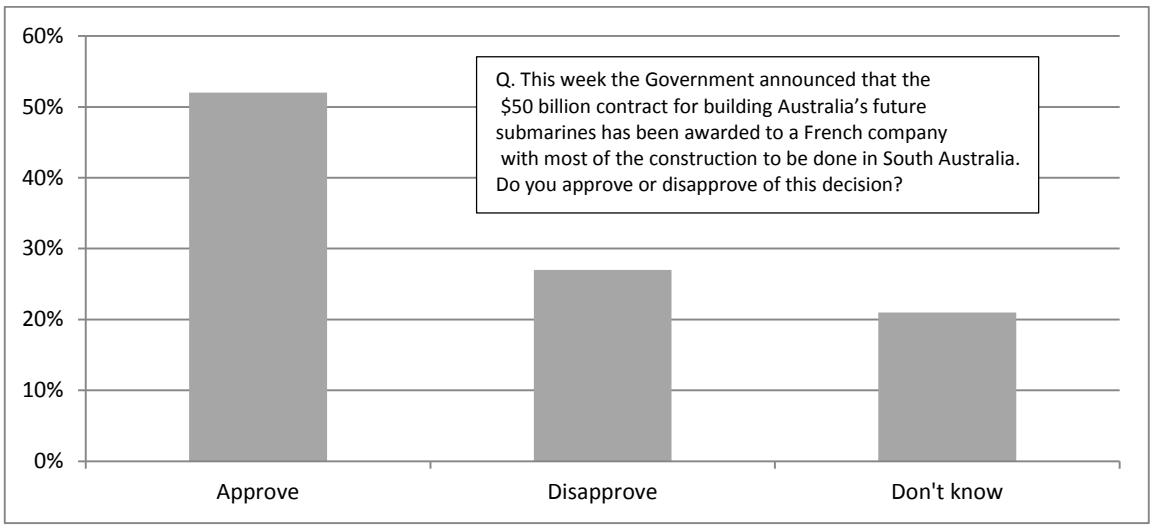
Figure 1.2.12: Submarines—local or foreign construction?



Source: Essential Report, 16 February 2015



Source: Lowy Institute Poll, February-March 2016

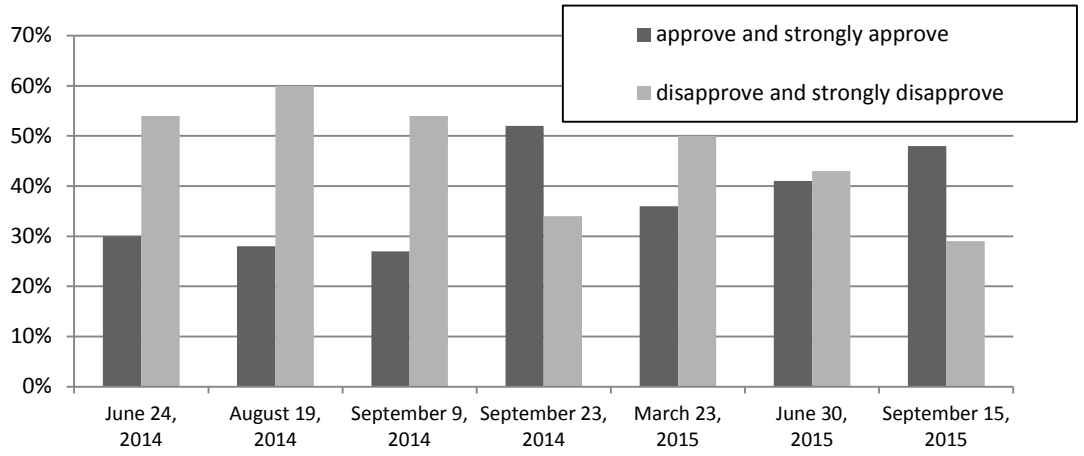


Source: Essential Media, 2 May 2016.

Public opinion — Iraq deployment

In 2014, public support for the deployment of the ADF to Iraq depends on both the timing and wording of the question (Figure 1.2.13). An Essential Media poll on 23 September 2014 found that only 15% of respondents thought that the Iraq deployment would 'make us more safe' (sic), and 51% thought that it would make us less safe. In the same poll, 36% of respondents cited the main reason for Australia sending military forces to Iraq was 'to fight against terrorism', 29% cited 'to support the USA', and 9% cited 'to protect the people of Iraq', and another 9% cited 'to distract attention from the government's problems'. In November 2015, 32% of respondents said we should 'increase our military involvement in Syria and Iraq against Islamic State', 19% said 'decrease', 23% said 'make no change' and 21% said 'don't know' (Essential Media, 24 November 2015). Two months later, the responses in the same categories were 18%, 34%, 32% and 17% respectively (Essential Media, 27 January 2015).

Figure 1.2.13: Deployment to Iraq



24 June 2014, 19 August 2014 and 9 September 2014
Would you approve or disapprove of Australia sending troops to Iraq if the USA asks for our support?

23 September 2014
Do you approve or disapprove of the Australian Government's decision to send 600 military personnel plus aircraft to Iraq for military action against the Islamic State (IS)?

23 March 2015: Do you approve or disapprove of sending more Australian troops to Iraq to help train Iraqi forces fighting Islamic State militants?

30 June 2015: Australia currently has troops in Iraq to help train Iraqi forces fighting Islamic State militants. Would you support or oppose Australian soldiers being used to fight Islamic State, not just train Iraqi forces?

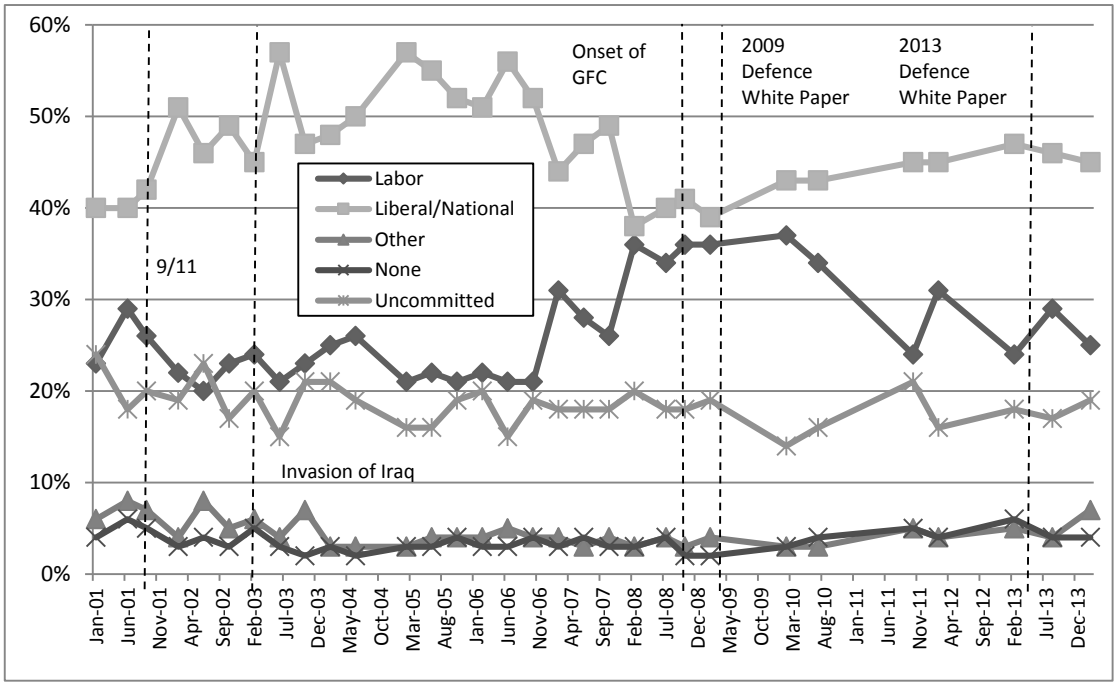
15 September 2015: Do you support or oppose Australia extending airstrikes against Islamic State into Syria?

Source: Essential Report, 2014 and 2015.

Who is trusted to handle defence?

Figure 1.2.14 shows polling results over 13 years on who is best able to handle defence/national security. Although confidence in the relative merits of Labor and the Coalition converged around the time of the 2007 federal election, the results diverged in favour of the Coalition following the 2009 Defence White Paper. The Coalition has maintained a strong lead since late 2009.

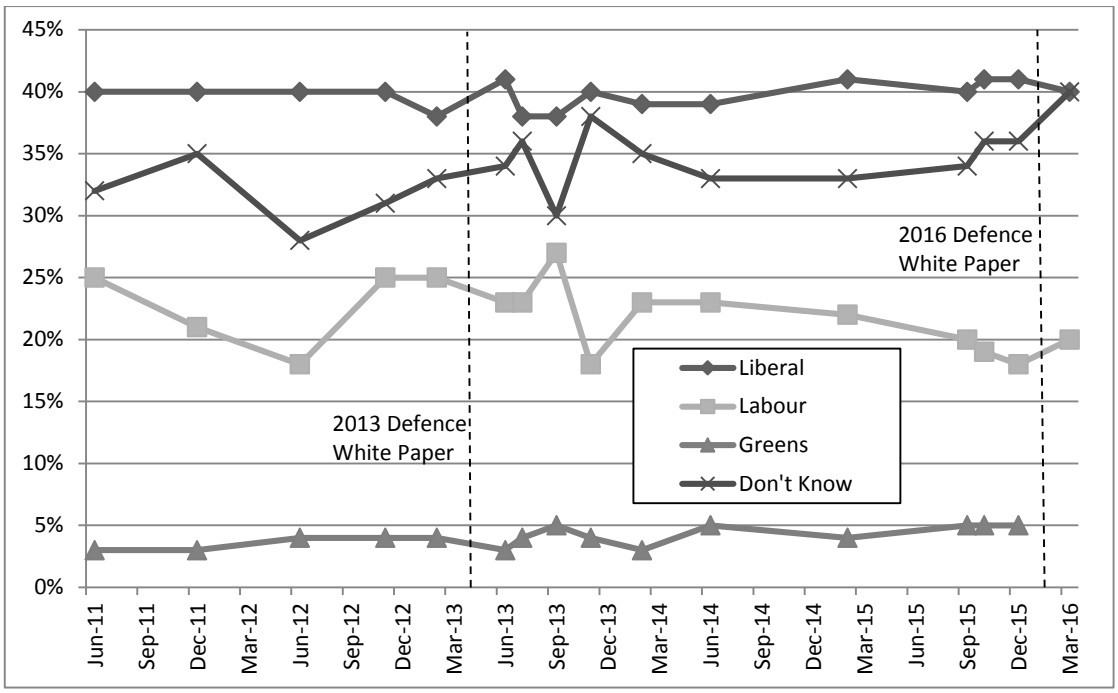
Figure 1.2.14: Who is best able to handle defence/national security?



Source: Newspoll for The Australian newspaper, January 2001 to February 2014.
(Defence pre-June 2004, National Security post-June 2004)

Newspoll has not conducted a 'best able to handle' poll since early 2014. Fortunately, an overlapping and more recent picture of voter perceptions can be found in Essential Media's 'trust most' poll graphed in Figure 1.2.15. The results are broadly consistent with the latter years of the Newspoll data. Note that the Greens were excluded in the last poll.

Figure 1.2.15: Which party would you trust to handle 'security and the war on terrorism'



Source: Essential Media, June 2011 to March 2016.

Political volatility

The September 2013 federal election saw the Abbott government elected with a comfortable majority in the lower house; 90 seats to the Coalition and 55 seats to Labor. As Table 1.2.9 shows, the electoral system rewards larger parties at the expense of the smaller when it comes to proportioning seats. Of particular note is the large swing to 'other' candidates—fully three times larger than the swing to the Coalition. So while Labor and the Greens fared badly in the December poll, only around a quarter of their lost primary votes went to the Coalition.

Table 1.2.9: Lower house primary votes and seats, 2013 federal election

	Votes	%	Swing %	Seats	%
Liberal/National Coalition	5,882,818	45.55	+1.93	90	60.00
Australian Labor Party	4,311,365	33.38	-4.61	55	36.67
The Greens	1,116,918	8.65	-3.11	1	0.67
Other	1,603,826	12.42	+5.79	4	2.67

Source: Australian Electoral Commission

A similar trend can be observed in the results for the Senate in the 2013 election (see Table 1.2.10). The Greens and Labor lost 9.5% of the primary vote, the Liberal/National Coalition lost almost 1% and 'other' candidates enjoyed a collective swing of more than 10%. The April 2014 Western Australian Senate recount saw the major parties punished again, with swings in the primary vote of 5% against Labor and 7% against the Liberal/National Coalition. Perhaps surprisingly, the Greens enjoyed half of the 12% collective swing away from the two main parties.

Table 1.2.10: Upper house primary votes and seats, 2013/2014 federal election

	Votes	%	Swing	Seats	%
Liberal/National Coalition	5,057,218	37.71	-0.92	17	42.5
Australian Labor Party	4,038,591	30.11	-5.02	12	30
The Greens	1,159,588	8.65	-4.46	4	10
Palmer United Party	658,976	4.91	4.91	3	7.5
Other	2,498,646	15.66	6.28	4	10

Source: Australian Electoral Commission
Note: votes are taken from September 2013 election, seat numbers and percentages include April 2014 Senate re-election

Although the March 2014 South Australian and November 2014 Victorian elections saw moderate two-party preferred swings (1.4% and 3.6% respectively), the January 2015 Queensland election saw a massive 14% swing against the incumbents and the March 2015 New South Wales election saw a sizable 10% swing. Voters have demonstrated their willingness to switch allegiance quickly.

Looking at the implications for the forthcoming election and the government that follows; the freedom to pursue unpopular policies is likely to be tempered by the electorate's demonstrated volatility and dissatisfaction with the major parties. In the longer run, the next government may find it politically difficult to simultaneously deliver a surplus and boost defence spending.

The government's election platform

Key points from the Abbott government's election policy document *The Coalition's Policy for Stronger Defence* appear in Table 1.2.11 along with an assessment of progress to date.

Table 1.2.11: Coalition defence election platform

Policy	Status
Continuation of the fundamental defence policy objectives as set out in the 2000 Defence White Paper—i.e. Defence of Australia with concentric circles (p.3).	The 2016 White Paper relegated 'Defence of Australia' to one of three equally weighted objectives.
'There will be no further cuts to Defence spending under a Coalition government.' (p.4)	$76 million in efficiency dividends were taken from Defence in the 2014-15 Budget. Another $177 million was lost in 2016-17 due to transfers to other agencies.
Savings will be sought from Defence but 'any savings that the Coalition finds from rationalising the Defence bureaucracy will be reinvested in greater military capacity and front line capabilities'. (p.4)	See above.
'….decisions necessary to ensure that Australia has no submarine capability gap within 18 months of the election. (p.4)	A design partner for the submarine project was announced in April 2016.
'….replacement of the current submarine fleet will centre around the South Australian shipyards. (p.4)	The submarines will all be built in South Australia—announced April 2016.
Contingent of advice from Defence chiefs, 'we will proceed with the initial purchase of up to 72 JSFs.' (p.5)	Approval announced 23 April 13.
'The Coalition's Defence White Paper will closely consider the need for unmanned aerial surveillance vehicles'. (p.5)	Commitment to purchase Triton UAV made on 13 March 2013.
'We will look for areas where it would be in the mutual interest of Australia and the United States to deepen our longstanding alliance relationship building on the recent announcement to rotate a marine brigade through Darwin'. (p.6)	
'….publish an objective replacement Defence White Paper with costed, affordable ways to meet Australia's defence and national security objectives.' (p.6)	Completed in February 2016
'The Coalition will appoint a high-profile team to undertake a first-principles review of the structure of the Defence Department and all its major processes.' (p.6)	Completed as promised.
'We will work with the Australian defence industry to avoid production troughs by co-operating closely with companies…' (p.7)	A naval shipbuilding plan is pending, but continuous shipbuilding has been announced for SA and WA.
'We will reform the Defence Materiel Organisation (DMO) to ensure it employs commercially experienced procurers with an understanding of commercial principles and risk.' (p.7)	DMO has been reestablished as CASG.
'…consider further options for reforming the DMO, including proposals for establishing it as a more independent agency driven by cost-benefit assessments'. (p.7)	Presumably, these options were considered.
Recipients of the Defence Forces Retirement Benefits (DFRB) and the Defence Force Retirement and Death Benefits (DFRDB) military superannuation pensions will see their payments indexed in the same way as aged and service pensions.' (p.7)	Funding provided in 2014 Budget.
'….all ADF dependants will be eligible to claim for out of pocket expenses for GP services. Additionally, each ADF dependant will be able to claim up to $400 per year for allied health services such as physiotherapy, psychology, dentistry and podiatry. (p.8)	Funding provided in 2014 Budget.
'The Coalition will re-build ADF Gap Year programme, progressively increasingly numbers until an average of 1,000 places per annum is made available in the programme.' (p.9)	Funding provided in 2014 Budget.
'Within a decade, Defence spending will be two per cent of GDP'. (p.10)	2016 White Paper provided explicit funding guidance consistent with that goal.

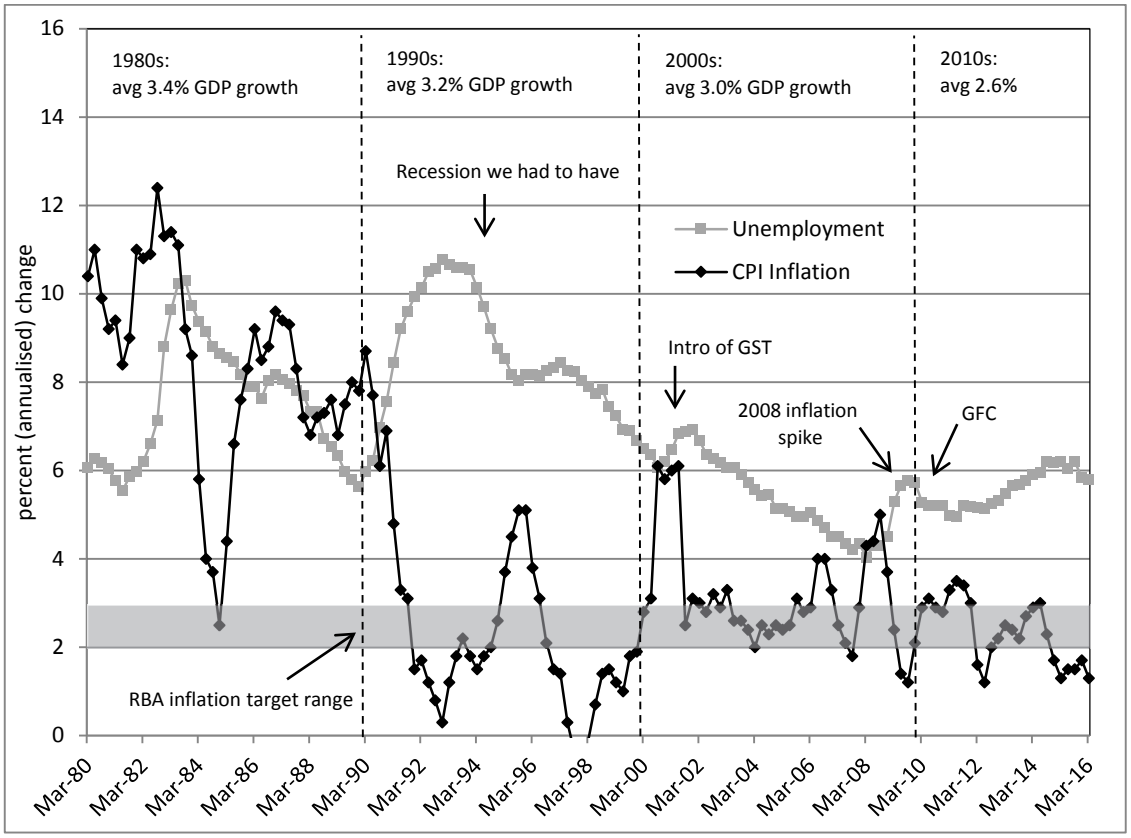
Source: The Coalition's Policy for Stronger Defence, 2013.

1.3 Economic Context

From the early 1990s until late 2008, Australia enjoyed relatively favourable economic conditions, see Figure 1.3.1. Three things stood out:

- In the 1990s, inflation fell to effectively half of what it was in the 1970s and 1980s, notwithstanding a short-lived spike in 2008.
- Economic growth was healthy, averaging 3.4% during the 1990s and 3.2% from 2000 to 2007, despite a fall in labour productivity growth.
- Unemployment fell from a peak of 10.8% in late 1992 to a 34-year low of 4% in early 2008 (at the same time as workforce participation edged up from 62.7% to 65.2%).

Figure 1.3.1: Australian economic performance 1980 to 2016

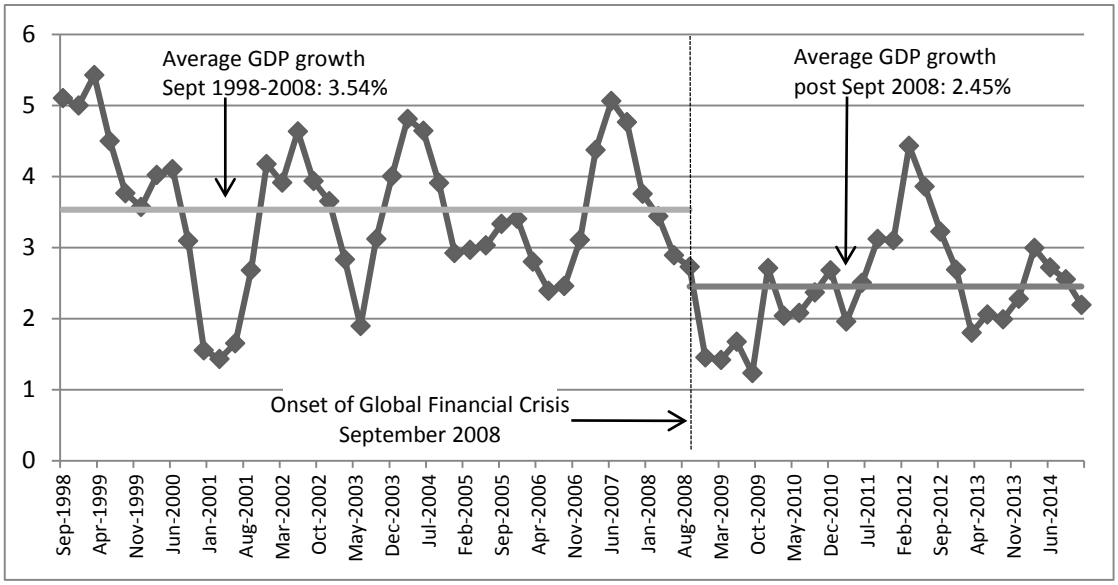


Source: Reserve Bank of Australia (RBA), Australian Bureau of Statistics (ABS) and Treasury statistics.

Strong economic growth allowed the Howard government to simultaneously increase spending and cut taxes in its later years. 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 from around 2004, when unemployment fell below 5%, capacity constraints started to be felt in the economy and inflation spiked around 2008.

Then, in late 2008, the GFC hit and it looked as though a substantial recession was on the cards. But Australia weathered the economic storm better than expected and only experienced a limited slowdown. Nonetheless, a return to trend growth is yet to emerge. Indeed, economic growth for the decade prior to the GFC averaged 3.54% compared with 2.45% subsequently (see Figure 1.3.2).

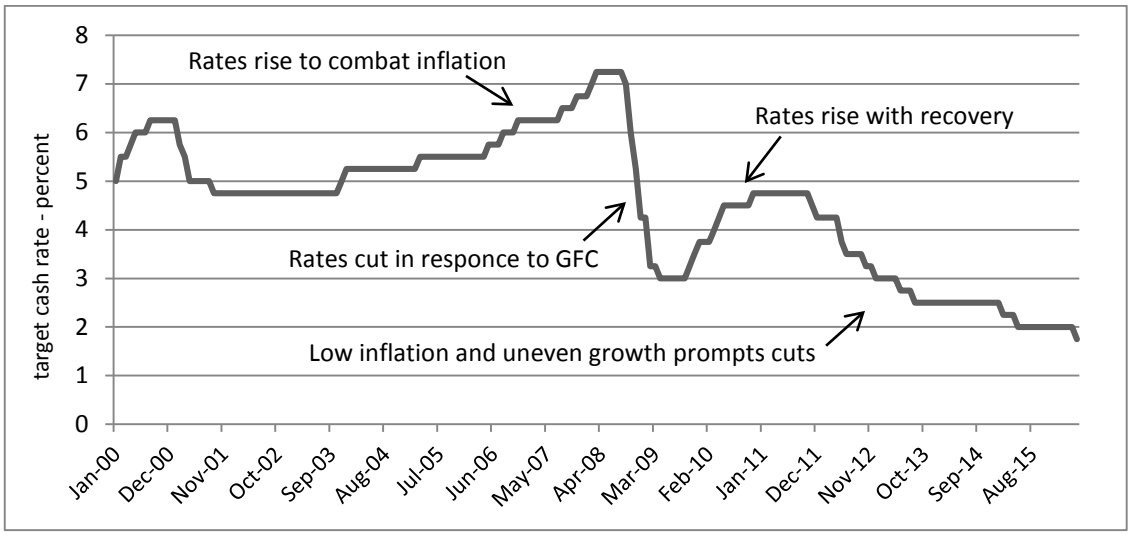
Figure 1.3.2: Seasonally adjusted annual GDP growth by quarter



Source: Reserve Bank of Australia (RBA), Australian Bureau of Statistics (ABS).

The timing of the events is reflected in the changes to the RBA target cash rate set out in Figure 1.3.3. From late 2009 until late 2010, rising inflation and restored growth saw the official interest rate rise progressively by 1.75%. Over the same period, unemployment fell to around 5.2%. In late 2011, however, the RBA changed tack and cut rates by 1% in three steps over a six-month period to an expansionary 3.75% as inflation moderated. Over the next fifteen months, from May 2012 to August 2013, the cash rate fell by another 1.25% as unemployment hedged upwards. Two further cuts were made in the first half of 2015. On the day of the 2016 Budget, the cash rate was revised down again to 1.75% in response to soft inflation figures.

Figure 1.3.3: RBA target cash rate 2001 to 2016

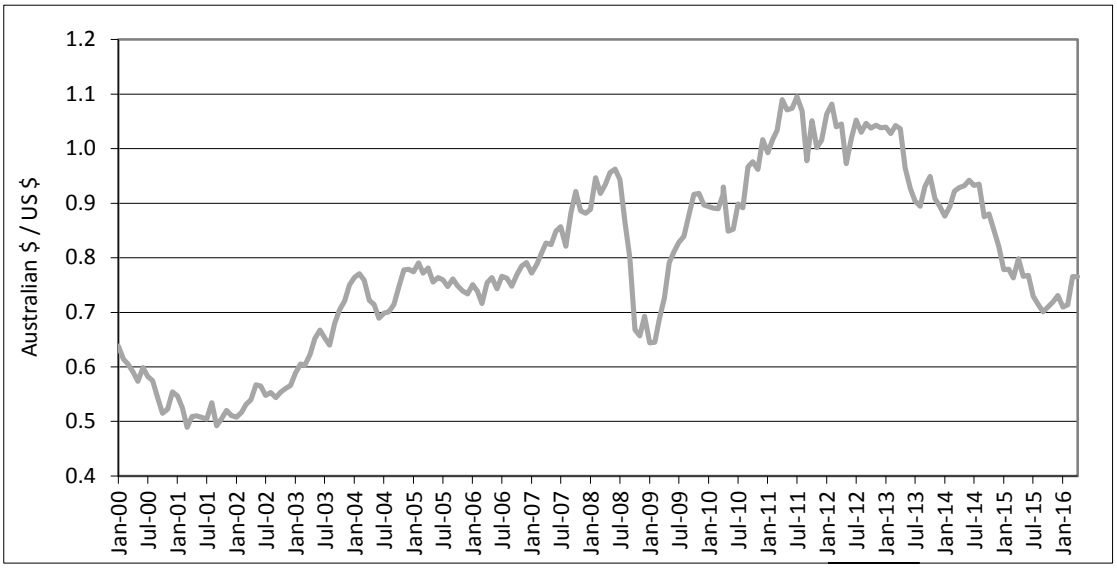


Source: RBA

Defence funding is affected by two economic parameters; the value of the Australian dollar—particularly relative to the US dollar—and the rate of inflation. These are explored below beginning with foreign exchange.

Defence currently spends something like $6–7 billion a year, mostly in contracts written in US dollars. And while Defence is insulated from foreign exchange fluctuations on a no-win, no-loss basis, the government, and ultimately the taxpayer, feels the pain or gain. In recent years, the USD–AUD exchange rate has fluctuated substantially, as Figure 1.3.4 shows. At the time of writing, the exchange rate was around US$0.73 having reached a post-float high of $1.11 against the US dollar in July 2011. The budget assumes a continuing rate of US$0.77.

Figure 1.3.4: Foreign exchange



Source: RBA

Since 2009-10, the Defence budget has nominally received fixed 2.5% annual indexation, calculated from 2009-10 but only applied from 2013-14. (This is separate from and in addition to the adjustments made for foreign exchange). The relative percentage gain or loss compared with CPI and 'core' inflation is calculated in Table 1.3.1, including historical figures for comparison.

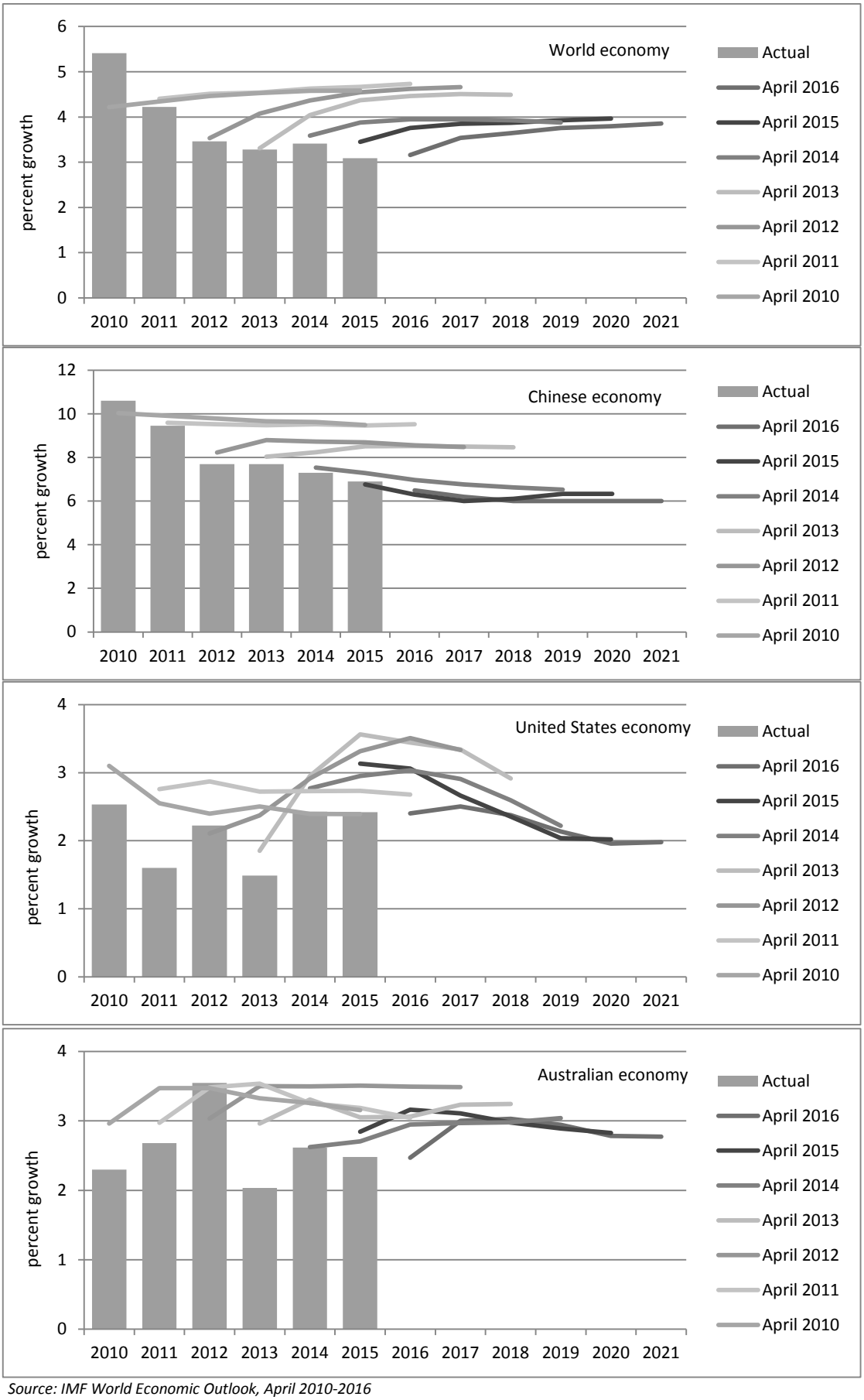
Table 1.3.1: CPI inflation, 'core' inflation and 2.5% indexation

	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20
Fixed 2.5%	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
CPI	3.2	2.9	3.4	3.1	2.4	3.1	2.4	2.3	2.7	1.7	1.4	1.7	2.2	2.4	2.5
Difference	-0.7	-0.4	-0.9	-0.6	0.1	-0.6	0.1	0.2	-0.2	0.8	1.1	0.8	0.3	0.1	0.0
Fixed 2.5%	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
'core' inflation*	2.9	2.9	3.9	4.4	3.3	2.5	2.3	2.4	2.6	2.3					
Difference	-0.4	-0.4	-1.4	-1.9	-0.8	0.0	0.2	0.1	-0.1	0.2					

Source: APH Library, RBA, ABS and Budget Papers. Average of the RBA weighted median and trimmed mean measures.*

The frustratingly slow growth of economies worldwide is shown in Figure 1.3.5 which compares actual GDP growth with successive IMF esimates. Time and time again hopes of recovery have been dashed.

Figure 1.3.5: Slower than expected growth around the world

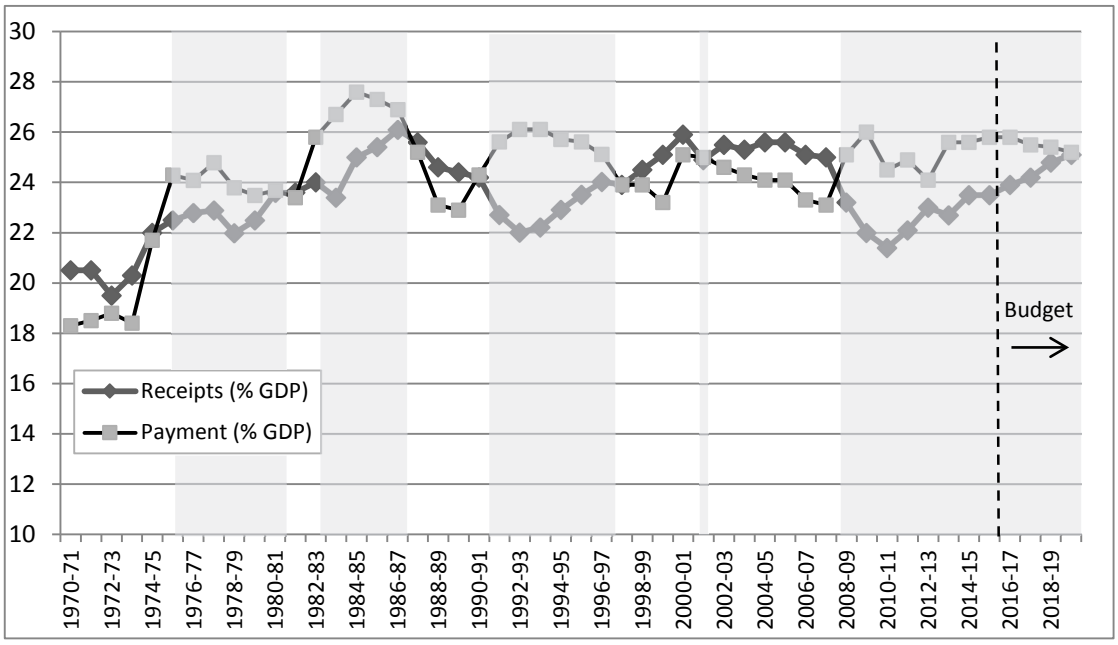


Source: IMF World Economic Outlook, April 2010-2016

1.4 Fiscal Context

Between 1970 and 1984, annual Australian Government payments grew from 18.3% to 27.6% of GDP (see Figure 1.4.1). Subsequently, payments moderated downward to around 23% and then fluctuated around an average of 24.9% of GDP up until the present day.

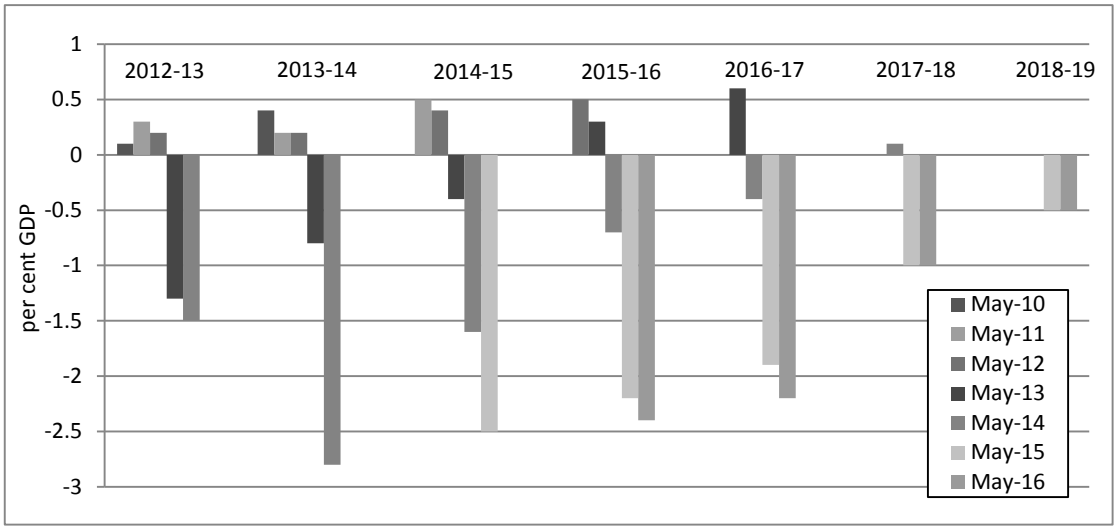
Figure 1.4.1: Australian Government payments and receipts 1970 to 2019



Source: Treasury Budget Papers, Budget 2016-17. Note: receipts are exclusive of Future Fund earnings.

Over the period 1970 to 2015, the Australian Government ran deficits in 28 out of 46 years, as marked in grey overshadow in Figure 1.4.1. The most recent excursion into deficit budgeting was caused by the GFC, which precipitated falling receipts, rising 'automatic stabiliser' spending and policy-led Keynesian spending. From 2009 onwards, there was a further deterioration of the government's fiscal outlook as projected revenues failed to materialise. Figure 1.4.2 graphs the dramatic changes to the fiscal outlook in successive official estimates from 2009 onwards.

Figure 1.4.2: The changing outlook—fiscal balance per cent GDP



Source: 2009-10 to 2016-17 Budget Papers

A more detailed comparison appears in Table 1.4.1, which compares the outlooks in the past four budgets. Note the severe and continuing deterioration in the government's fiscal position between 2012 and today; deficits are shaded in grey. Key figures are as follows; the planned surplus (as at May 2012) for 2012-13 blew out by around $22 billion, and the predicted deficit (as at May 2013) for 2013-14 grew from $18 billion to $50 billion.

Table 1.4.1: Budget aggregates 2012-13 to 2016-17 Budgets (nominal billion dollars)

		Historical Figures							Budget Estimates				
		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Budget 2012-13	Underlying cash	**-27.1**	**-54.8**	**-47.7**	**-44.4**	**1.5**	**2.0**	**5.3**	**7.5**				
	Per cent of GDP	-2.2	-4.3	-3.4	-3.0	0.1	0.1	0.3	0.4				
	Fiscal balance	**-29.7**	**-52.9**	**-42.0**	**-42.0**	**2.5**	**2.6**	**7.0**	**9.5**				
	Per cent of GDP	-2.4	-4.1	-2.8	-2.8	0.2	0.2	0.4	0.5				
Budget 2013-14	Underlying cash	**-27.1**	**-54.8**	**-47.7**	**-43.4**	**-19.4**	**-18.0**	**-10.9**	**0.8**	**6.6**			
	Per cent of GDP	-2.2	-4.3	-3.4	-2.9	-1.3	-1.1	-0.6	0.0	**0.4**			
	Fiscal balance	**-29.7**	**-52.9**	**-42.0**	**-44.5**	**-20.3**	**-13.5**	**-6.3**	**6.0**	**10.8**			
	Per cent of GDP	-2.4	-4.1	-2.8	-3.0	-1.3	-0.8	-0.4	0.3	**0.6**			
Budget 2014-15	Underlying cash	**-27.1**	**-54.8**	**-47.7**	**-43.4**	**-18.8**	**-49.9**	**-29.8**	**-17.1**	**-10.6**	**-2.8**		
	Per cent of GDP	-2.2	-4.3	-3.4	-2.9	-1.2	-3.1	-1.8	-1.0	-0.6	-0.2		
	Fiscal balance	**-29.7**	**-52.9**	**-42.0**	**-44.5**	**-23.5**	**-45.1**	**-25.9**	**-12.2**	**-6.6**	**1.0**		
	Per cent of GDP	-2.4	-4.1	-2.8	-3.0	-1.5	-2.8	-1.6	-0.7	-0.4	0.1		
Budget 2015-16	Underlying cash	**-27.0**	**-54.5**	**-47.5**	**-43.4**	**-18.8**	**-48.5**	**-41.1**	**-35.1**	**-25.8**	**-14.4**	**-6.9**	
	Per cent of GDP	-2.1	-4.2	-3.4	-2.9	-1.2	-3.1	-2.6	-2.1	-1.5	-0.8	-0.4	
	Fiscal balance	**-29.7**	**53.9**	**-51.8**	**-44.5**	**-23.5**	**-43.7**	**-39.4**	**-33.0**	**-23.4**	**-9.2**	**-3.3**	
	Per cent of GDP	-2.4	-4.2	-3.7	-3.0	-1.5	-2.8	-2.5	-2.0	-1.3	-0.5	-0.2	
Budget 2016-17	Underlying cash	**-27.0**	**-54.5**	**-47.5**	**-43.4**	**-18.8**	**-48.5**	**-37.9**	**-39.9**	**-37.1**	**-26.1**	**-15.4**	**-6.0**
	Per cent of GDP	-2.1	-4.2	-3.4	-2.9	-1.2	-3.1	-2.4	-2.4	-2.2	-1.4	-0.8	-0.3
	Fiscal balance	**-29.7**	**53.9**	**-51.8**	**-44.7**	**-23.5**	**-43.7**	**-40.0**	**-39.4**	**-37.1**	**-18.7**	**-9.8**	**-2.0**
	Per cent of GDP	-2.4	-4.2	-3.7	-3.0	-1.5	-2.8	-2.5	-2.4	-2.2	-1.0	-0.5	-0.1

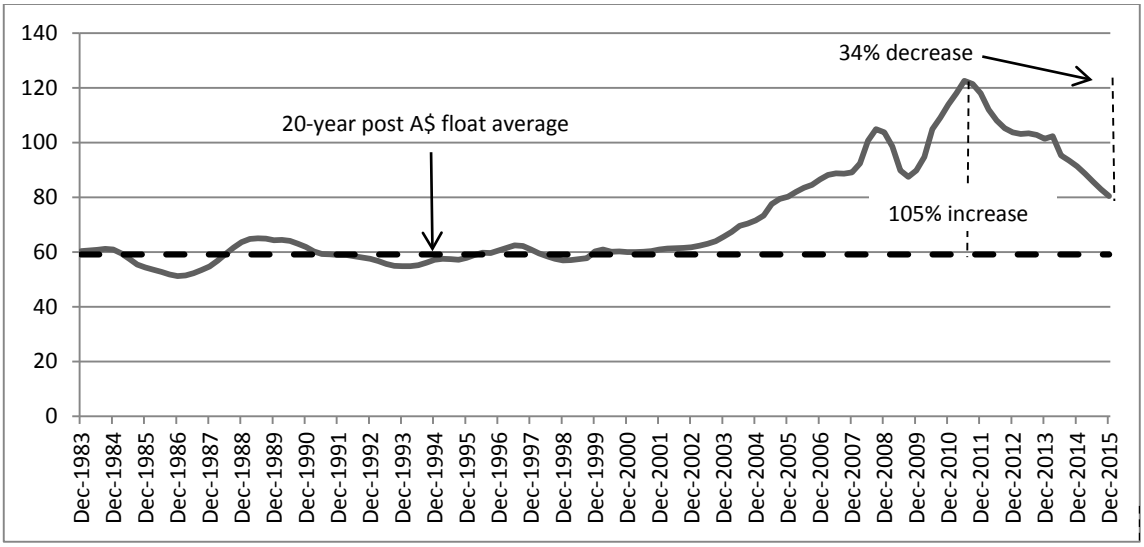
Source: Treasury Budget Papers No. 1.

The recent deterioration in government revenues is due to several factors, including reduced company profits and sluggish nominal GDP growth (tax depends on nominal rather than real GDP levels). A key factor overall was the fall in Australia's terms of trade, Figure 1.4.3.

The terms of trade measure the quantity of imports an economy can purchase per unit of exports. Concurrent with the mining boom, Australia's terms of trade grew substantially, reaching a historical peak in September 2011 before falling 34% to its current level. This year's budget assumes the terms of trade will recover by 1.25% in 2016-17, and hold steady in 2017-18.

Deficits result in debt. Fortunately, unlike most other advanced economies, Australia entered the GFC with no debt. As a result, our accumulated and projected debt is far below the daunting levels—typically 80-100% of GDP—faced by many European economies and the United States. Figure 1.4.4 shows the past and projected net Australian Government debt out to 2019-20 as assessed in May 2014 and 2016. The deterioration in our debt position over the past 24 months is apparent. Economic growth coupled with the assumed slow remediation of the deficit results in debt peaking as a share of GDP in 2016-17.

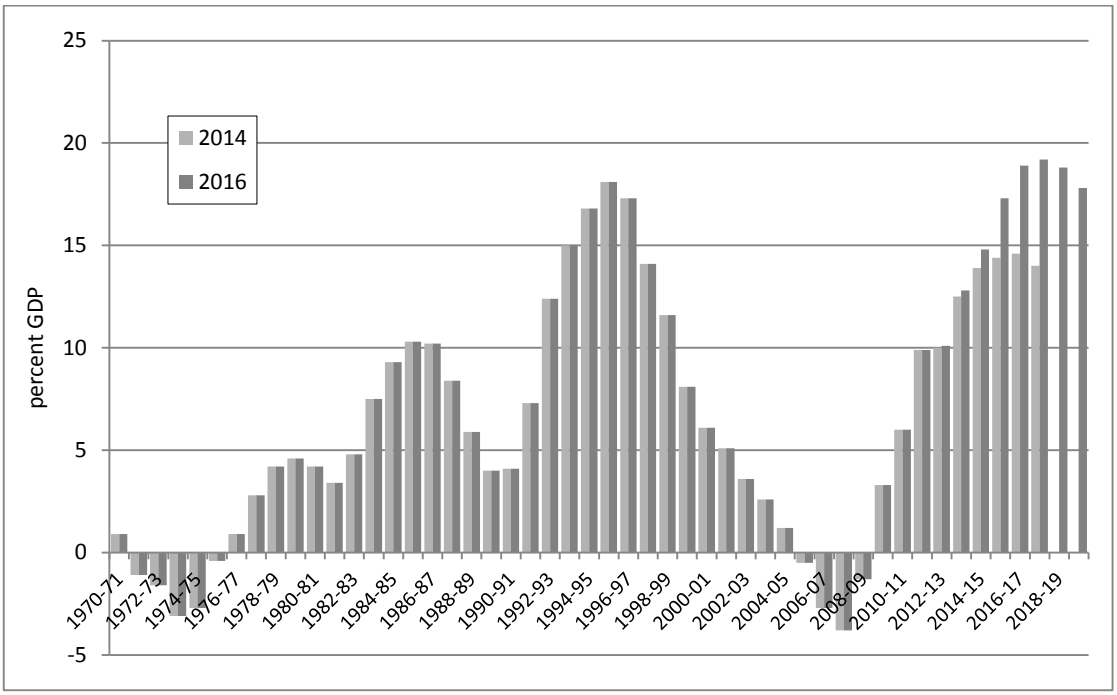
Figure 1.4.3: Australia's terms of trade index



Source: ABS Australian National Accounts 5206.0.

Although a net debt of around 19.2% of GDP is not extraordinary by international standards, it is far from desirable. Australia has a narrow export base and high household debt levels. Thus, aside from the substantial ongoing impost of interest payments, we are somewhat vulnerable in the event of another financial crisis or economic downturn.

Figure 1.4.4: Australian Government net debt

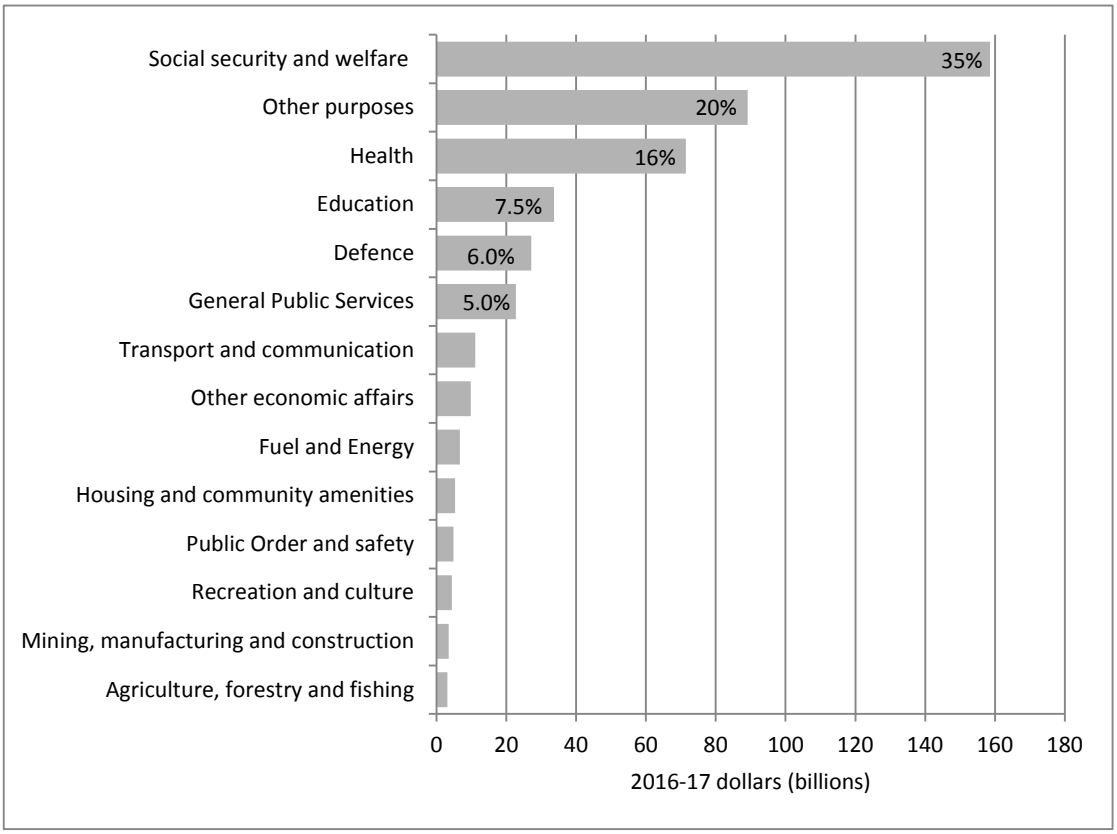


Source: Treasury Papers, May 2014 and 2016.

To put defence spending properly into a fiscal context, we turn now to examine the structure of Australian Government spending. Figure 1.4.5 shows Australian Government spending by function for 2016-17. As can be seen, defence spending accounts for a relatively small part of the total. The reputation of defence as a 'big spender' probably arose because it involves a small number of very large purchases rather than millions of small payments as

in health, education and social security. Note that in this chart defence spending excludes capital investment because of the peculiarities of Treasury's accounting system.

Figure 1.4.5: Australian Government expenses by function 2016-17



Source: 2016-17 Budget Papers

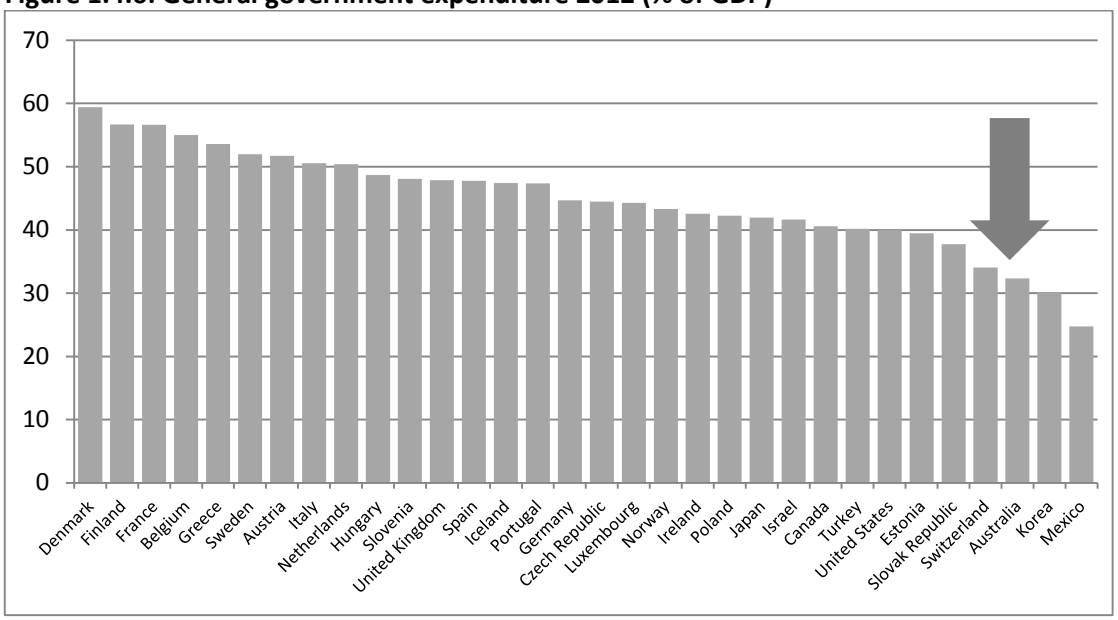
Comparing defence spending with other components of federal (i.e. Australian Government) spending fails to take into account the additional public revenues expended at the state and local level. In 2011, for example, federal spending accounted for only around two-thirds of public spending (source OECD statistics). Taking local and state government spending into account, defence spending represents only 3.9% of public expenditure in Australia. Even this figure fails to properly put defence spending into context. The denominator in the ratio (general government expenditure) is highly dependent on the extent to which the government intermediates between individuals and the providers of services such as health and education. The level of intermediation varies substantially between different countries, as demonstrated in Figure 1.4.6, which shows general government expenditure across the OECD.

Because of Australia's relatively low level of general government expenditure, the percentage devoted to defence is higher than it otherwise would be. A better way to capture the true scale of defence spending relative to the usual cited 'opportunity cost' areas of social spending, health, pensions and education is to compare defence spending to the total (public plus private) expenditure in those areas. This is done in Figure 1.4.7.

As is clear from the figure, defence expenditure is small compared with combined public and private expenditure in the four areas. Moreover, although Australia's general government

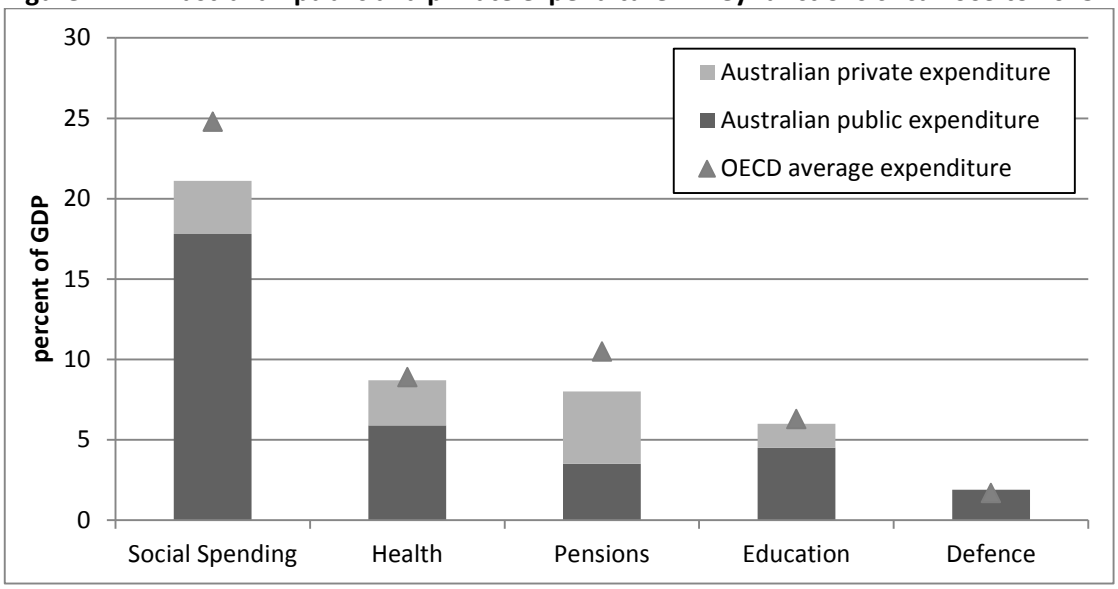
expenditure is small by OECD standards, our public plus private expenditure in these areas is fully commensurate with the aggregate OECD expenditure.

Figure 1.4.6: General government expenditure 2012 (% of GDP)



Source: OECD Factbook, 2014.

Figure 1.4.7: Australian public and private expenditure in key functions circa 2003 to 2015



Source: OECD Factbook, 2013 to 2015 (Defence OECD figure is the actually NATO European average for 2012).

The critical point to observe is that defence is different from the competing areas of expenditure in a very important respect. Although a shortfall in government spending on social, health, pensions or education can be made up for through private spending, in practice only the government can provide the public good of defence. Thus, any shortfall in the provision of defence by the government can't be remediated.

1.5 Defence Organisation and Management

The Outcomes and Program Framework

Since 2009-10, the Defence budget has been set out according to a framework of 'outcomes' and 'programs', which replaced the 'outcomes' and 'outputs' framework established in 1999.

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.

Programs are activities that agencies undertake in pursuit of the outcomes they are expected to deliver.

The performance of agencies is measured under the framework. This is done through specific targets (like flying hours for Air Force) and, ultimately, the extent to which their programs actually deliver the outcomes intended. So the aim is to show not only how much an agency is *doing*, but how much it's actually *achieving.* Defence is currently being restructured following the First Principles Review. The output/organisational structure is likely to evolve further as a result. See Chapter 4.

The Defence Outcomes

Since 2009-10, the Defence Outcomes have been:

Outcome 1: The protection and advancement of Australia's national interests through the provision of military capabilities and the promotion of security and stability.

Outcome 2: The advancement of Australia's strategic interests through the conduct of military operations and other tasks as directed by Government.

Outcome 3: Support for the Australian community and civilian authorities as requested by Government**.**

The programs that contribute to these three outcomes are set out in Figure 1.5.1. Note that the programs are closely aligned with the actual organisational structure of Defence, as can be seen by comparison with the Defence 'wiring diagram' in Figure 1.5.2.

This framework provides greater visibility of resources consumption within the organisation than the output-based approach that was in place up to 2007-08. But that 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 is how much it costs to deliver ships, planes and battalions ready for deployment, not how much money is spent on inputs such as health services, legal advice or personnel management. Of course, in a perfect world we'd be told both.

Curiously, at the same time as Defence's formal budget framework abandoned the concept of outputs in favour of an organisation-based program approach, the 2009 White Paper said Defence would move to an output-driven internal budgeting model. Seven years on, we still don't know what this will entail. The idea many have been abandoned.

Figure 1.5.1: The Defence Outcome-Program framework (May 2016)

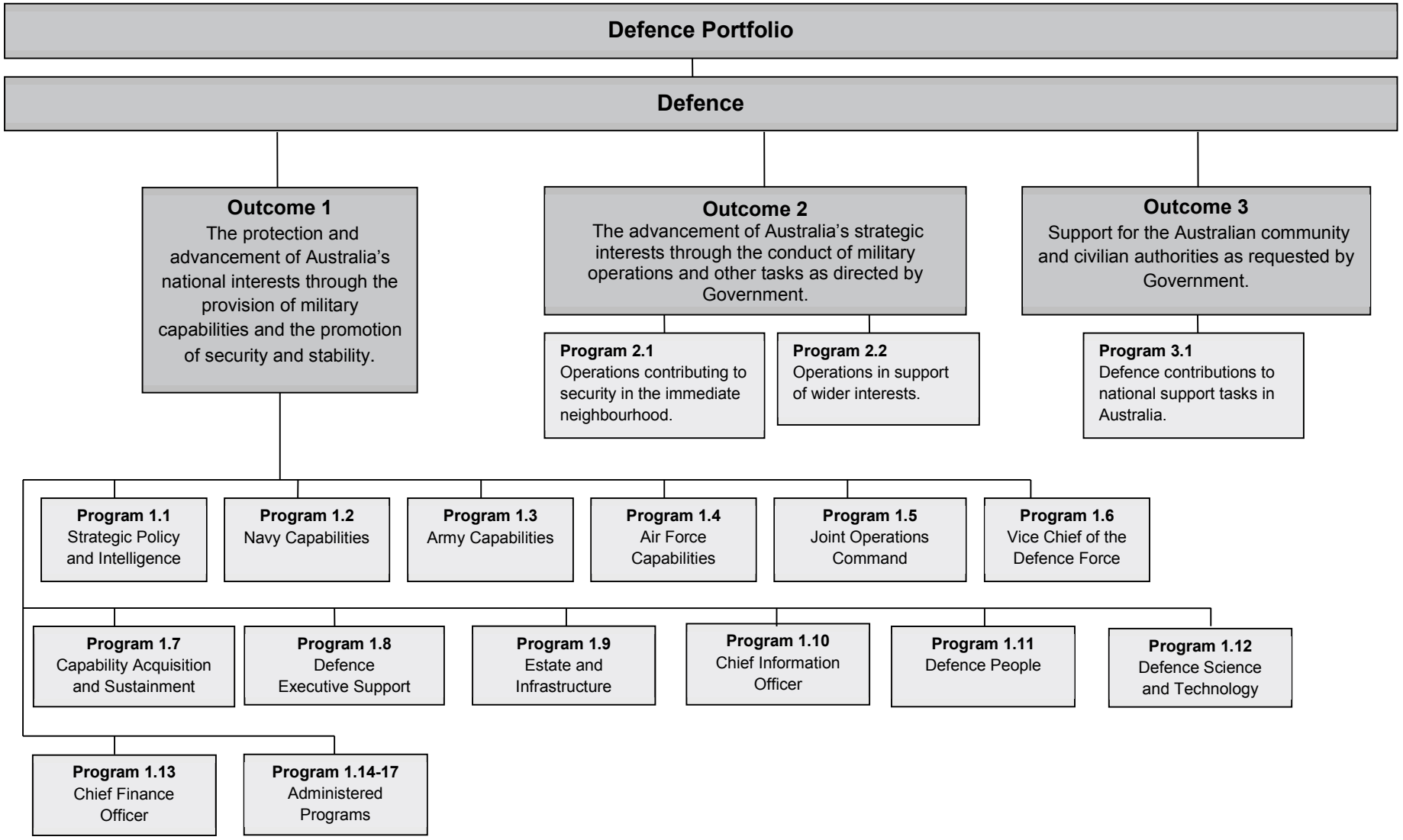
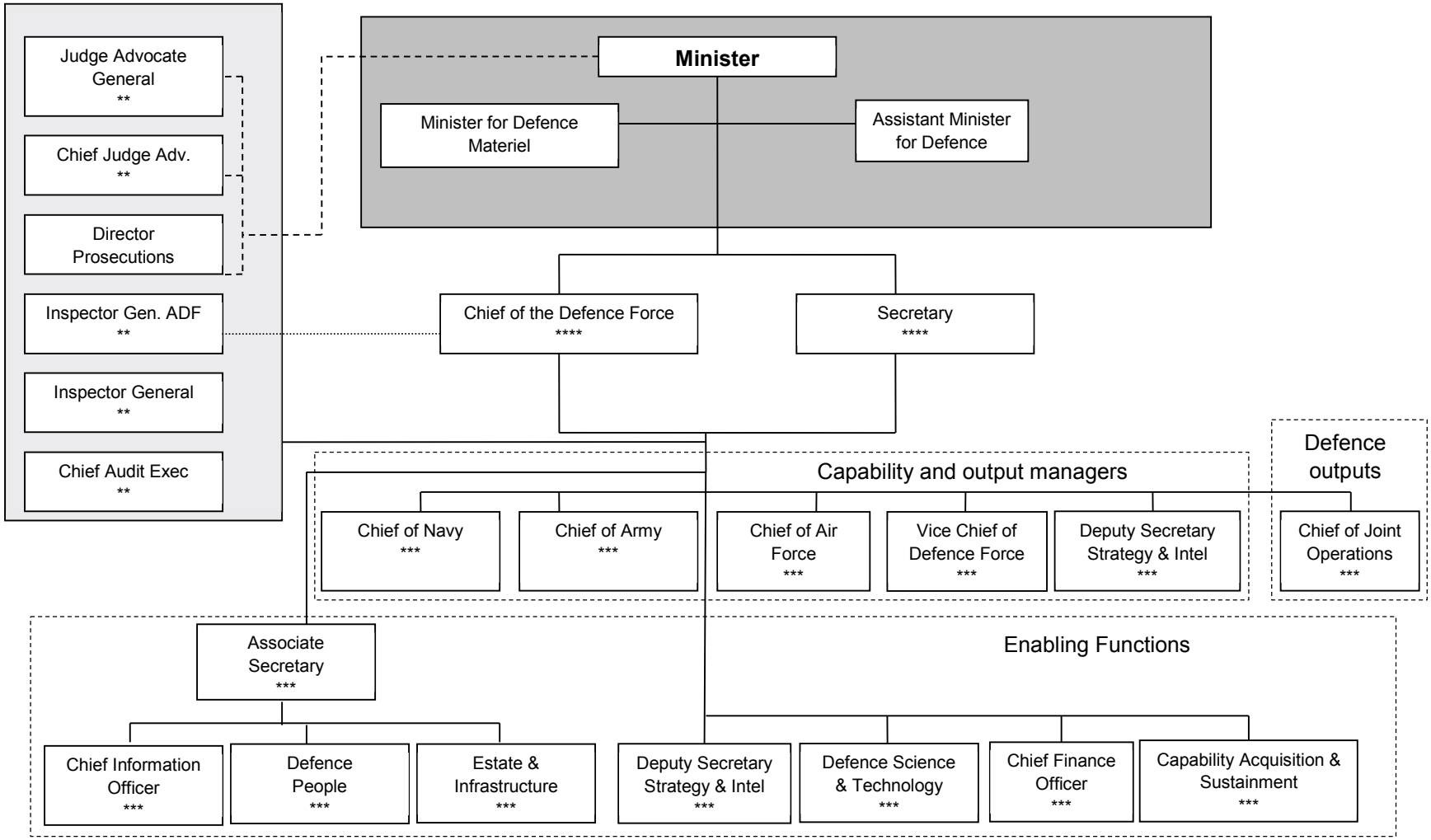


Figure 1.5.2: Defence organisational structure (as May 2016)



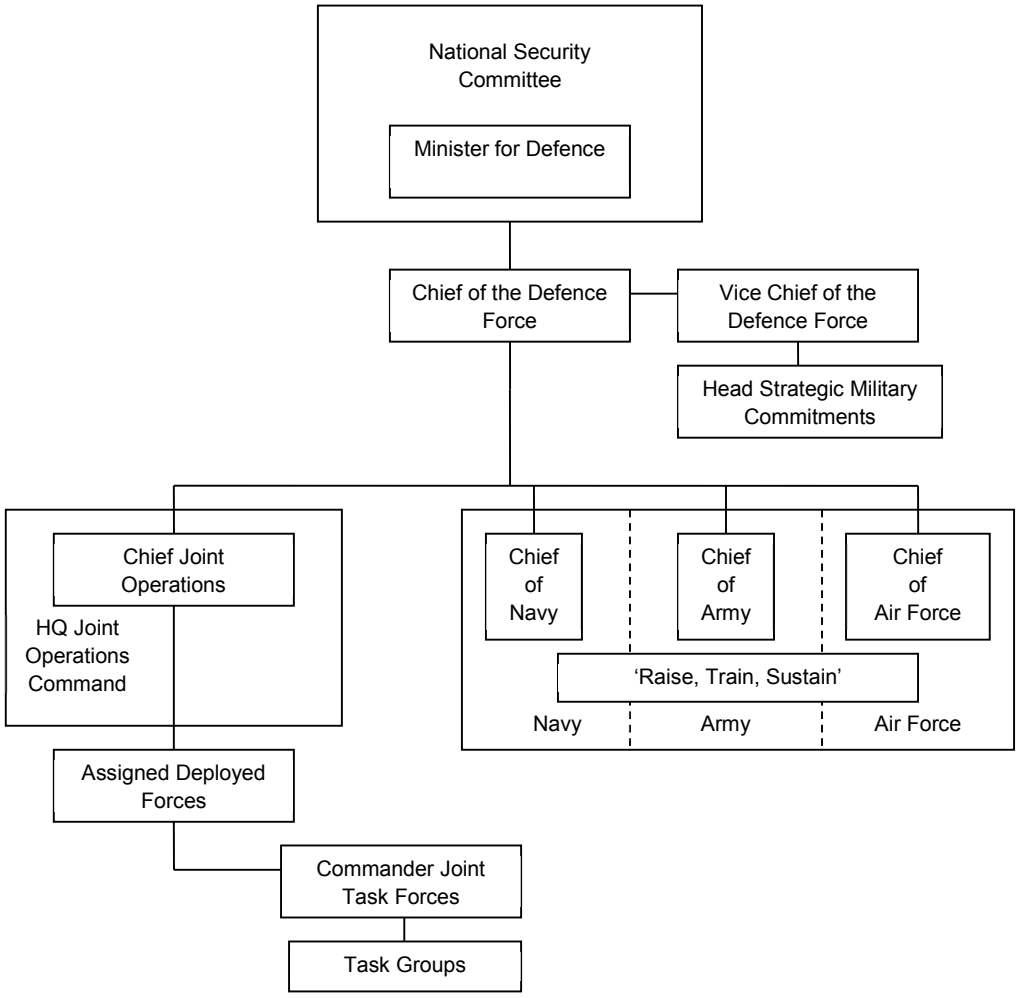
ADF command structure

It's 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 of the CDF and Secretary and the group/program arrangements outlined above. The latter is exercised through a formal command chain and dedicated headquarters structure.

On a day-to-day basis, the three Services (Navy, Army, and Air Force) are responsible for raising, training and sustaining their forces. When forces are deployed on operations or major exercises, the designated force elements are assigned to Headquarters Joint Operations Command (HQJOC) for that purpose. Since late 2008, HQJOC has been housed at a purpose-built facility near Bungendore in rural NSW and is staffed by around 800 personnel.

A more detailed outline of ADF command and HQJOC appears in Chapter 2.6 of this brief under Program 1.5.

Figure 1.5.3: ADF command structure



1.6 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's increasingly recognised that our national security interests are best served by a coordinated approach that uses all of the levers 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.

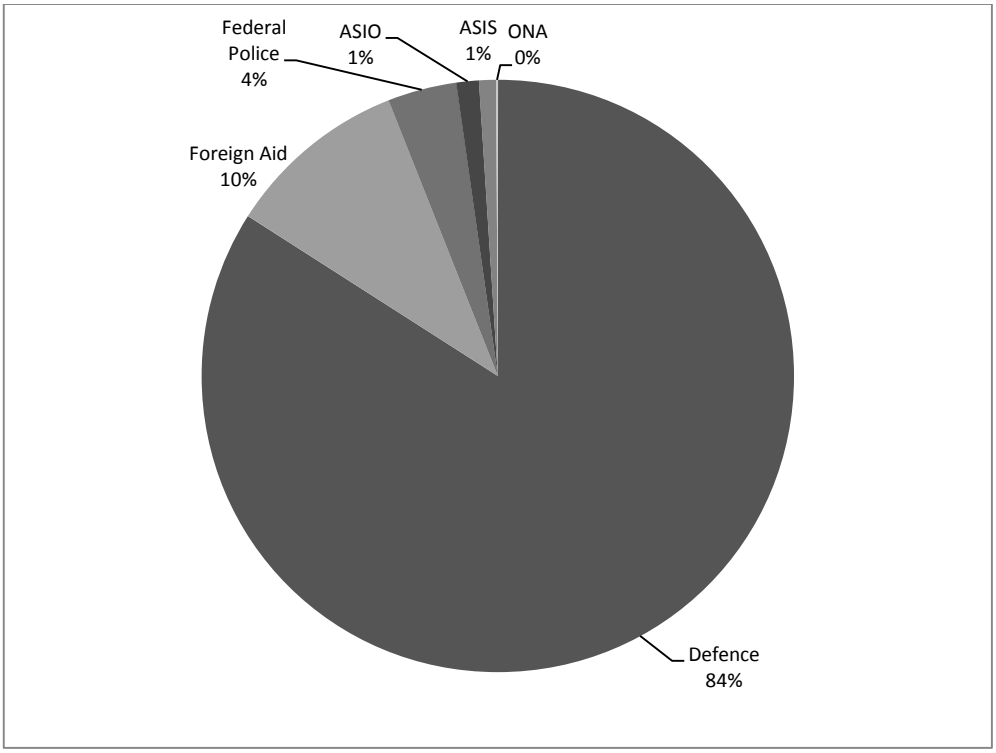
This year's budget papers included a 14 page glossy brochure, *Protecting Australia*, which explained the steps taken by the government to keep Australia safe and secure. It mentioned $1.2 billion of spending for national security, including $450 million to 'strengthen intelligence capabilities and challenge extremism'. This built on $630 million provided mid-year in additional funding to security agencies. The remaining $750 million was new funding to support ADF deployments to Afghanistan, Iraq and the Middle East.

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

- Australian Federal Police (AFP)
- Australian Security Intelligence Organisation (ASIO)
- Australian Secret Intelligence Service (ASIS)
- Department of Defence (DOD)
- Overseas Development Assistance (DFAT)
- 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 and Border Protection 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 1.6.1 compares the appropriations allocated to each of the aforementioned agencies in 2016-17. Note that because of the absorption of AusAID into DFAT, care should be taken comparing Overseas Development Assistance in 2016-17 to that in earlier years.

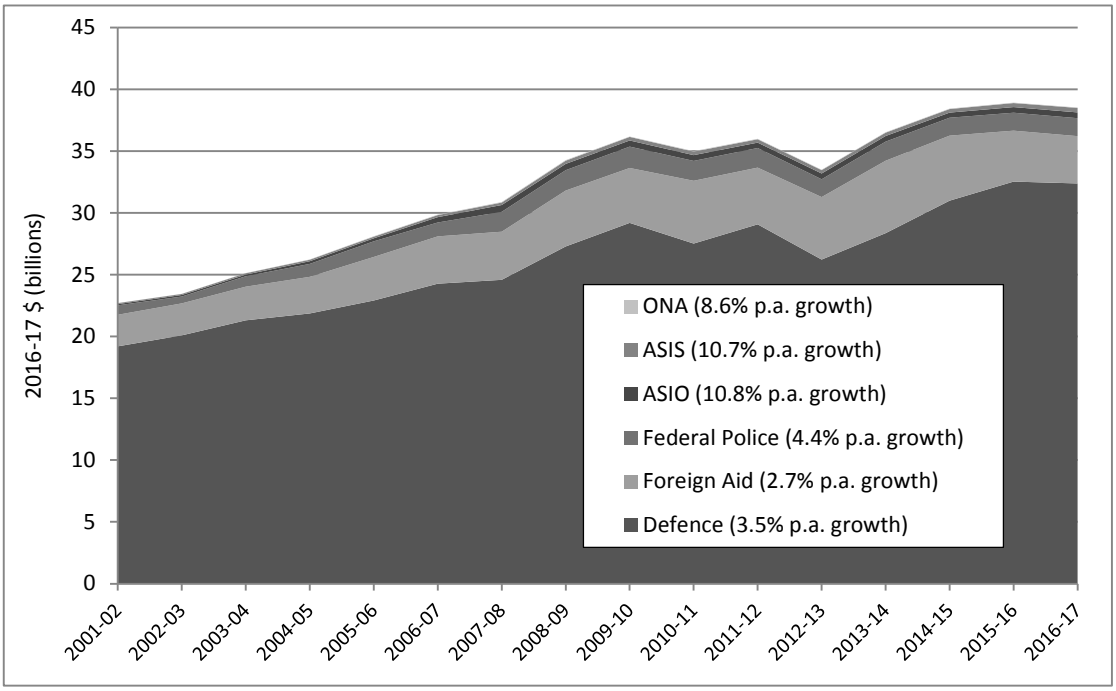
Figure 1.6.1: Federal national security spending



Source: 2016-17 Budget Paper No. 4 and ASPI calculation of Net Defence Funding

Figure 1.6.2 shows the real growth in spending by various national security agencies since 2000-01. Because changes in outputs and the presentation of budget figures make it difficult to extract precisely comparable figures from year to year, the numbers should be used with caution—though the broad trends are clear.

Figure 1.6.2: Federal national security appropriations 2001-02 to 2016-17



Source: 2002-03 to 2016-17 Budget Paper No. 4 and ASPI calculation of Net Defence Funding. [All growth rates compounding.]

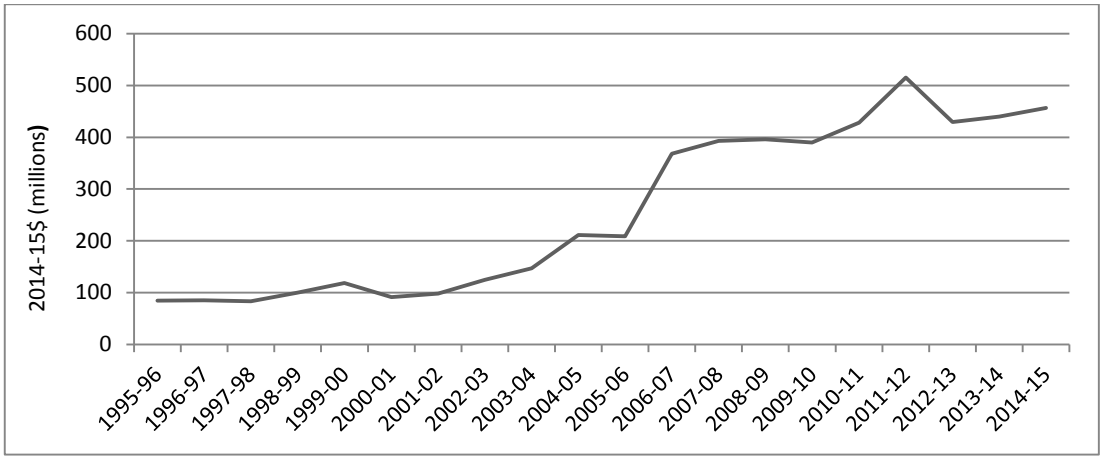
Special Focus: Australian Security Intelligence Organisation (ASIO)

Prepared by Lachlan Wilson

Established in 1949, the Australian Security Intelligence Organisation (ASIO) mission is to identify and investigate threats to security and provide advice to protect Australia and its citizens as defined under the *Australian Security Intelligence Organisation Act 1979*.

Over the last two decades ASIO has had to adapt and keep pace with rapidly changing and dynamic security threats. This has resulted in an increase in operational spending of over 250% in the past 10 years as shown in Figure 1.6.3.

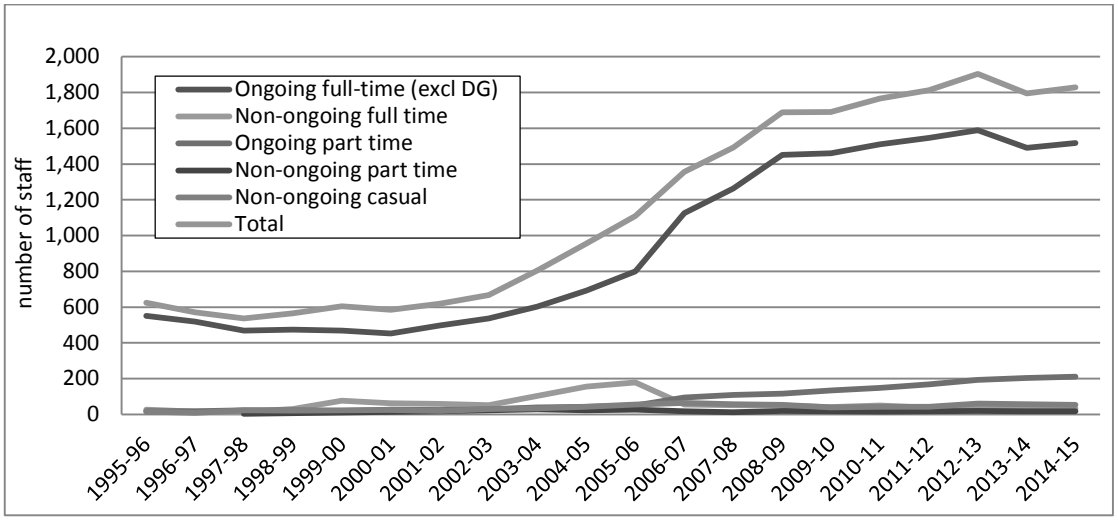
Figure 1.6.3: ASIO funding



Source: ASIO Annual Reports

An increase in funding has seen a corresponding increase in staff numbers as indicated in Figure 1.6.4. Significant increases began in the 2005-2006 financial year, with the total number nearly doubling over the next 10 years. There has been a dramatic increase in full-time staff while the number of non-ongoing full-time, casual and non-operational staff has been maintained at a relatively low level.

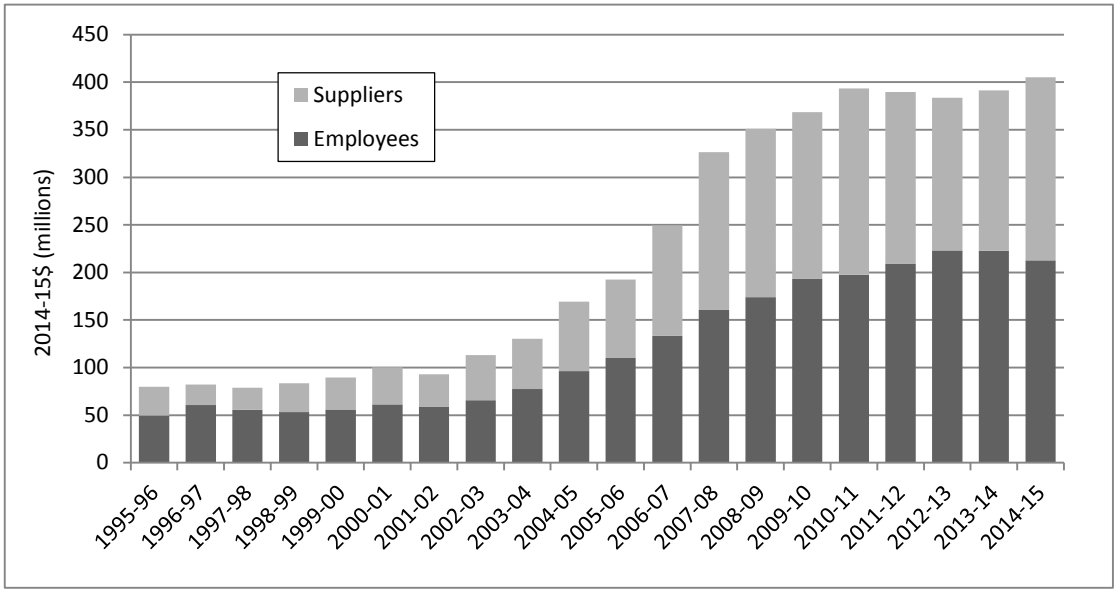
Figure 1.6.4: Composition of ASIO workforce



Source: ASIO annual reports

Figure 1.6.5 shows the rise in expenditure for employees and suppliers, with the suppliers' share progressively accounting for a larger share of expenditure, even exceeding those to employees in 2007-08.

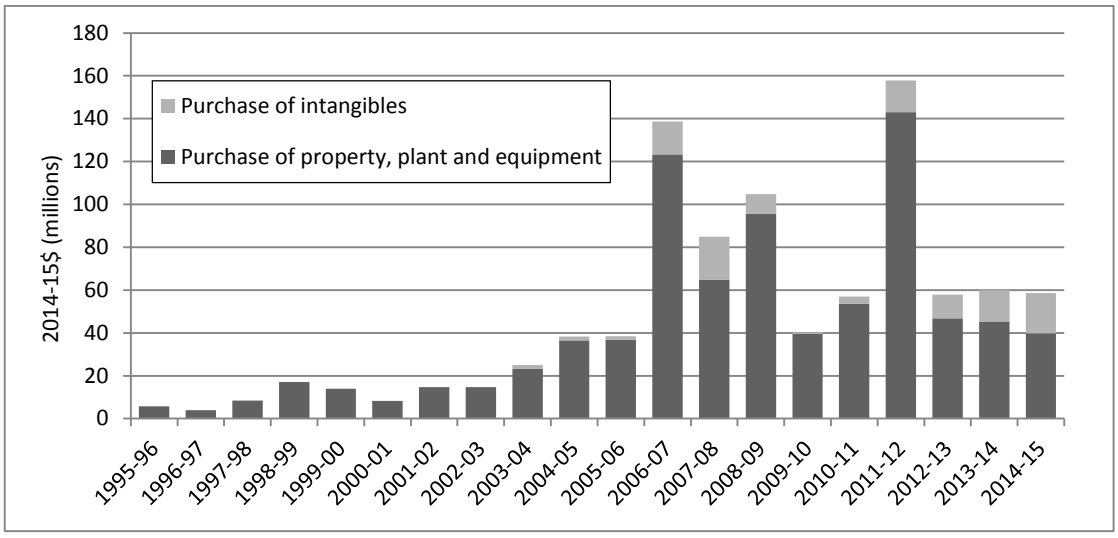
Figure 1.6.5: ASIO cash expenditure—employees and suppliers



Source: ASIO annual reports

Figure 1.6.6 displays Property, Plant, Equipment and Intangible costs over the last 20 years. Costs have increased with significant expenditure in 2006-09 and then in 2011, with the latter contributing to the construction of the Ben Chifley Building which opened in July 2013 and was finally occupied in August 2014.

Figure 1.6.6: ASIO Property, Plant, Equipment and Intangible expenditure



Source: ASIO annual reports

1.7 Measuring Defence Spending

The amount 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. Here in Australia, for example, a lot of attention was placed on achieving 3% real growth in the Defence budget during the 2000s, and then 2% of GDP in the 2010s. It's important, therefore, that reporting of defence spending captures what's actually going on.

Table 1.7.1 sets out the presentation in the 2016-17 Portfolio Budget Statement (PBS) [Table 1, p.17] excluding the administered appropriations. (We ignore the administered appropriations for superannuation and housing because they aren't controlled by Defence, and are appropriated through the organisation for convenience.) The bottom line is *Total Defence Funding* which, in the past, has been presented in the PBS as 'the most common way of presenting the Defence budget' [2008-09 PBS, p.119].

Table 1.7.1 Total Defence funding FY 2016-17

	2016-17 $'000
Departmental	
1. Output Appropriation	30,016,525
2. Equity Injection	2,321,327
3. Prior Year Appropriation	
4. Current year's appropriation (1+2+3)	**32,337,852**
5. Drawdown of appropriations carried forward	
6 Other appropriation receivable movements	
7. Returns to Official Public Account (OPA)	-897
8 Funding to/from OPA (5+6+7)	**-897**
9. Funding from Government (4+8)	**32,336,955**
9. Capital Receipts	44,988
10. Own-source Revenue	500,098
11. Funding from other sources (9+10)	**545,086**
12. Total Defence Funding (9+11)	**32,882,041**

Source: 2016-17 PBS

The easiest way to explore what a better approach might be is to examine each of the elements appearing in Table 1.7.1.

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 needn't concern us. What matters is that this is the quantum of cold hard cash 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 appropriations carried forward: Because funding may either be spent or received in a year other than the appropriation year, an Appropriation Receivable account is utilised (held in the Official Public Account). This recognises that departmental Appropriations don't lapse unless specifically extinguished by the Minister for Finance. Changes 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 holdings must also be accounted for (since that's where the money in the appropriation receivable came from originally).

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 via a Return to the Official Public Account (OPA). The remainder is retained by Defence and is called Net Capital Receipts. Given that Net Capital Receipts are generated from the sale of public assets, it's 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's 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 third-party providers and third-party customers.

For example, the sale of fuel to a foreign government or rations to personnel delivers no revenue to Defence that's 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. Figure 1.7.1 depicts the flow of funds into and out of Defence

So what is the 'Defence budget'?

In light of the above, it seems sensible to include Funding from Government, Net Capital Receipts (= Capital Receipts – Return to OPA), Net Bank Balance Shifts, Appropriation Receivable and Special Account Shifts, but to exclude Own-source Revenue.

Table 1.7.2 shows the calculation of Total Defence funding and 'ASPI Net Defence' funding for 2016-17. Our calculation of Net Defence funding yields a figure 1.5% lower (albeit $500 million in absolute terms) than Total Defence funding. Comparison of Total Defence funding and ASPI Net Defence with the explicit funding guidance provided in the 2016 Defence White Paper can be found in Chapter 3 . Unless otherwise specified, all figures for defence funding in this Brief refer to ASPI Net Defence funding.

Figure 1.7.1: Defence Cash and Resource Flows

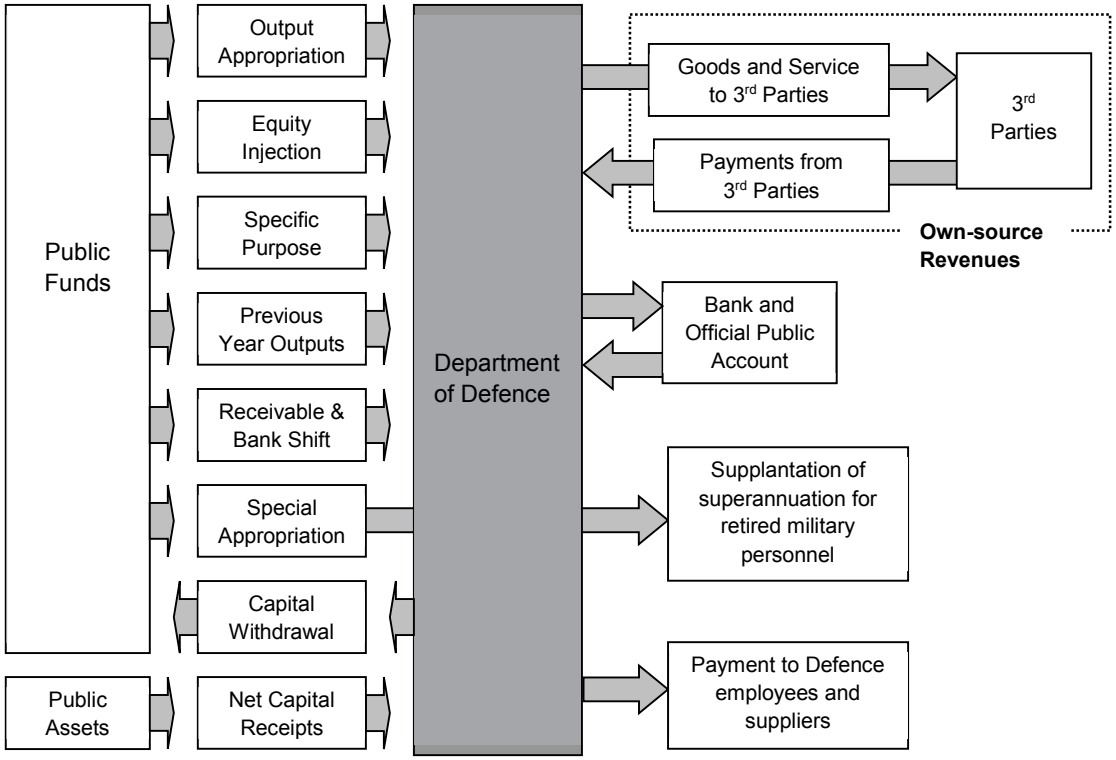


Table 1.7.2: Total Defence resourcing for FY 2016-17

	2016-17	
	Total Defence Funding	**ASPI Net Defence Funding**
Departmental		
1. Output Appropriation	30,016,525	30,016,525
2. Equity Injection	2,321,327	2,321,327
3. Prior Year Appropriation		
4. Current year's appropriation	**32,337,852**	**32,337,852**
5. Drawdown of appropriations carried forward		
6 Other appropriation receivable movements		
7. Returns to OPA	-897	-897
8. Funding from Government	**32,336,955**	**32,336,955**
7. Capital Receipts	44,988	44,988
8. Own-source Revenue	500,098	
9. Funding from other sources	545,086	44,988
11. Total Defence funding	**32,882,041**	
12. ASPI Net Defence funding		**32,381,943**

1.8 Where Does the Money Go?

Co-authored with Annaliese FitzGerald

Over the next financial year, Defence will spend in excess of $32.4 billion, equivalent to $2,700 dollars per individual taxpayer in Australia. While there's surely a wide variation in the level of satisfaction (or frustration) felt by individual taxpayers, on the other side of the transaction are around 100,000 individuals and thousands of firms whose likelihoods derive from defence expenditure. This section explores the how, what, where and to whom of Australian defence spending.

What follows provides a snapshot of where the money went in the most recent financial year where data is available, which means in practice a mix of 2014-15 and 2015-16. Unfortunately, the nature of the available data complicates the task. In particular, because Defence's financial accounts are presented in accrual terms, there is often a choice between using cash or expense figures (see box). Unfortunately, many items of interest are only presented in one format or the other. As a result, it's sometimes necessary to mix the accounting equivalent of apples and oranges in order to build a complete picture. In the face of these data limitations, every care has been taken to ensure that the resulting depictions are broadly accurate. Nonetheless, the resulting picture will often be more illustrative than precise.

Accrual accounting

Since the turn of the century, Defence has reported its financial situation using accrual accounting. At the heart of accrual accounting are three 'statements'.

The *Operating Statement*, or *Comprehensive Income Statement*, reports on the expenses incurred and revenues received over the reporting period. Expenses and revenues are not necessarily cash transactions. Expenses reflect the consumption of resources, such as depreciation in the value of assets and the consumption of inventory—likewise for revenues.

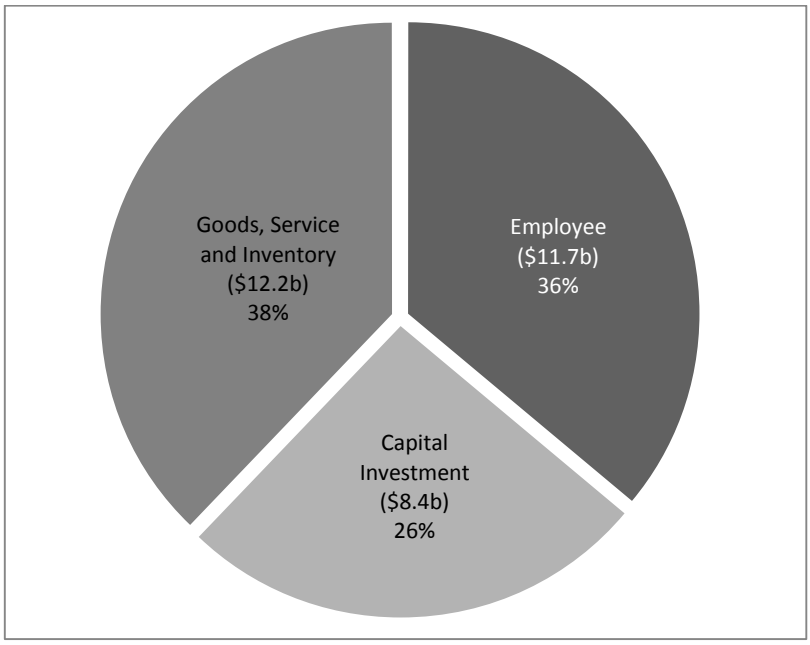
The other two statements are more straightforward. The *Balance Sheet* reports changes to the value of assets and liabilities held over the reporting period, and the *Cash Flow Statement* reports on the concrete cash transactions for the period.

Dividing the pie

Just as there are many ways to slice a pie, there are a number of different ways to sub-divide defence expenditure—each of which can provide a useful perspective. Given the presentation of the financial statements, the easiest way to break up the budget is in terms of the following three components: capital investment, employee expenditure and a final category of 'goods, services and inventory'. Capital investment represents spending on assets that will be retained for long periods of time (such as buildings and military equipment), employee expenditure represents spending related to employees, and the final category picks up everything else. In practice, it represents spending on things that are consumed (although in the case of inventory, it's things that may be consumed in the future). Note that because Defence derives revenue from housing and rationing, care has

been taken to ensure the final figures are net of this financial 'churn'. Figure 1.8.1 shows the breakdown of 2015-16 defence expenditure based on Defence's cash flow statement.

Figure 1.8.1: Investment, personnel and other expenditure 2015-16



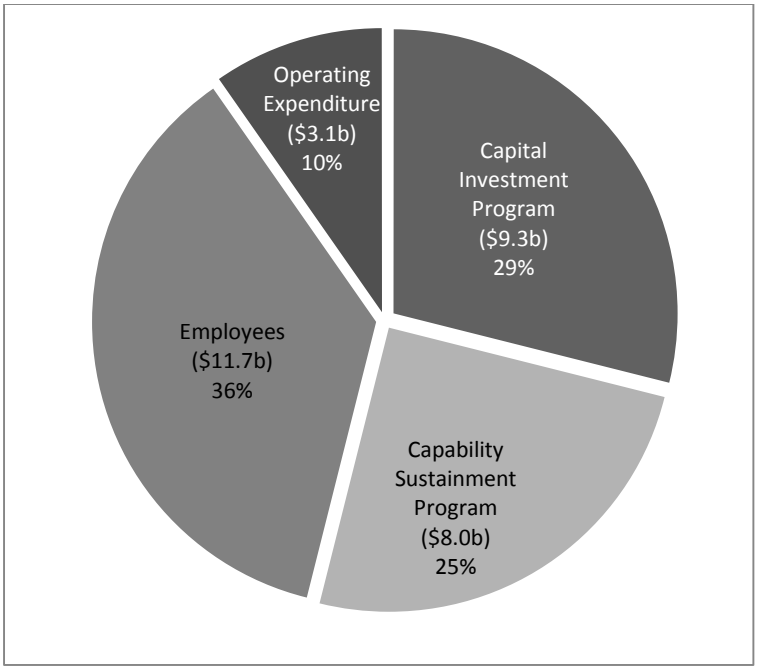
Source 2015-16 PAES

Despite misguided claims to the contrary, there is no optimal breakdown between the three categories. Over time, the proportions can shift for a variety of reasons; for example, as in-house labour intensity changes in response to technological developments and the out/in-sourcing of activities. Similarly, the proportion spent on investment can change when a period of force expansion and modernisation is embarked upon. Comparisons between different countries are spurious for these reasons and also because the relative cost of labour and capital can vary substantially between countries—not to mention the impossibility of apples-to-apples comparisons due to different accounting systems.

The 2016 Defence White Paper chose a different way to break down defence expenditure by sub-dividing it into 'capital investment', 'sustainment', 'employees' and 'operating expenditure' (see Figure 5 on page 182 of the 2016 Defence White Paper). We're not sure how the categories were defined, but we think that the breakdown relies on two budgeting programs within Defence called the *Capital Investment Program* and the *Capability Sustainment Program*. Although both are listed in the official budget papers, they're not mentioned in the Annual Report. That's understandable because, far from being standard accounting categories, the two programs are defined by and unique to Defence budgeting. Our best attempt to reproduce the White Paper breakdown for 2015-16 appears in Figure 1.8.2.

The final category of 'operating expenditure' used by the White Paper is potentially confusing because it's the term usually used to describe the residual after capital and personnel costs have been subtracted from the total budget (i.e. what we have called Goods, Services and Inventory).

Figure 1.8.2: Investment, employee, sustainment and operating expenditure 2015-16



Source 2015-16 PAES

Before turning to look in more detail at what makes up the three (or four) categories defined above, there are a couple of alternative ways to divide the budget that merit discussion. The first is the division of the budget between the three military services and some residual departmental core. Perhaps not surprising for a self-proclaimed 'joint force' there's no unique or straightforward way to say how much is spent on each of the three services. The best we can do is say how much money spent by, or at the direction of, the three services. In doing so, it's natural to also look at how much money is spent by other organisational components of Defence via the reported Program expenses. Even then, the situation is complicated by several factors. First, the churn of own-source revenue (as explained in Section 1.7). Second, the internal transfer of funds from the three Services to Capability Acquisition and Sustainment Group (CASG) to fund sustainment activities. Third, and most importantly, the Program expenses are only reported in accrual terms, which means that depreciation on assets (and amortization of intangibles) is included but capital investment is not.

In Table 1.8.1 we've tried to track the flow of resources to show the organisational entities that actually spend the cash. Depreciation and similar accrual shifts have been subtracted from the individual program expenses to yield an estimate of the resources they directly consume on the non-asset related items of employees and suppliers. In practice, funding for depreciation flows directly into capital investment and is not controlled by the owners of the associated assets. Note that the supplemental funds received for military operations (Programs 2.1, 2.2 and 3.1) flow through to the actual organisationally based Programs—though the details are unavailable.

It is interesting to note that CASG was responsible for spending 41 % of the overall budget and fully 64% of the non-personnel budget. Despite the vagaries of accrual expenses and the

difficulty of tracking inter-group transfers, the resulting matrix broadly reproduces the 2015-16 cash breakdown between investment (26%), employees (38%) and goods, services and inventory (36%) when 'suppliers expenses' are substituted for the last category.

Table 1.8.1: Estimating the cash spent by Defence's eighteen programs

#	Program	Employee Expenses (a)	Suppliers Expense (b)	Sustainment Transfers (c)	Investment Expenditure (d)	Total	% of Defence Budget
1.1	Strategy	30	140			170	0.0%
1.2	Navy	2,111	2,318	-2,078		2,352	7.3%
1.3	Army	4,095	1,864	-1,578		4,380	13.6%
1.4	Air Force	2,065	2,394	-2,230		2,229	6.9%
1.5	Joint Operations	7	39			46	0.1%
1.5	Intelligence	237	286			524	1.6%
1.7	Vice Chief of the Defence Force	557	443			1,000	3.1%
1.8	Capability Acquisition and Sustainment	492	114	5,886	6,701	13,193	41.0%
1.9	Executive Support	77	122			199	0.6%
1.10	Estate and Infrastructure	1,130	2,206		941	4,277	13.3%
1.11	Chief Information Officer	101	758		426	1,285	4.0%
1.12	Defence People	179	300			479	1.5%
1.13	Defence Science & Technology	299	122			421	1.3%
1.14	Capability Development	20	732			752	2.3%
1.15	Chief Finance Officer	127	111			238	0.7%
2.1	Security of immediate neighbourhood		0.1			0.1	0.0%
2.2	Support of wider interests	130	663			792	2.5%
3.1	National support tasks in Australia	18	31			49	0.2%
	Total	11,646	12,503		8,067	32,217	
	% of Defence Budget	36%	39%		25%		

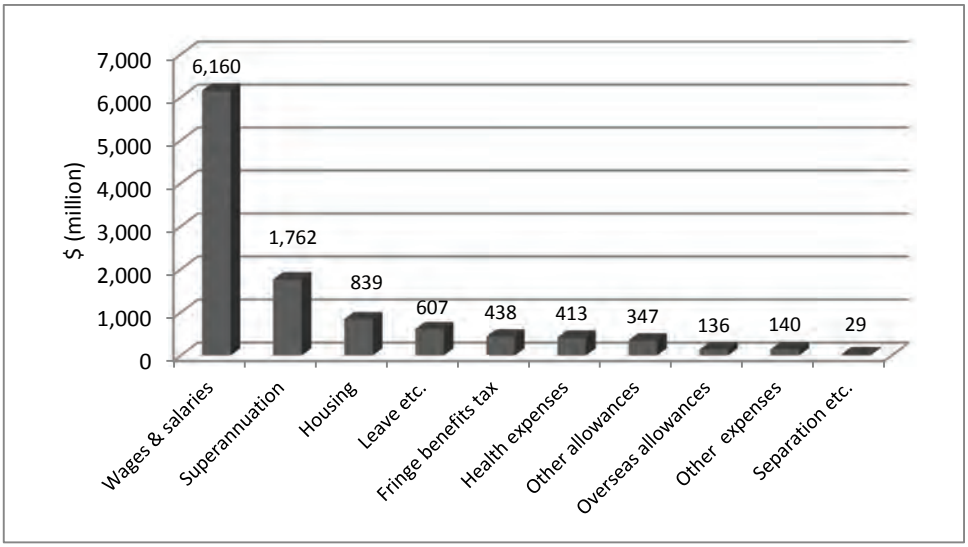
Source 2015-16 PBS

Having looked at how the total budget can be subdivided, we now turn to examine what's contained within the broad categories of employees, capital investment and goods, services and inventory. Due to the unavailability of data (pending the Annual Report), we have to step back a year to 2014-15.

Personnel expenditure

A breakdown of total employee expenses by category for 2014-15 is given in Figure 1.8.3, and the subdivision into military and Australian Public Service (APS) employee expenses appears in Table 1.8.2. Not unexpectedly, most of the money goes towards wages, salaries and superannuation (61%). Note however, that in the case of military employee expenses, there are significant proportions spent on housing, fringe benefits tax, health care and allowances. As a result, although wages and salaries account for 74% of APS employee expenses, the same category only accounts for 54% of military expenses. An analysis of military and civilian per capita costs can be found in Chapter 2.5, including historical trends.

Figure 1.8.3: Defence employee expenses, 2014-15



Source 2014-15 Defence Annual Report (DAR)

Table 1.8.2: Defence employee expenses, 2014-15

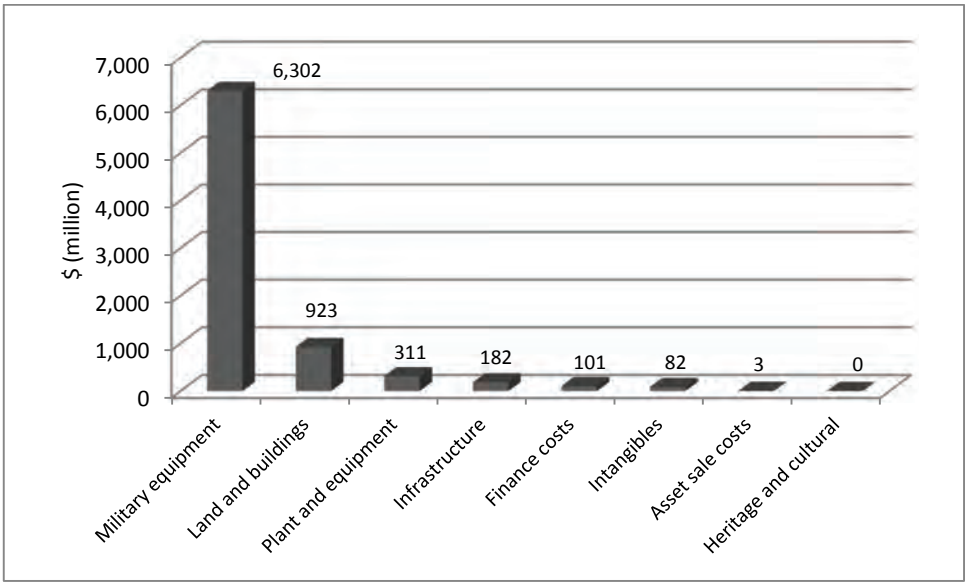
	ADF		APS	
	$ million	**%**	**$ million**	**%**
Wages and salaries	4,601	54.2%	1,558	74.4%
Superannuation:	1,465	17.2%	297	14.2%
Housing	839	9.9%	0	
Leave and other entitlements	447	5.3%	160	7.7%
Fringe benefits tax	428	5.0%	9	0.5%
Health expenses	408	4.8%	5	0.2%
Other allowances	315	3.7%	32	1.5%
Overseas allowances	136	1.6%	0	
Separation and redundancies	10	0.1%	19	0.9%
Other employee expenses	127	1.5%	14	0.7%
Total	**8,492**		**2,096**	

Source 2014-15 DAR

Capital investment

The distribution of capital investment across accounting categories appears in Figure 1.8.4 for 2014-15. As expected, the two largest categories are specialist military equipment (80%) and land and buildings (12%). It's not readily possible to allocate equipment expenditure between the three services and joint capabilities.

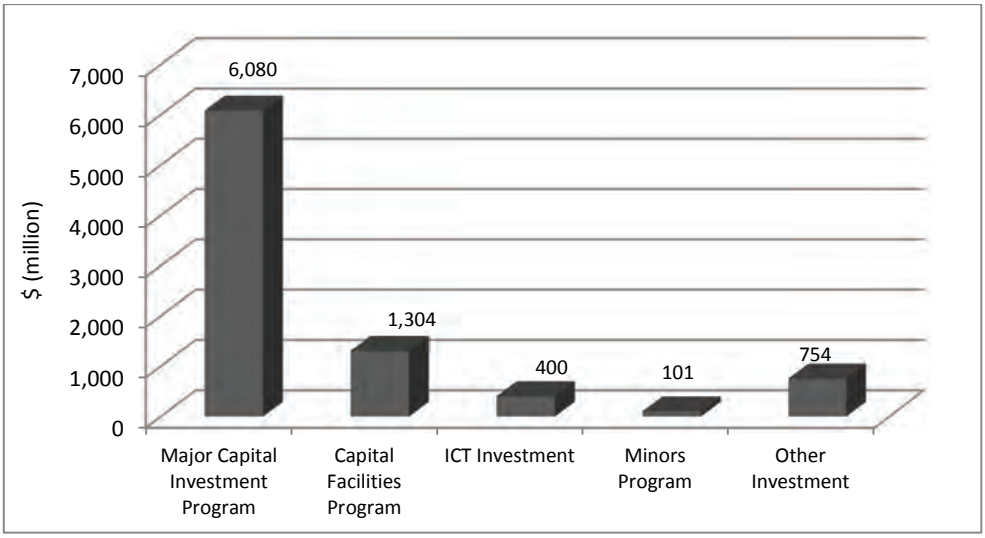
Figure 1.8.4: Defence capital investment, 2014-15



Source 2014-15 DAR

The Capital Investment Program for 2014-15 appears in Figure 1.8.5. It reflects how Defence actually budgets for and manages its capital investment. Care is needed comparing the results with Figure 1.8.4 for two reasons. First, the latter comes from the 2014-15 PAES rather than annual report (remember Defence does not report on the outcomes of its investment program). Second, around 12% of the Capital Investment Program represents operating costs rather than actual investment—i.e. the cost of making investments.

Figure 1.8.5: Defence Capital Investment Program, 2014-15



Source 2014-15 PAES

Goods, services and inventory

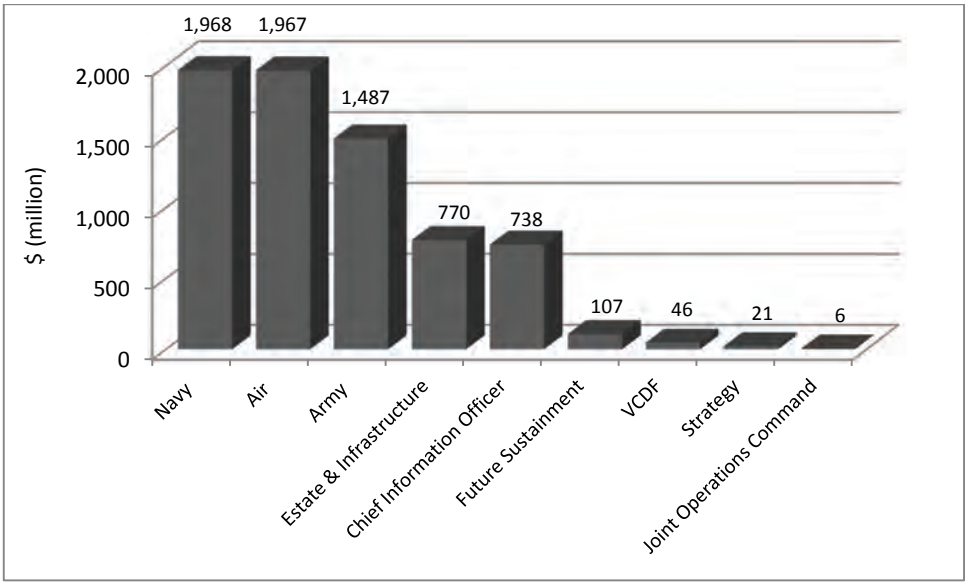
Table 1.8.3 gives the breakdown of suppliers expenses for 2014-15. The two largest categories, sustainment of specialist military equipment (43%) and inventory consumption (11%) account for more than half of what's spent. Around 61% of the resources consumed within suppliers expenses is managed through the Capability Sustainment Program, which allocates sustainment funding to Defence groups/programs, see Figure 1.8.6.

Table 1.8.3: Defence suppliers expenses, 2014-15

Category	Expense ($m)	%
Sustainment of specialist military equipment	4,993	43%
Inventory consumption	1,249	11%
Other goods and services	1,118	10%
Communications and information technology	974	8%
Estate upkeep	695	6%
Freight, storage and removal	457	4%
Training	399	3%
Garrison support and mess operations	395	3%
Utilities	256	2%
Repair and overhaul	245	2%
Professional services/technical advice	190	2%
Travel	188	2%
Purchase of minor assets	179	2%
Research and development	151	1%
Total	**11,488**	

Source 2014-15 DAR

Figure 1.8.6: Capability Sustainment Program, 2014-15



Source 2014-15 PAES

Bringing the preceding discussion analysis together, Figure 1.8.7 lists the expenditure categories by rank order for 2014-15. Further information on Defence spending can be found in Chapter 9 where around 250,000 Defence contracts are explored.

Figure 1.8.6: Expenditure categories by rank

#	Type	Category	Cost $m
1	Capital Investment	Military equipment	6,302
2	Employees	Wages & salaries	6,160
3	Goods & Services	Sustainment of specialist military equipment	4,993
4	Employees	Superannuation	1,762
5	Goods & Services	Inventory consumption	1,249
6	Goods & Services	Other goods and services	1,118
7	Goods & Services	Communications and information technology	974
8	Capital Investment	Land and buildings	923
9	Employees	Housing	839
10	Goods & Services	Estate upkeep	695
11	Employees	Leave etc.	607
12	Goods & Services	Freight, storage and removal	457
13	Employees	Fringe benefits tax	438
14	Employees	Health expenses	413
15	Goods & Services	Training	399
16	Goods & Services	Garrison support and mess operations	395
17	Employees	Other allowances	347
18	Capital Investment	Plant and equipment	311
19	Goods & Services	Utilities	256
20	Goods & Services	Repair and overhaul	245
21	Goods & Services	Professional services/technical advice	190
22	Goods & Services	Travel	188
23	Capital Investment	Infrastructure	182
24	Goods & Services	Purchase of minor assets	179
25	Goods & Services	Research and development	151
26	Employees	Other expenses	140
27	Employees	Overseas allowances	136
28	Capital Investment	Finance costs	101
29	Capital Investment	Intangibles	82
30	Employees	Separation etc.	29
31	Capital Investment	Asset sale costs	3
32	Capital Investment	Heritage and cultural	0
		Total	**30,263**

Source 2014-15 DAR

Chapter 2 – Defence Budget 2016-17 PBS Explained

The 213 pages of the 2016–17 Defence Portfolio Budget Statements (PBS) set out the government's plan for the expenditure of around $32.4 billion by Defence in the coming financial year.

This chapter 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.

Some of the material that follows is unavoidably technical due to the disciplines and complexities of accounting. However, it isn't necessary to read this chapter 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.

This Brief doesn't 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 downloaded from the web at <http://www.defence.gov.au/budget/>.

As a result of the 2015 First Principles Review, there were major organisational changes announced for Defence—including the reabsorption of the Defence Materiel Organisation by Defence. This year's PBS reflects the ongoing implementation of those changes.

The PBS begins with something akin to an executive summary [PBS p. 1–13] which provides a useful snapshot of governance arrangements, resources and portfolio structure of Defence. Rather than recount this material, we turn now to examine the main body of the document.

2.1: Strategic Direction Statement [PBS Section 1.1]

The overview chapter of the PBS provides a synopsis of the 2016 Defence White Paper and its accompanying Integrated Investment Plan and Defence Industry Policy Statement. The tone is upbeat and self-congratulatory. There's also a short description of the reforms underway following the First Principles Review. Ongoing operations are mentioned.

2.2: Resourcing [PBS Section 1.2 & 1.3]

The 'rubber hits the road' in Sections 1.2 and 1.3 of the PBS, in terms of allocating money to get things done. It contains the resource statements, new budget measures and the funding bottom line.

How much money will Defence get?

On page 17 of the PBS, we get to the heart of the issue. Table 2 gives three key figures for the Defence budget:

- **Funding from Government,** being those funds formally *appropriated* to Defence by the government for departmental purposes along with shifts in appropriations receivable (unspent money from previous years). In 2016-17, *Funding from Government* will amount to $32,336,955,000.

- **Total Defence funding,** being those funds actually *available* to Defence including appropriations and revenue from other sources and Returns to/from the Official Public Account. In 2016-17, *Total Defence funding* will amount to $32,882,041,000.

- **Total Defence resourcing,** being Total Defence Funding plus those funds appropriated administratively through Defence for superannuation and defence housing subsidies. In 2016-17, *Total Defence resourcing* will amount to $38,223,704,000.

Of these three figures, *Total Defence 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, *Total Defence funding* doesn't include administered funds for superannuation and defence housing subsidies.

However, as explained in the last chapter, *Total Defence funding* is inflated by a churning of money that delivers no military capability or outcome. We believe that the *ASPI net Defence funding* figure gives a more accurate picture of how much is being spent on delivering defence capability and outcomes. Henceforth, we will only present the *ASPI net Defence funding* figure.

How much money will Defence receive?

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

When calculating the real growth rate, the nominal dollar values of the individual years have been converted to a single base year using the Consumer Price Index (CPI) to reflect the

opportunity cost incurred by the taxpayer. Note that this is not the deflator used within government to adjust the defence budget from year to year. From 2001-02 until 2009-10 that was the implicit Non-Farm GDP Deflator (NFGDPD) and from 2009-10 onwards it has been nominally fixed at 2.5% in accord with the funding model introduced in the 2009 Defence White Paper. Externally, it no longer matters because the decade-long funding guidance in the 2016 White Paper was given in nominal dollars.

Table 2.2.1: ASPI Net Defence Funding – real (2016-17$) and nominal

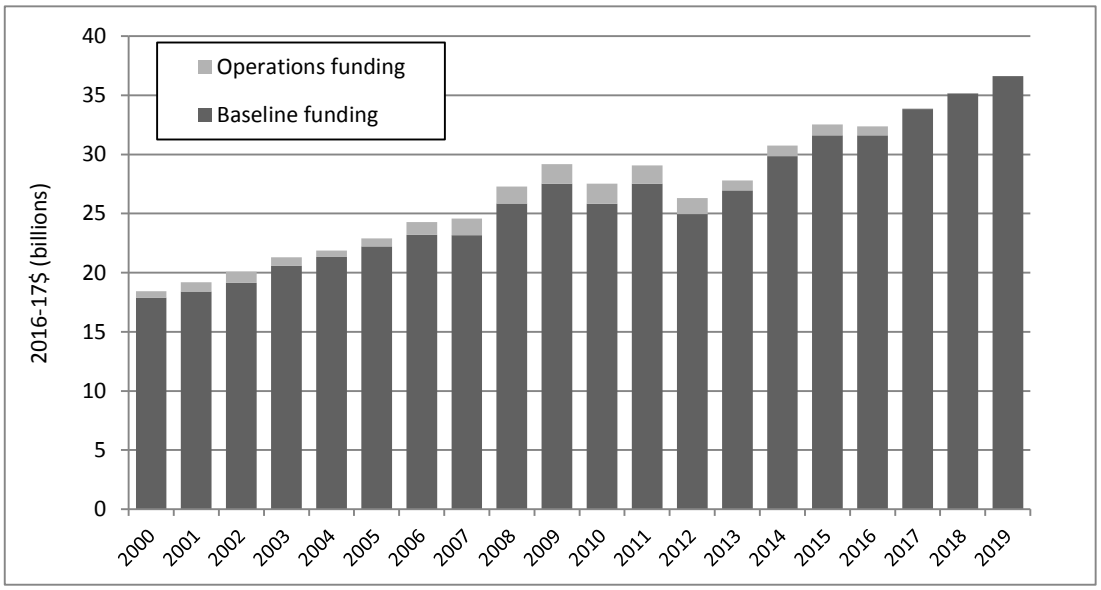
	Funds (nominal)	Growth (nominal)	Funds (real)	Growth (real)
01-02	13,191	7.08%	19,203	4.11%
02-03	14,216	7.78%	20,092	4.63%
03-04	15,439	8.60%	21,308	6.05%
04-05	16,224	5.09%	21,864	2.61%
05-06	17,547	8.15%	22,912	4.79%
06-07	19,140	9.08%	24,273	5.94%
07-08	20,038	4.69%	24,585	1.28%
08-09	22,933	14.45%	27,286	10.99%
09-10	25,104	9.46%	29,191	6.98%
10-11	24,403	-2.79%	27,519	-5.73%
11-12	26,381	8.10%	29,080	5.67%
12-13	24,417	-7.44%	26,317	-9.50%
13-14	26,487	8.48%	27,794	5.61%
14-15	29,813	12.55%	30,756	10.66%
15-16	31,989	7.30%	32,493	5.78%
16-17	32,382	1.23%	32,382	-0.46%
17-18	34,607	6.87%	33,877	4.62%
18-19	36,817	6.39%	35,192	3.88%
19-20	39,269	6.66%	36,621	4.06%

Source: 2016-17 PBS, and *earlier Defence Annual Reports (DAR).*

The *arithmetic* average annual rate of real growth in the budget over the past decade (commencing in 2006-07) has been 3.1%. Over the same period, the effective *compounding* annual rate of real growth is 2.9%. Looking forward, things are more encouraging. Over the four years covered by the budget and estimates, the *arithmetic* average annual rate of real growth in the budget from 2016-17 to 2019-20 comes out to be 4.2%. Over the same period, the effective *compounding* annual rate of real growth is the same. Note that real spending next year will decline by about 0.5% relative to this year.

These calculated growth figures should be viewed with some caution due to the perturbing effect of operational supplementation, see Figure 2.2.1. Chapter 3 of this brief examines the longer term funding commitment contained in the 2016 Defence White Paper.

Figure 2.2.1: Real Net Defence Funding – 2000 to 2019



Source: 2016-17 PBS, 2015-16 PAES and earlier DAR. 2005 = 2005-06 etc.

What is the Defence share of GDP?

Table 2.2.2 gives ASPI net Defence funding as a percentage of GDP for recent and (as projected for) future years. As shown, the share of GDP will fall from 1.94% in 2015-16 to 1.88% in 2016-17. (Last year's estimate has changed due to shifts in both foreign exchange, spending and GDP.) Over the subsequent three years, the GDP share will recover to 1.97%. Note that current and recent spending is boosted by high levels of operational supplementation which are not reflected in the latter years of the forward estimates.

Table 2.2.2: ASPI Net Defence Funding as a percentage of GDP

2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
1.74	1.75	1.77	1.79	1.76	1.76	1.77	1.70	1.83	1.94	1.74	1.78	1.60	1.67	1.85	1.94	1.88	1.92	1.94	1.97

Source: Analysis of data from 2016-17 Budget Overview, 2016-17 PBS and earlier DAR

What is the Defence share of Commonwealth payments?

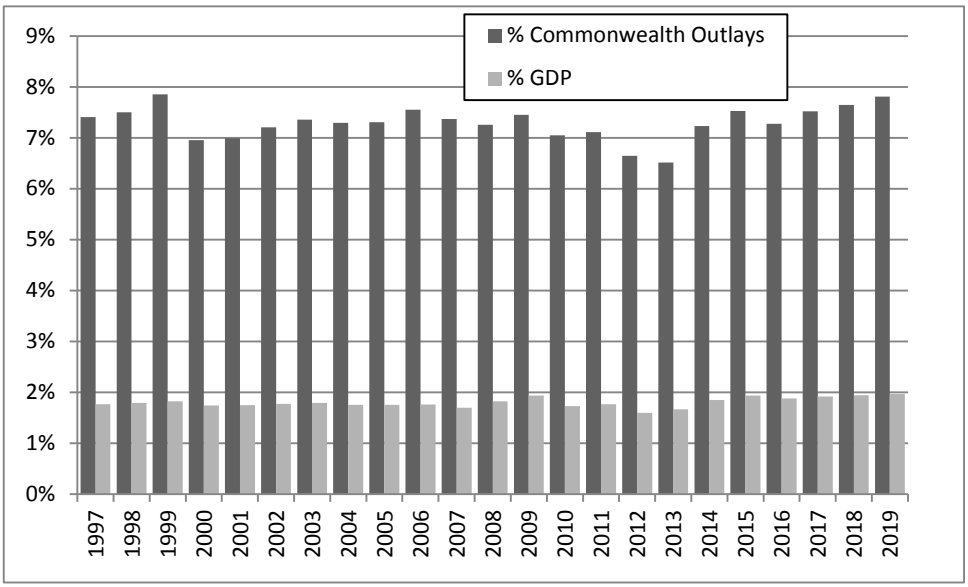
Defence spending as a percentage of total Commonwealth payments is shown in Table 2.2.3. On current plans, Defence's share of payments will rise slowly over the forward estimates period. Figure 2.2.2 graphs the percentage GDP and share of Commonwealth payments from 1997 to 2019.

Table 2.2.3: ASPI Net Defence Funding as a percentage of Commonwealth payments

2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
6.96	6.99	7.21	7.36	7.29	7.31	7.56	7.37	7.26	7.45	7.05	7.11	6.65	6.52	7.23	7.53	7.28	7.52	7.65	7.81

Source: Analysis of data from 2016-17 Budget Overview, 2016-17 PBS and earlier DAR

Figure 2.2.2: Net Defence funding as a percentage of payments and GDP



Source: Analysis of data from Budget Overview, 2016-17 PBS and earlier, DAR 2005 = 2005-06 etc.

Changes since the last budget

Since the last budget, measures and adjustments have been undertaken that provide context for this year's budget. Table 2.2.4 shows the key items from the 2015-16 Portfolio Additional Estimates Statement (PAES) [Table 7, p.19].

Table 2.2.4: Key measures and adjustments from the 2015-16 PAES (million $)

	15-16	16-17	17-18	18-19	4 year total
Fisheries Assistance*	-	-	-	-	-
Operation Okra (Iraq/Syria)*	-	-	-	-	-
Foreign exchange movements	253.5	299.0	312.4	420.1	1,285.0
School Pathways Programme	-1.3				-1.3
Superannuation Admin Fees	-1.3	-1.3	-1.3	-1.3	-5.2
Geocoded National Address File	0.4	0.1	0.1	0.1	0.7
New ADF Superannuation	3.0	3.0	3.0		9
TOTAL	**254.3**	**300.9**	**311.2**	**418.9**	**1285.3**

*Source: 2015-16PAES. Note: Ten-year totals were not disclosed. *Absorbed measures.*

Fisheries Assistance

On 4 September 2015, the Government provided $2.6 million for targeted assistance to eligible fishers and businesses affected by the closure of Hunter River and Port Stephens fisheries. The cost of this measure was met from within the resources of the Departments of Defence and Human Services.

Operational supplementation

Defence is funded on a no-loss/no-win basis for the net additional cost of operational deployments. Adjustments were made to Operation Okra (Australia's contribution to the

international coalition against ISIL, or Daesh, in Iraq) but were managed from within the $390.8 million allocated in the 2015-16 Budget.

Foreign exchange adjustment

Defence is funded on a no-win/no-loss basis for foreign exchange movements. Depending on how the Australian dollar moves relative to currencies that Defence plans to make purchases in, adjustments are made to maintain the buying power of the Defence budget. As a result of depreciation in the value of the Australian dollar during 2015-16, Defence received an additional $1.285 billion over the budget and forward estimates.

Minor adjustments

In 2015-16, Defence transferred $1.3 million to Treasury to help fund the School Pathways Program. Over the forward estimates period, Defence will pay $5.2 million in administrative fees associated with the Public Sector Superannuation Plan. In addition, $0.7 million was returned to Defence for the Geocoded National Address File, and an extra $9 million was provided to Defence for the establishment of the new ADF superannuation scheme over the forward estimates.

2.3 Funding from Government

2016 Defence White Paper

The 2016 Defence White Paper was released between the publication of the 2015-16 PAES and the 2016-17 Budget. The White paper provided an additional $29.9 billion over the decade commencing 2016-17, see Table 2.3.1. Details of White Paper funding are explored in Chapter 3 of this Brief.

Table 2.3.1: 2016 Defence White Paper additional funding

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
New White Paper Funding $ (million)	700	0	60	600	1,800	3,200	4,500	5,540	6,256	7,202

Source: 2016 Defence White Paper

The 2016-17 Budget Measures and Adjustments [PBS p. 19 – 20]

Each year, changes to the Defence budget are set out in the PBS. Usually the changes fall into three categories: budget measures, savings measures and budget adjustments. The distinction between the three is variable, with identical items classified differently from one year to the next. There are also so-called 'absorbed measures', which are unfunded initiatives that must be funded from within existing Defence resources. Inevitably, this means that either other activities have to be forgone or efficiency savings created. The individual measures and adjustments are detailed in Table 2.3.2.

Table 2.3.2: 2016-17 Budget Measures and Adjustments (million $)

	2015-16	2016-17	2017-18	2018-19	2019-20	Total
2016 Defence White Paper		700.0		60.0	600.0	1360.0
Operation Okra—extension		335.4	13.6	13.9		363.0
Operation Accordion—extension		178.0	2.7	3.2		183.8
Operation Manitou—extension		38.0	11.0	11.9		60.9
Operation Highroad—extension		47.6	-0.1	11.2		58.7
Operation Resolute—extension		16.8	2.8			19.6
TPP—implementation		2.7				2.7
Antarctica—Australian presence		-11.2	-11.2	-11.2	-11.2	-44.8
ANZAC Travelling Exhibition		-10.0				-10.0
Cyber Security transfers		-23.5	-34.0	-32.6	-32.0	-122.2
Fisheries closure						
Adjustments						
Foreign Exchange		162.1	152.9	306.8	459.3	1,081.1
Defence Budget Rephasing		-500.0	500.0			
Contribution to Shared and Common Services Program		-4.1	-8.2	-8.2		-20.6
DHA PSS Super Adjustment		-0.2	-0.2	-0.2	-0.2	-0.7
Defence PSS Super Adjustment		5.9	5.7	5.6	5.4	22.6
Defence CSS Super Adjustment		0.9	0.8	0.7	0.6	2.9
Total Variation to Funding		938.3	635.7	361.0	1,021.9	2,956.9

Source: 2016-17 PBS and Budget Paper #2. Numbers may not add due to rounding. *Absorbed measure, not included in total.

The budget initiatives in detail

In the past, the PBS contained detailed explanations of the various measures. However, the PBS has been silent on such matters for several years now. Fortunately, further information regarding Defence measures is available in Treasury's Budget Paper Number 2. This information is reproduced below—often verbatim—along with supporting data where available. See Chapter 6 of this Brief for more on the cost and composition of ADF deployments.

Measures

Five of this year's budget measures provide operational supplementation for ADF operations, including:

> **Operation Okra** is Australia's contribution to the international coalition against ISIL, or Daesh, in Iraq. An additional $363.8 million was provided over four years.
>
> **Operation Accordion** supports the sustainment of ADF operations, enables contingency planning and enhances regional relationships in the Middle East Region. An additional $383 million was provided over four years.

Operation Manitou supports international efforts to promote maritime security, stability and prosperity in the Middle East Region. An additional $60.9 million was provided over four years.

Operation Highroad is Australia's contribution to international efforts in Afghanistan. An additional $58.7 million was provided over four years.

Operation Resolute is the ADF's contribution to the whole-of-government effort to protect Australia's borders and offshore maritime interests. An additional $19.6 million was provided over four years.

Trans-Pacific Partnership Agreement

Defence will receive $2.7 million for unspecified purposes related to the Trans-Pacific Partnership Agreement (TPP). The measure is not included in the Treasury papers.

Antarctica — maintaining Australia's presence

To support Australia's presence in Antarctica, the Government will provide $83.1 million over four years from 2016-17 and further funding of $413.1 million over 29 years from 2020-21 with $10.3 million per annum ongoing from 2049-50. This measure is funded in part by redirecting $44.8 million from Defence.

Spirit of ANZAC Centenary Experience Travelling Exhibition

The Government will provide an additional $10.0 million in 2016-17 to support the travelling exhibition of Australia's involvement in the First World War and the Century of Service of Australia's armed forces in wars, conflicts and peacekeeping operations. This measure is funded in part by redirecting $10 million from Defence.

Cyber Security — implementation of Australia's Cyber Security Strategy

As part of the government's $230 million Cyber Security Strategy, $122 million over four years will be transferred from Defence to other agencies, including the Attorney-General's Department, Australian Federal Police and Australian Crime Commission.

Closure of Hunter River and Port Stephens Fisheries

The government has extended targeted assistance to eligible fishers and businesses affected by the closure of Hunter River and Port Stephens fisheries. The measure is being funded from within the existing resources of Defence ($2.2 million) and the Department of Human Services.

Adjustments

Foreign exchange adjustment

As a result of changes in the value of the Australian dollar, Defence lost $54 million over four years.

Defence Budget Rephasing

To better align funding and expenditure, $500 million was shifted from 2016-17 to 2017-18.

Miscellaneous

A total of $20.6 million was transferred from Defence as part of establishing common and

shared services across different government agencies. Various minor adjustments were also made relating to superannuation funding.

So what happened?

This year's Defence budget is easy to understand. Three key things have happened:

- Defence received $700 million from the 2016 Defence White Paper and promptly handed back $500 million, which is now planned to be spent one year later.
- Defence received $686 million over four years to cover the net additional cost of operational deployments.
- Despite promises of 'no further cuts', $177 million over four years was cut from the Defence budget and transferred to other departments.

Does it all add up?

The changes since the White Paper are clearly reconciled in Table 3 of the PBS. Things are less clear when it comes to reconstructing the pre-White Paper baseline (excluding operations supplementation) funding.

Using the funding guidance in the 2015-16 PAES for the years 2016-17 to 2018-19, it should be possible to reconstruct the White Paper funding baseline for those years (see page 180 in the 2016 White Paper). The complication is that two foreign exchange adjustments were made, one prior to the White Paper and one after the White Paper. This can be inferred from the different forex adjustments given in Table 2 and Table 3 of the 2016-17 PAES. Taking the implied pre-White Paper forex adjustment and adding it to the funding baseline from the 2015-16 PAES, the resulting guidance figures turn out to be $113 million higher in 2016-17, $132 million higher in 2017-18 and $12 million lower in 2018-19. Although these are small differences on the scale of the Defence budget, it would be interesting to understand the source of the difference.

2.4: Capital Investment Program [PBS Section 1.4]

Information on the Capital Budget is spread across several areas of the PBS. The Capital Budget represents 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 57 on page 115 of the PBS, although that is not very revealing.

Capital Investment Program [PBS p.20]

The Capital Investment Program is detailed in Table 5 of the PBS (page 21), which we've reproduced in part in Table 2.4.1. Unfortunately, the projected result for 2015-16 hasn't been included in this year's PBS, so we've been forced to use the revised estimate from the 2015-16 PAES. Similarly, because the Defence Annual Report no longer reports on the capital investment program, we've had to use the revised estimates from the 2012-13 to 2014-15 PAES for those years.

Table 2.4.1: The Capital Investment Program (million $)

	Unapproved Major Capital Investment (DCP)	Approved Major Capital Investment	Subtotal	Minors Program	ICT Investment Plan	Other Capital	Capital Facilities Programme	Total
	a	b	a+b	c	d	e	f	a+b+c+d+e+f
2006-07		4,019	4,019			925	653	5,598
2007-08		4,030	4,030			829	570	5,429
2008-09		3,943	3,943			742	963	5,648
2009-10		5,150	5,150			626	1,504	7,280
2010-11		4,838	4,838			883	1,211	6,932
2011-12		4,208	4,208			739	997	5,944
2012-13	30	3,327	3,357			276	1,019	4,652
2013-14	14	3,544	3,558			1,482	1,222	6,262
2014-15	328	5,753	6,081	101	400	754	1,303	8,638
2015-16	285	6,280	6,565	88	490	1,056	1,082	9,281
2016-17	1,040	6,204	7,243	84	824	932	1,758	10,840
2017-18	2,032	6,099	8,130	82	763	699	1,726	11,400
2018-19	3,685	5,812	9,496	127	964	682	1,706	12,975
2019-20	5,499	4,848	10,347	144	1,011	512	2,010	14,024

Source: 2012-13 & 2013-14 to 2015-16 PAES and 2016-17 PBS and various DAR. The AMCIP figure for 2011-12 doesn't take into account the additional $825 million booked in 2010-11 by DMO and paid for by Defence in 2011-12. Where possible, large shifts due to accumulation and drawdown of the old DMO special account have been accounted for.

There are four components to the Capital Investment Program:

Unapproved Major Capital Investment Program, or Defence Capability Plan (DCP): This represents Major Capital Investment projects that have not yet received second-pass approval from government. Major Capital Investment 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 Capability Managers. Once approved, projects generally pass to the CASG for delivery.

Approved Major Capital Investment Program: Projects already approved by government and under way, previously called the ‘White Book’. Once approved, projects generally pass to the CASG for delivery.

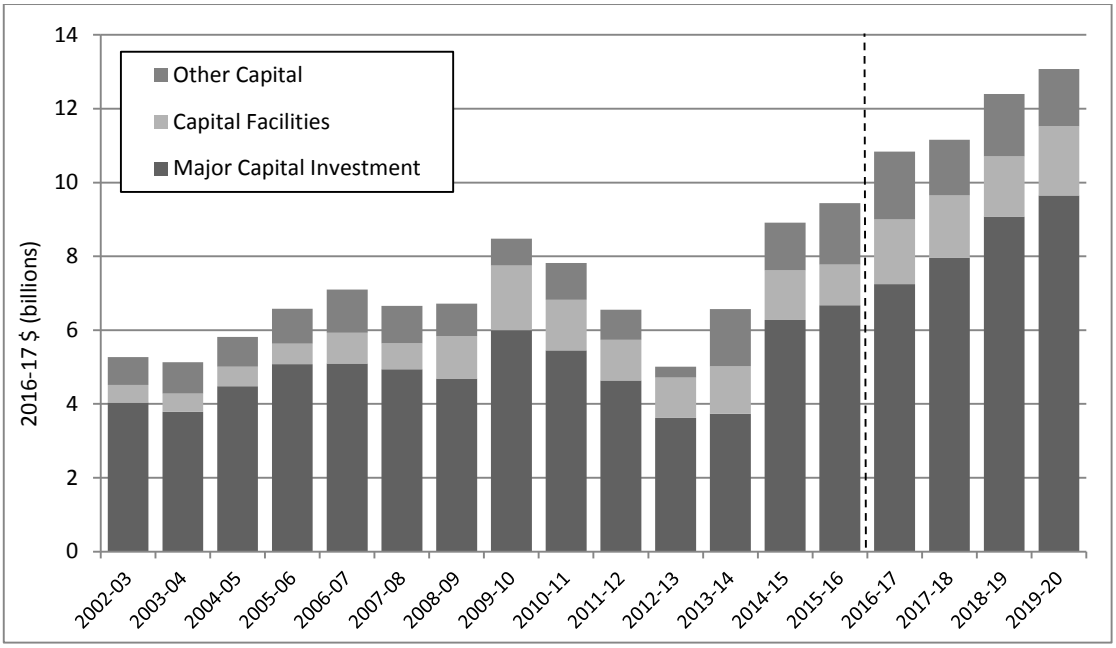
Capital Facilities: Approved and Unapproved Capital Facilities Projects, including everything from new barracks to upgrades of existing facilities. These projects are the responsibility of the Infrastructure Division in the Defence Support and Reform Group.

Other Capital: including Minor Capital Investment (projects costing less than $20 million), repairable items, non-capital facilities, plant and equipment, and software and intangibles. In recent years, minor capital and ICT investment has been listed separately.

What are the trends in the Capital Investment Program?

Recent actual and projected real spending in the Capital Investment Program is shown in Figure 2.4.1 in 2016-17 dollars. Note that the figures for 2012-13 to 2015-16 are uncertain because no official figures have been released for the anticipated outcome for those years. Minors and ICT investment have been grouped in with ‘Other Capital’. The trough in funding around 2012-13 resulted from the then government’s attempt to get back to surplus that year. Chapter 3 includes further discussion of the capital investment program.

Figure 2.4.1: Recent and planned trends in the Capital Investment Program



Source: 2012-13 & 2013-14 PAES, 2014-15 PAES and 2015-16 PBS and various DAR. The AMCIP figure for 2011-12 does not take account of an additional $825 million booked in 2010-11 by DMO and paid for by Defence in 2011-12.

Retained Capital Receipts [PBS page 21]

The Capital Budget is funded in part through the proceeds from sales of property, plant and equipment and other capital receipts (see Table 7 on page 21 of the PBS). 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 to Defence. Table 2.4.2 shows recently planned and achieved assets sales (including both property and other assets).

Capability Sustainment Program [PBS page 21]

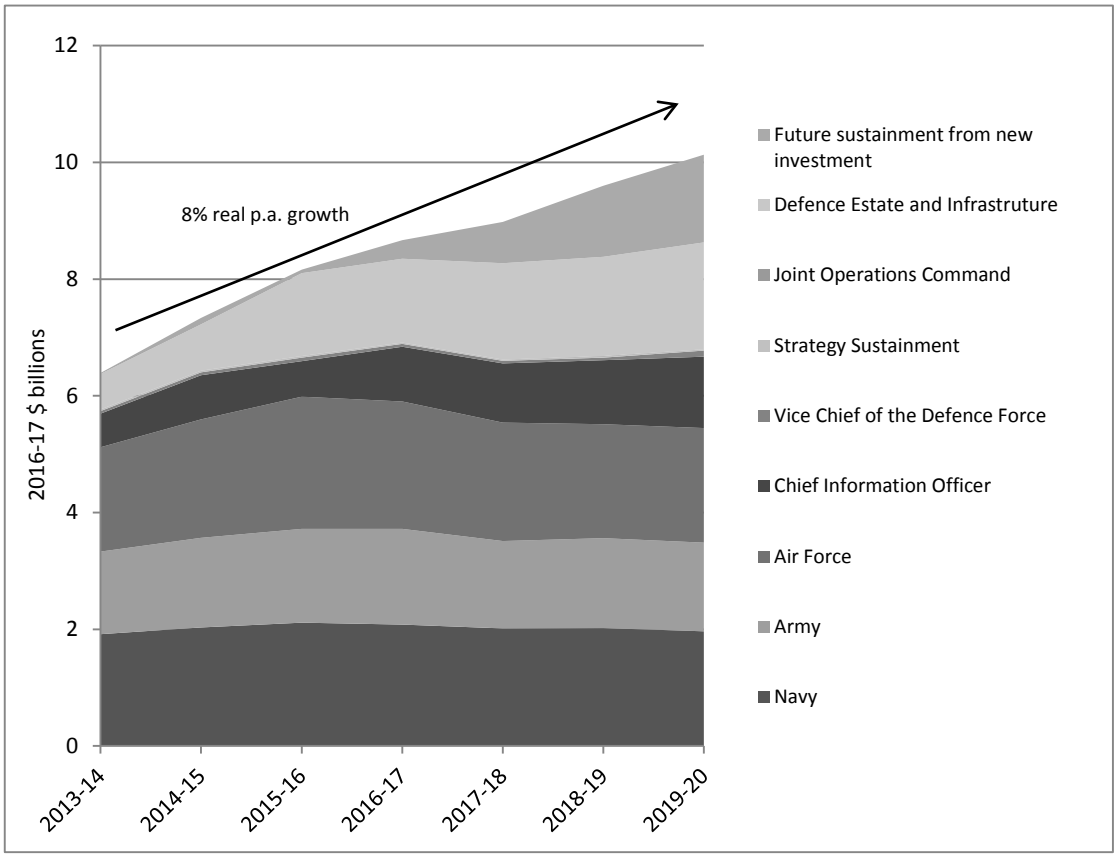
Since 2013-14 the PBS has listed the Capability Sustainment Program by group. This year, the figures appear in Table 6. As data accumulates, an interesting time series will become available. Figure 2.4.2 plots the seven years of data that is available. Note that the 8% growth is driven in large part by the first-time inclusion of estate management and garrison support within the Estate and Infrastructure Group in the 2015-16 PAES. A more valid trend can be found by looking across the forward estimates, where sustainment costs are rising in real terms by 5.4% p.a. compounding.

Table 2.4.2: Proceeds from the sale of assets ($ million)

	Budgeted	Achieved	Shortfall		Budgeted	Achieved	Shortfall
pre 2000	–	77	–	**2010-11**	156	138	18
2000–01	820	87	733	**2011-12**	118	134	-16
2001–02	1023	199	824	**2012-13**	127	undisclosed	
2002–03	700	632	68	**2013-14**	102	undisclosed	
2003–04	306	184	122	**2014-15**	73	undisclosed	
2004-05	231	143	88	**2015-16**	200	undisclosed	
2005-06	95	108	-13	**2016-17**	-44		
2006-07	38	134	-96	**2017-18**	-34		
2007-08	99	65	-34	**2018-19**	-42		
2008-09	285	5	280	**2019-20**	44		
2009-10	287	61	226				

Source: DAR and PBS

Figure 2.4.2: The Capability Sustainment Program



Source: 2013-14 to 2016-17 PBS and PAES

2.5: People

Overview

Over the past fifteen years, Defence's military and civilian workforces have been on a roller coaster ride. There have been periods of unplanned and planned growth and periods of unplanned and planned reductions in both workforces. Over the same period, the long-term target strength of the ADF has slowly but surely grown from around 50,000 to around 62,400, while the long-term target size of the civilian workforce grew to a peak in excess of 22,000 around 2009—it stands at 18,200 today.

Since 2000, there've 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. The most substantial changes arose in late 2006, when the then-government allocated an additional $1 billion for recruitment and retention over ten years, with a further $2.1 billion made available the next year. The 2006 and 2007 funding initiatives were a response to unplanned reductions in the preceding years. In the late 2000s, ADF numbers grew more quickly than planned (after the GFC) but then fell three years in a row despite plans to grow the force.

ADF numbers have recovered over the past two years and in 2014-15 the budgeted strength for that year was achieved. Over the next four years, permanent ADF numbers are planned to increase to 60,090 on the way to the White Paper target of 62,400.

On the civilian side, numbers have been driven down in recent years by successive efficiency measures. However, the 2016 White Paper boosted planned numbers from a target of 17,800 to 18,200. New positions will be created in 'information technology support, simulation, support to Navy engineering and logistics, security, force design and analysis, and strategic and international policy, including civilian policy officers posted overseas'. Further adjustments to the civilian workforce (and to a lesser extent the military workforce) are occurring through the implementation of the First Principles Review.

How big is the workforce?

According to the PBS, in 2016–17 Defence will be funded to maintain an average of:

- 59,209 full-time military personnel
- 17,950 APS civilians
- 19,110 Reservists

In addition, there will be 490 Professional Service Providers or 'contractors'.

The rise in military numbers over the next four years to 60,090 begins with an additional 1,188 people in 2017-18. Reserve days are planned to grow from 970,000 to 1,004,000 over the next four years. Civilian APS personnel numbers will fall by around 150 in 2016-17 compared to 2015-16, but will recover to 18,200 in 2017-18. Historical and planned workforce numbers are detailed in Table 2.5.1

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

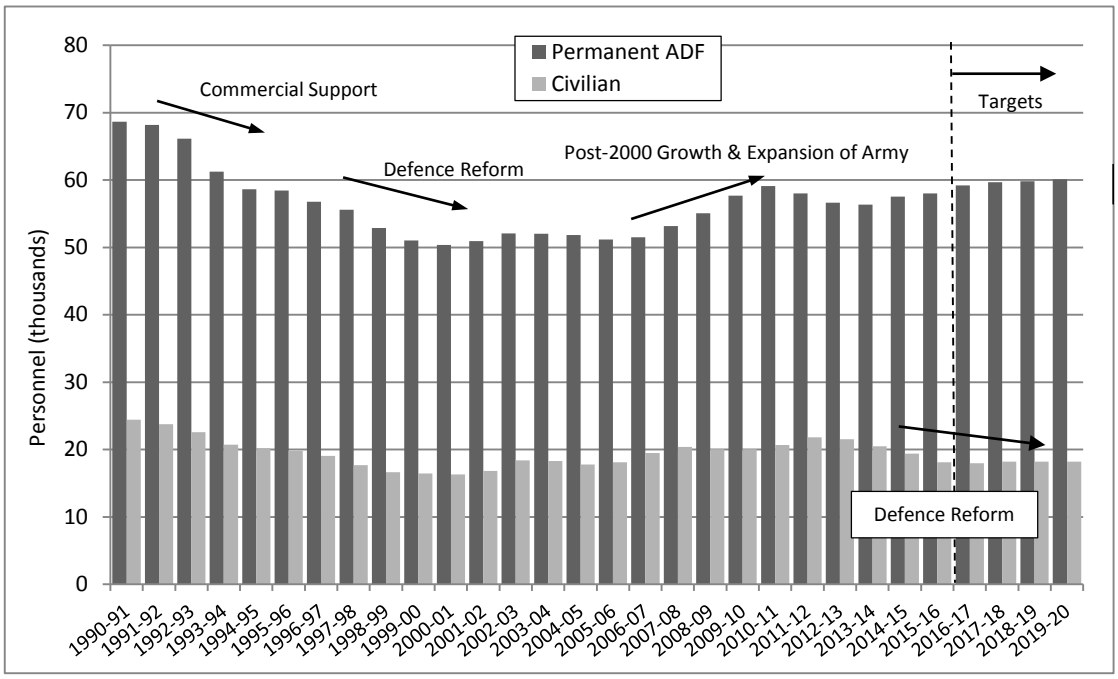
	2002-03 actual	2003-04 actual	2004-05 actual	2005-06 actual	2006-07 actual	2007-08 actual	2008-09 actual	2009-10 actual	2010-11 actual	2011-12 actual	2012-13 actual	2013-14 actual	2014-15 actual	2015-16 proj.	2016-17 budget	2017-18 est.	2018-19 est.	2019-20 est.
Navy	12,847	13,133	13,089	12,767	12,690	12,935	13,182	13,828	14,207	14,054	13,760	13,862	14,070	14,216	14,394	14,456	14,684	14,718
Army	25,587	25,446	25,356	25,241	25,525	26,611	27,833	29,339	30,253	29,697	28,928	28,568	29,366	29,640	30,430	30,891	30,907	30,966
Air Force	13,646	13,455	13,368	13,143	13,289	13,621	14,066	14,530	14,624	14,243	13,919	13,934	14,076	14,165	14,385	14,334	14,203	14,406
TOTAL	**52,080**	**52,034**	**51,813**	**51,151**	**51,504**	**53,167**	**55,081**	**57,697**	**59,084**	**57,994**	**56,607**	**56,364**	**57,512**	**58,021**	**59,209**	**59,681**	**59,794**	**60,090**
Active Reserve	**19,620**	**20,488**	**19,275**	**19,464**	**19,562**	**20,340**	**20,277**	**21,248**	**21,339**	**22,072**	**20,708**	**19,741**	**19,362**	**19,120**	**18,850**	**19,080**	**19,310**	**19,540**
High Readiness	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**	**240**	**260**	**280**	**300**	**320**
Total Reserve	**19,620**	**20,488**	**19,275**	**19,464**	**19,562**	**20,340**	**20,277**	**21,248**	**21,339**	**22,072**	**20,708**	**19,941**	**19,362**	**19,360**	**19,110**	**19,360**	**19,610**	**19,880**
Civilians																		
Defence	18,385	18,303	13,390	13,577	14,516	15,087	14,489	14,532	15,115	15,829	15,786	15,280	14,861	18,100	17,950	18,200	18,200	18,200
DMO	-	-	4,363	4,502	4,951	5,304	5,552	5,526	5,533	5,989	5,748	5,216	4,481					
Total Civilian	**18,385**	**18,303**	**17,753**	**18,079**	**19,467**	**20,391**	**20,041**	**20,058**	**20,648**	**21,818**	**21,534**	**20,496**	**19,342**	**18,100**	**17,950**	**18,200**	**18,200**	**18,200**
PSP																		
Defence	2,311	1,880	1,913	1,277	810	620	1,008	700	581	467	358	340	350	401	490	488	494	494
DMO	-	-	-	374	298	181	176	120	24	45	33	18	11					
Total PSP	2,311	1,880	1,913	1,651	1,099	801	1,184	820	605	512	391	**358**	**361**	401	490	488	494	494
PSP & Civilian	**20,696**	**20,183**	**19,666**	**19,730**	**20,575**	**21,192**	**21,225**	**20,878**	**21,253**	**22,330**	**21,925**	**20,854**	**19,703**	**18,501**	**18,440**	18,688	18,694	18,694

*Source: DAR, PBS, PAES. *Reserve numbers post 2015-16 estimated on the basis of days of Reserve activity in PBS and days/reservist for 2015-16.*

Historical background

During the 1990s full-time ADF numbers dropped from nearly 70,000 to 50,000 personnel, as shown in Figure 2.5.1. 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 Reserves by the 1991 Force Structure Review). In fact, the initial goal of the Defence Reform Program (DRP) was to reduce the strength of the ADF to 43,500 but that was soon revised up to 50,000, thereby arresting the decline. That 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—though there's little evidence of that occurring.

Figure 2.5.1 Historical and Planned Defence Workforce



Source: Various DAR, 2001-02 Defence Budget Brief and 2016-17 PBS

The 2000 White Paper then set permanent ADF personnel numbers on a growth path towards a figure between 53,000 to 54,000. Subsequent budgets added additional personnel for a range of initiatives including, most especially, the expansion of the Army. By 2009 the target had grown to around 57,000.

The 2009 Defence White Paper revised the full-time ADF target up to approximately 57,800 and the civilian workforce up to 21,900 over the decade. Subsequent reductions in planned savings under the Strategic Reform Program saw the targets grow to around 59,000 and 23,000 respectively. The 2013 Defence White Paper said that permanent ADF would be maintained at around 59,000 and that civilian number would fall by 1,000 to around 20,500, effectively the targets existing prior to that time. Cuts to civilian numbers were subsequently imposed.

The 2016 White Paper boosted the military target to 62,400 and set the civilian target at 18,200, partially reversing the efficiency measures of immediately preceding years.

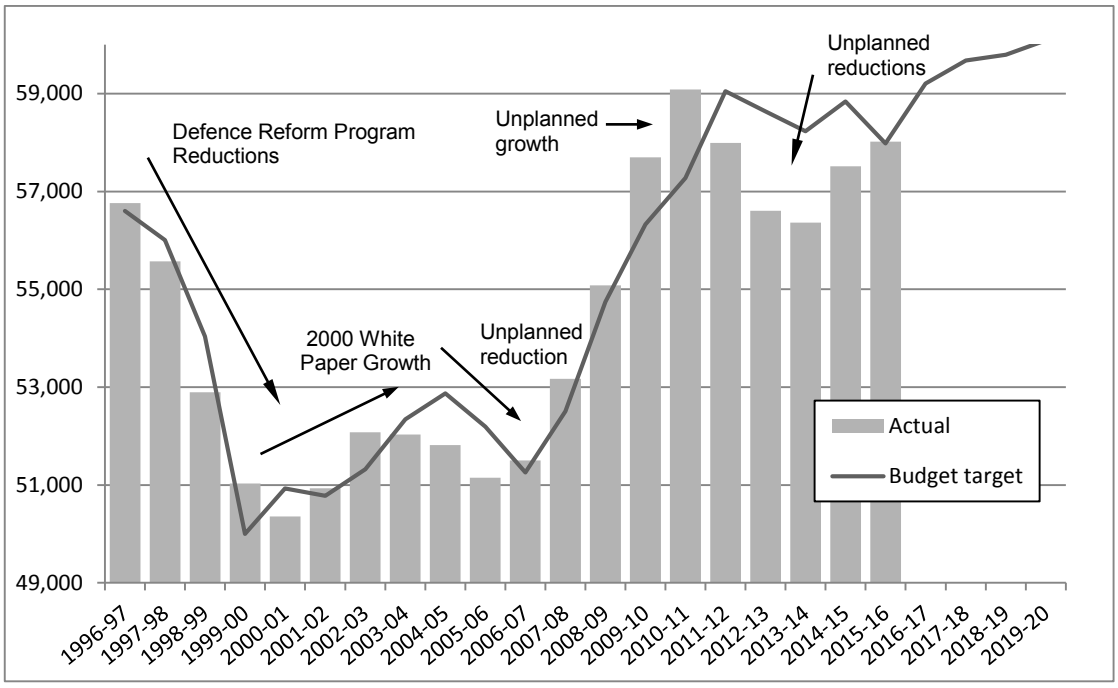
Permanent ADF numbers

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 instance. Then, in 2006-07, numbers began to rise to the extent that budget estimates were exceeded three years in a row. All signs being that the revamp of recruiting and retention policy (and a lot of extra money) slowly but steadily turned the personnel situation around.

Then, for two years commencing in 2009-10 military numbers grew much more quickly than planned as a result of better than expected recruitment and retention. In 2009-10 military personnel numbers exceeded planned levels by 1,372. To redress this unplanned growth, the permanent ADF was supposed to *decrease* by around 400 people in 2010-11. Instead, the ADF grew by a further 1,387 persons, exceeding planned levels by 1,808. During 2011-12, action was taken to get military numbers back to planned levels, with more success than planned, so that actual numbers fell to around 1,000 below target. The trend continued over the next two years, with numbers falling 2,000 and 1,800 below target in 2012-13 and 2013-14 respectively. The result for 2014-15 was a shortfall of 1,327, although for the first time in four years, numbers actually grew. The good news is that the projected result for 2015-16 is just above target.

According to earlier PBS, the unplanned shrinkage of the permanent force reflected several factors, including reduced recruiting targets and higher than anticipated separations. The 2016-17 PBS says that 'the implementation of the ADF Total Workforce Model will provide greater workforce agility by contemporising career arrangements and increasing the retention of skilled people to meet future people capability requirements'. Given past struggles to build and maintain numbers, let's hope it's correct.

Figure 2.5.2 Permanent ADF personnel: 1996-97 to 2019-20 (average funded strength)



Source: DAR, 2001-02 Defence Budget Brief, 2016-17 PBS

Recruitment and retention

The annual change in ADF strength is the difference between the numbers of people recruited into and separated from the force (historically around 5,000 in each case). Since the planned change in strength is usually no more than 1,000, 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 fifteen 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% level in 2002-03 and 2003-04 before deteriorating to 80% in 2004-05 and then recovering to 84% for the next two years. In 2007-08 and 2008-09 the result fell to around a 15-year low before recovering strongly in 2009-10 and 2010-11. The result for 2013-14 was good by historical precedents, the result for 2015-16 was not.

Table 2.5.2: Percentage of recruitment targets met (per cent)

	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Navy	98	92	98	76	57	74	85	84	86	73	72	78	73	72	91	87	88	88	92	92
Army	99	98	94	78.5	83	79	100	79	84	81	89	86	76	76	90	90	87	85	94	81
Air Force	86	93	101	90.5	83	88	87	94	90	92	88	86	85	86	92	93	86	81	88	95
ADF	**96**	**94**	**97**	**80**	**76**	**80**	**93**	**84**	**86**	**80**	**84**	**84**	**77**	**76**	**91**	**89**	**87**	**85**	**92**	**84**

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

It is important to note that recruitment results vary from Service to Service, and that within each Service skilled personnel (like technicians and tradespeople) have proven particularly hard to recruit in recent times. As the data shows, Navy has tended to have the most trouble until recently.

Retention

Table 2.5.3 shows the percentages of ADF personnel who separated from full-time military service over the last fifteen 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. Still, separation rates from 2001-02 to 2004-05 were better than in 1995-96 before the cuts to personnel commenced. Note that the separation rates for 2009-10 and 2010-11 are the lowest of all the years examined by a fair margin. Unfortunately, this favourable trend did not continue into 2011-12.

To put recent ADF separation rates in context, Figure 2.5.3 plots the separation rate over the past thirty years. The key point to notice is that recent separation rates are commensurate with or better than rates 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

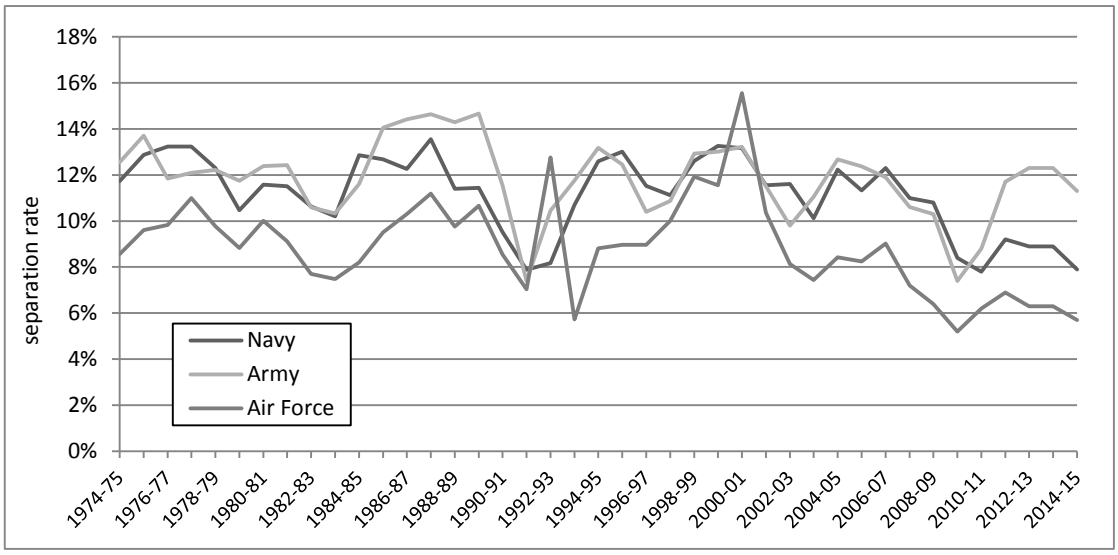
society to shorter term employment—the fact that the ADF had been able to keep people on average for longer than in the 1970s is a real achievement.

Table 2.5.3: ADF separation rates %

	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Navy	13.0	11.5	11.1	12.6	13.3	13.2	11.5	11.6	10.1	12.2	11.3	12.3	11.0	10.8	8.4	7.8	9.2	8.9	8.4	7.9
Army	12.5	10.4	10.9	12.9	13.0	13.2	11.5	9.8	11.0	12.7	12.4	11.9	10.6	10.3	7.4	8.8	11.7	12.3	12.4	11.3
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	7.2	6.4	5.2	6.2	6.9	6.3	5.5	5.7
ADF	**11.6**	**10.3**	**10.7**	**12.6**	**12.**	**13.8**	**11.2**	**9.8**	**9.9**	**11.5**	**10.7**	**11.2**	**9.8**	**9.4**	**7.1**	**7.9**	**9.9**	**10.0**	**9.7**	**9.1**

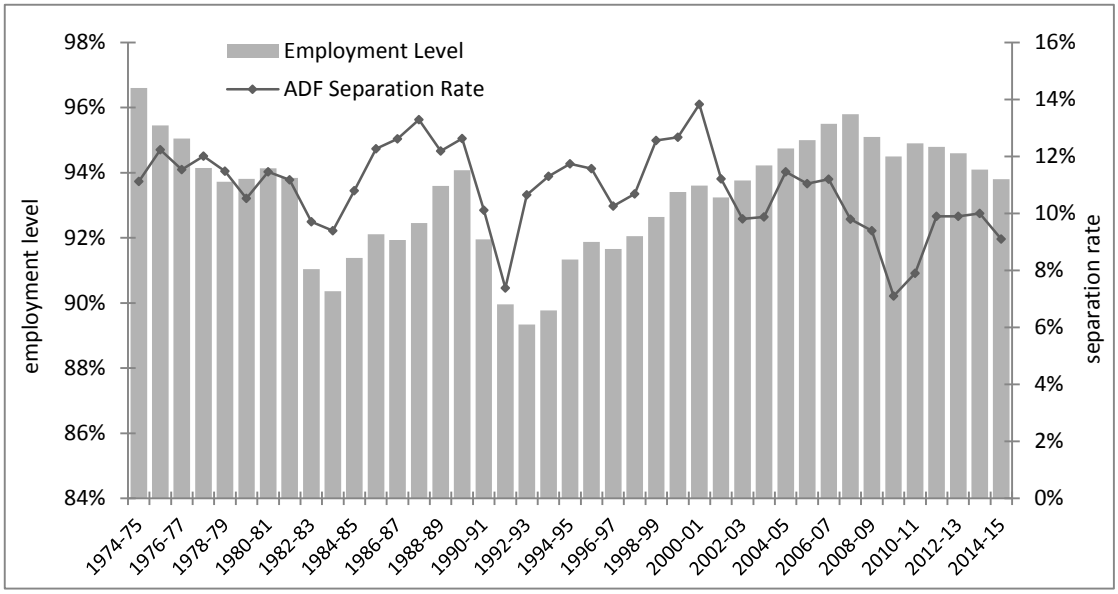
Source: DAR and FAD&T Committee inquiry into ADF recruitment and retention, May 2001, and advice from Defence

Figure 2.5.3: Permanent ADF separation rate: 1974-75 to 2014-15



Source: DAR 1974-75 to 2014-15 and advice from Defence

Figure 2.5.4: Employment and ADF separation rates: 1974-75 to 2014-15



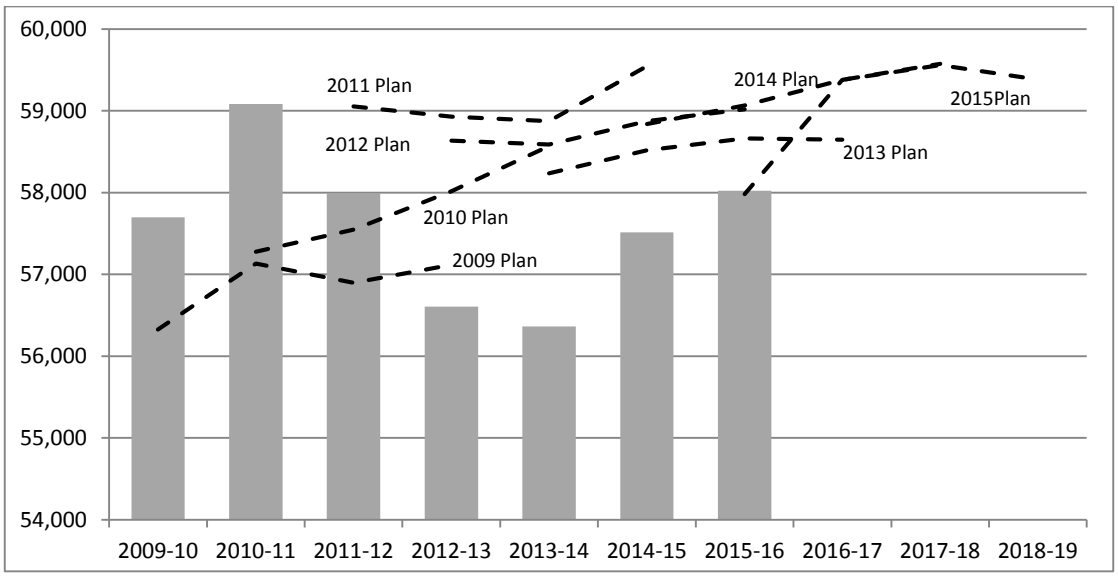
Source: DAR 1974-75 to 2014-15 and advice from Defence

As Figure 2.5.4 shows, the Global Financial Crisis pushed separation rates to historical lows in 2009-10 and 2010-11. Since then, separations have increased but remain below long-term average levels. Note that the correlation between unemployment in the wider Australian economy and separations has been less than clear in recent years.

What's going on?

It's unsurprising that ADF numbers grew faster than planned after the GFC as people decided to remain in the military rather than face an uncertain labour market. After that, however, permanent ADF numbers fell substantially below target for four years in a row, see Figure 2.5.5. Given that separation rates remained low, the problem was likely that recruitment targets were set too conservatively. In any case, 2015-16 saw planned and actual numbers converge.

Figure 2.5.5: Planned and actual permanent ADF numbers

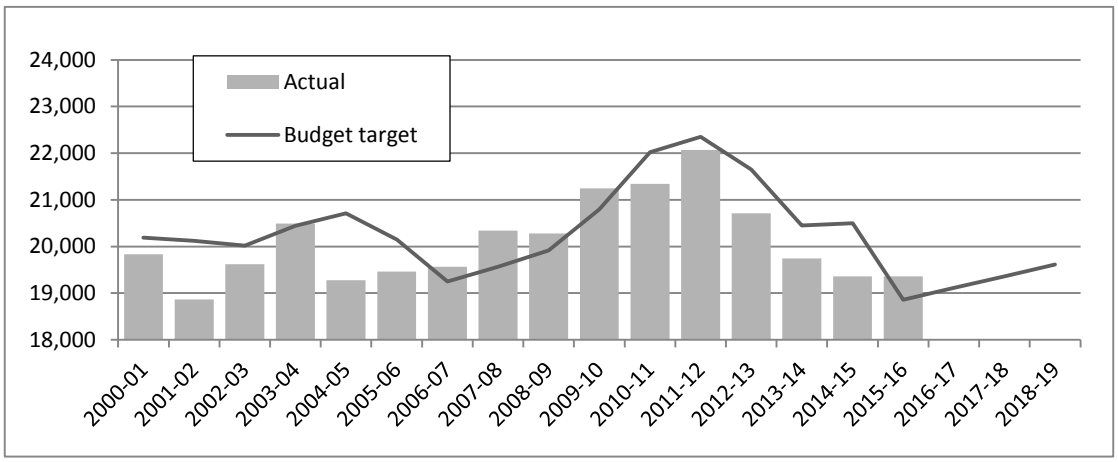


Source: DAR and PBS

Reserve numbers

Reserve numbers overachieved in 2015-16 after falling short for five years in a row, most especially in 2012-13, see Figure 2.5.6.

Figure 2.5.6: Active Reserve personnel: 2000-01 to 2019-20

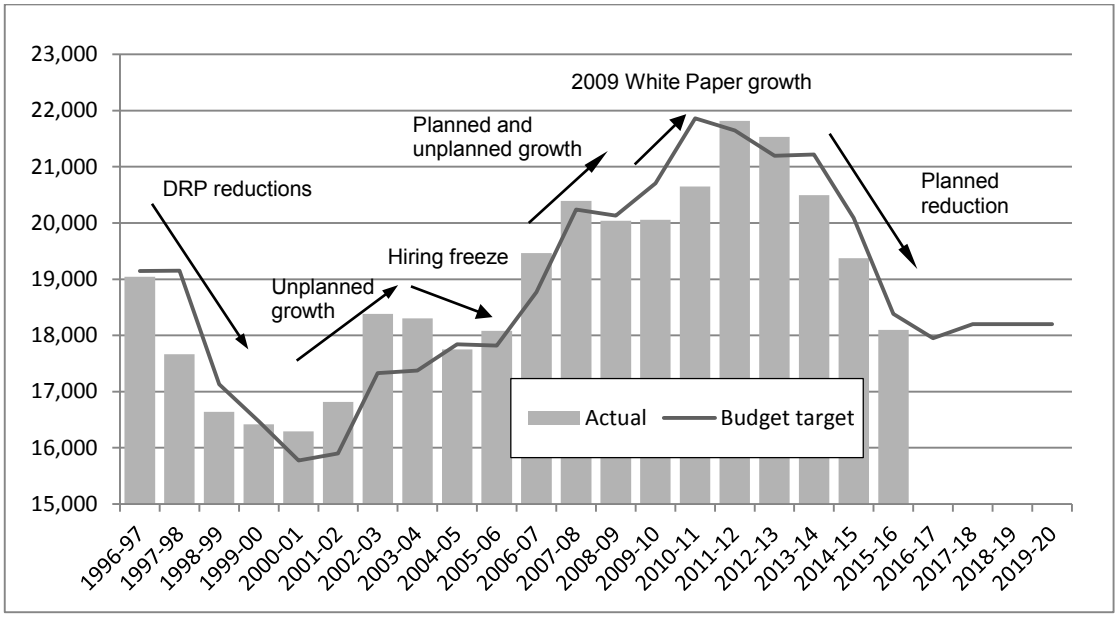


Source: Defence Annual Reports and 2016-17 PBS

Civilian Numbers

Figure 2.5.7 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 after the 2000 White Paper. 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. In January 2003 a civilian hiring freeze was imposed. In April 2003, the freeze was lifted but direction was given to maintain civilian numbers at current levels. 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 was only 82 positions below the previous year's figure due, mainly, to a series of government initiatives but also because of the creation of 349 additional but unplanned positions.

Figure 2.5.7: Civilian personnel: 1996-97 to 2019-20



Source: Defence Annual Reports, 2001-02 Defence Budget Brief and 2016-17 PBS

In 2004-05 and 2005-06, budgeted and actual figures were closely aligned. In 2006-07, civilian personnel numbers were set to rise by 950 due to government initiatives and workforce restructuring. However, the actual result for 2006-07 was more than 450 above estimate. Then, in 2007-08, civilian numbers grew by another 1,468, fully 155 above the initial budget estimate.

The plan for 2008-09 was for civilian numbers to fall to around 20,000 and then remain largely static across the forward estimates. However, following the 2009 White Paper, civilian personnel numbers were set a target of around 21,900 which was subsequently revised upwards to around 23,000 after Defence abandoned many of the efficiency savings originally planned from the civilian workforce. In 2009-10 and 2010-11 civilian numbers failed to grow to planned levels. Specifically, in 2009-10 the number of civilians grew by only 17, fully 645 below the updated budget estimate. Attempts to regain lost progress in 2010-11 largely failed, with civilian numbers falling 1,213 below target (though still 590 above the level for the previous year).

Presumably, the shortfalls reflected an overestimate by the 2009 White Paper of the number of civilians needed. Accordingly, budgeted civilian workforce numbers were cut by 1,000 in the 2011-12 budget. In each of 2012 and 2013, civilian numbers were cut by a further 1,000. Despite a notional reduction of 3,000 positions, some of the cuts were against planned growth. In 2013, a further 1,200 position were cut. As at May 2014, APS personnel numbers in Defence were slated to fall from 20,092 in 2014-15 to 18,105. During 2014-15, civilian numbers fell to 19,371—fully 721 positions below the budgeted level. Planned reductions towards a long-term target of 17,900 commenced in 2015-16; the projected result of 18,100 is 280 below target. Consistent with the revised target in the 2016 White Paper, civilian numbers will move towards 18,200 over the next two years.

What are the long-term targets for the Defence workforce?

The evolution of personnel targets is contained in Tables 2.5.4 and 2.5.5. We cannot properly account for the changes in 2014 and 2015.

Table 2.5.4: Long-term targets for the Defence civilians & contractors

	Civilian	Contractors	Total
Estimated pre-2009 White Paper Target	**20,000**	**-**	**-**
Baseline (May 2009)			**21,672**
Extra White Paper Positions			2,290
SRP impact			-2,015
2018-19 target strength (May 2009)			**21,937**
Baseline (April 2010)			**21,620**
Extra White Paper Positions			2,290
SRP impact			-1,191
2018-19 target strength (April 2010)			**22,719**
Baseline (April 2011)*			**22,397**
Reduction of 1,000 positions			-1,000
2018-19 target strength (May 2011)			**21,397**
Baseline (July 2011)			**21,397**
Reduction of 1,000 positions			-1,000
2018-19 target strength (May 2012)			**20,397**
2013 Defence White Paper			
Baseline (April 2013)			**21,700**
Reduction of 'around 1,000 positions'			-700
Target strength (May 2013)			**20,000**
Baseline (unknown)			**-**
Reduction of 1,200			-1,200
Target strength (May 2014)			**18,100**
Target strength (May 2015)			**17,800**
2016 Defence White Paper			
Baseline (May 2015)			**17,800**
Additional 400 personnel			400
Target strength (February 2016)			**18,200**

*Source: Budget Papers and the May 2009 and April 2010 SRP Booklets, 2015-16 PBS. *Advice from Defence May 2011. Defence White Papers*

Table 2.5.5: Long-term target for the permanent ADF

	Navy	Army	Air Force	Total
Post-Defence Reform Program Baseline	**13,800**	**23,000**	**13,000**	**50,000**
East Timor Boost 1999		+3,000	+555	+3,555
2000 White Paper Target	**13,800**	**26,000**	**13,555**	**53,555**
Changes made 2000 to 2009	-311	+4,538	+500	+4,721
Estimated pre-2009 White Paper Target	**13,689**	**30,538**	**14,055**	**58,282**
Baseline (May 2009)				**58,648**
Extra White Paper Positions				1,979
SRP impact				-2,813
2018-19 target strength (May 2009)				**57,812**
Baseline (April 2010)				**58,276**
Extra White Paper Positions				1,979
SRP impact				-1,376
2018-19 target strength (April 2010)				**58,879**
Baseline (July 2011)				**58,277**
Extra White Paper Positions				1,979
SRP impact				-1,629
2018-19 target strength (July 2011)				**58,627**
2013 Defence White Paper				**59,000**
Target for 2017-18 (May 2014)				**59,570**
Target for 2018-19 (May 2015)				**59,380**
2016 Defence White Paper				**62,400**

Source: 2010-11 DAR, Budget Papers and the May 2009 and April 2010 SRP Booklets, 2016-17 PBS, Defence White Papers

How much do personnel cost?

The per-capita cost of civilian and military personnel appears in Tables 2.5.6 to 2.5.7, the PBS does not provide enough information to calculate budgeted per-capita costs.

Table 2.5.6: Per-capita permanent ADF personnel expenses

	Military Numbers	Expense $ 000's	Per Capita	Nominal Growth
00-01	50,355	4,151,801	$82,451	
01-02	50,932	4,377,827	$85,954	4.2%
02-03	52,080	4,568,493	$87,721	2.1%
03-04	52,034	4,890,100	$93,979	7.1%
04-05	51,813	4,757,900	$91,828	-2.3%
05-06	51,151	5,093,100	$99,570	8.4%
06-07	51,504	5,515,651	$107,092	7.6%
07-08	53,109	6,062,882	$114,159	6.6%
08-09	54,748	6,751,456	$123,319	8.0%
09-10	57,697	7,456,595	$129,237	4.8%
10-11	59,084	7,834,680	$132,602	2.6%
11-12	57,994	7,989,786	$137,769	3.9%
12-13	56,607	8,054,390	$142,286	3.3%
13-14	56,364	8,246,043	$146,300	2.8%
14-15	57,512	8,531,437	$148,342	1.4%
			Average	**4.3%**

Source: Defence Annual Reports, expenses adjusted to take account of Reserve component.

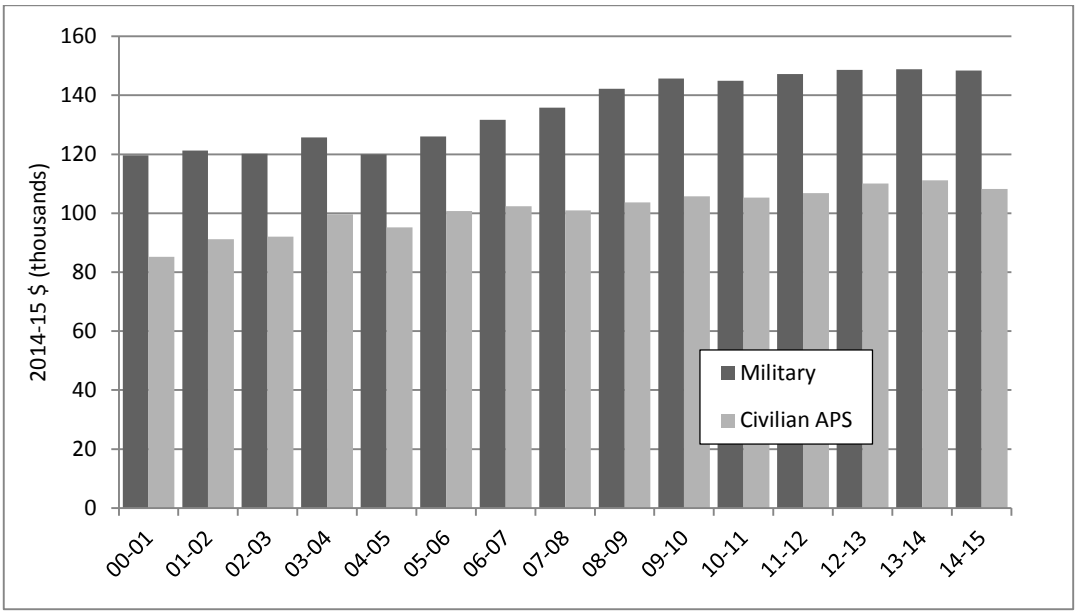
Table 2.5.7: Per-capita Defence civilian personnel expenses

	Civilian Numbers	Expense $ 000's	Per Capita	Nominal Growth
00-01	16,292	$956,661	$58,720	
01-02	16,819	$1,086,116	$64,577	10.0%
02-03	18,385	$1,235,752	$67,215	4.1%
03-04	18,303	$1,363,205	$74,480	10.8%
04-05	17,753	$1,293,100	$72,838	-2.2%
05-06	18,079	$1,438,274	$79,555	9.2%
06-07	19,467	$1,621,655	$83,303	4.7%
07-08	20,391	$1,730,215	$84,852	1.9%
08-09	20,041	$1,802,056	$89,918	6.0%
09-10	20,058	$1,881,294	$93,793	4.3%
10-11	20,648	$1,988,898	$96,324	2.7%
11-12	21,818	$2,180,654	$99,947	3.8%
12-13	21,534	$2,268,744	$105,356	5.4%
13-14	20,496	$2,238,988	$109,240	3.7%
14-15	19,371	$2,095,906	$108,198	-1.0%
			Average	**4.5%**

Source: Defence Annual Reports.

The per-capita expenses include salaries, allowances, superannuation, health, redundancies, housing and fringe benefits tax. We've done our best (on the basis of incomplete information) to account for the cost of Reserve personnel in the estimate for the permanent ADF. In addition, the transfer of military compensation to Veterans Affairs in 2004-05 has been adjusted for. Historical per capita costs are depicted graphically in Figure 2.5.8.

Figure 2.5.8: Historical per-capita personnel costs



Source: Defence Annual Reports.

Personnel structures

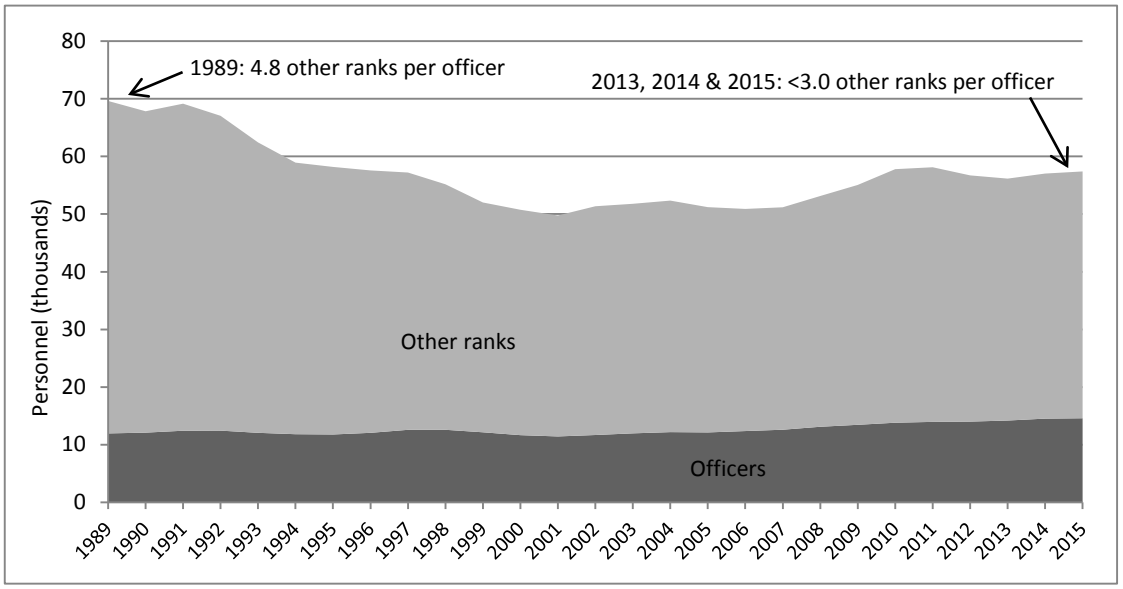
To facilitate understanding of the structure of the Defence workforce, it is useful to understand the nominal equivalence between different levels in the APS and ADF and between the three Services. For a comparison of relative ranks/levels, see Table 2.5.8.

Table 2.5.8: Rank/level comparison:

Civilian	Navy	Army	Air Force	
APS-4	Sub-Lieutenant	Lieutenant	Flying Officer	Officers
APS-5	Lieutenant	Captain	Flight Lieutenant	
APS-6	Lt-Commander	Major	Squadron Leader	
EL-1	Commander	Lt-Colonel	Wing Commander	Senior Officers
EL-2	Captain	Colonel	Group Captain	
SES-1	Commodore	Brigadier	Air Commodore	Star-ranked and Senior Executive Service
SES-2	Rear Admiral	Major General	Air Vice-Marshal	
SES-3	Vice Admiral	Lt General	Air Marshal	

The breakdown of ADF personnel by rank, and civilians by level, appears in Table 11 on page 27 of the PBS. As the ADF contracted during the 1990s, the number of officers remained more or less constant. Then, as the size as the ADF increased over the past few years, the number of officers grew more quickly (see Figure 2.5.9). As a result, the percentage of officers in the ADF has grown from 17.2% in 1989 to 25.5% in 2010. This means that there are now less than three enlisted personnel for every officer. To a large extent, the rising proportion of officers probably reflects the outsourcing of activities during the 1990s, which saw more enlisted personnel than officers discharged. However, the recent expansion of the army has marginally reversed the trend.

Figure 2.5.9: Permanent ADF Numbers 1989 – 2015 as at 30 June



Source: Defence Annual Reports.

Generals and Mandarins

The trends in star rank, senior executive, and senior officer numbers are shown in Table 2.5.9; the most recent data is taken from the 2016-17 PBS. Changes in reporting account for the gaps and lack of earlier data. Over the long term, the number of managers and executives has increased at a rate well in excess of the growth in the size of the overall workforce.

However, after steady increases from the late 1990s onwards, the number of civilian executives and senior officers has declined significantly—presumably due to implementation of the First Principles Review. Over the same period, the reduction in the number of military star-rank and senior officers has been much less than observed in the civilian workforce.

Table 2.5.9: Numbers of Senior Ranks and Executive Levels; average funded strength

	Civilian						Military	
	Defence Executives	DMO Executives	Total Executives	Defence Senior Officers	DMO Senior Officers	Total Senior Officers	Star Rank Officers	Senior Military Officers
1998-99	100		100	0	0	0	110	1,360
1999-00	106		106	0	0	0	0	0
2000-01	103		103	3,317	0	3,317	120	1,415
2001-02	117		117	3,844	0	3,844	119	1,467
2002-03	130		130	3,824	0	3,824	120	1,507
2003-04	123		123	3,889	0	3,889	119	1,528
2004-05	96	30	126	3,081	995	4,076	125	1,551
2005-06	102	29	131	3,385	1064	4,449	135	1,594
2006-07	108	29	137	3,656	1225	4,881	149	1,684
2007-08	121	32	153	3,911	1388	5,299	176	1,768
2008-09	126	35	161	3,970	1502	5,472	169	1,852
2009-10	128	36	164	4,192	1579	5,771	173	1,937
2010-11	undisclosed	undisclosed	172	undisclosed	undisclosed	6,250	181	1,941
2011-12	undisclosed	undisclosed	175	undisclosed	undisclosed	6,796	184	1,850
2012-13	133	35	168	5,010	1,757	6,767	188	1,983
2013-14	133	35	168	4,934	1,590	6,524	189	2,101
2014-15			160			6,243	189	2,124
2015-16			153			5,815	189	2,057
2016-17			152			5,767	186	2,079

Source: Defence Annual Reports, 2014-15 estimated actual from PBS, 2016-17 planned.

The changing number of Deputy Secretary and 3-star military officers is given in Table 2.5.10, where the impact of the First Principles Review is abundantly clear. From a pool of only 22 positions, there are now five fewer band-three civilian senior executives and one less military 3-star officer than before.

Table 2.5.10: Band 3 and 3-Star officers (equiv. Chief of Service - Deputy Secretary)

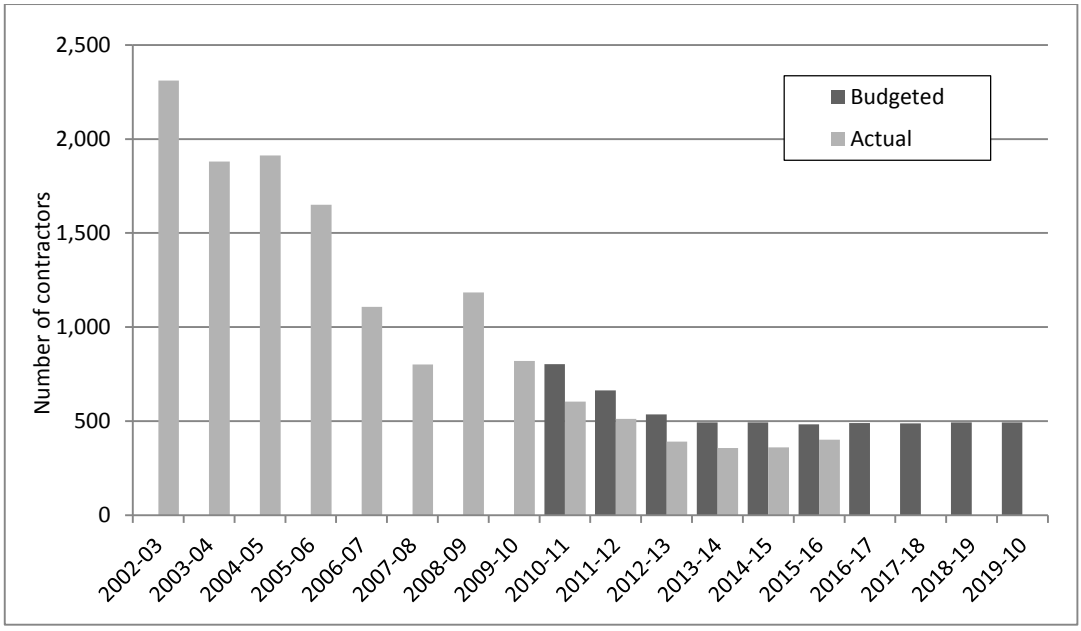
	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Assoc. Sec														1	1	1	1	1	1
Band-3 (Defence)	3	4	7	5	5	5	5	5	5	7	8	8	8	8	8	7	7	7	8
Band 3 (DMO/ CASG	1	1	1	1	1	1	1	1	1	4	4	5	5	5	5	5	5	5	1
Band-3 (DSTO)	2	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1
subtotal	**6**	**8**	**10**	**9**	**9**	**9**	**9**	**9**	**9**	**14**	**15**	**16**	**16**	**17**	**17**	**16**	**16**	**16**	**11**
3-Star	4	4	4	4	4	5	5	5	5	6	6	6	6	6	6	6	6	6	5
Total	**10**	**12**	**14**	**13**	**13**	**14**	**14**	**14**	**14**	**20**	**21**	**22**	**22**	**23**	**23**	**22**	**22**	**22**	**16**

Source: DAR and 2016-17 PBS. Includes Chief of Division Grade 3 in DSTO. CEO of DMO counted as a Deputy Secretary.

Professional Service Providers

The Defence workforce includes a limited number of Professional Service Providers (PSP), sometimes called simply 'contractors' in line positions within the organisation. For most of the past decade, there was a concerted effort underway to reduce the number of PSP employed by Defence. In fact, Defence has claimed successive reductions in the number of PSP as an internal efficiency. Note the temporary increase in 2008-09, against which savings were calculated in 2009.

Figure 2.5.10: Professional Service Providers



Source: Defence Annual Reports and 2016-17 PBS.

The number of contractors has fallen three years in a row and done so more quickly than budgeted for. However, these reduction need to be viewed with some caution. Over the past couple of years Defence has begun to engage 'capability partners' to provide skills and

expertise not available within their own workforce. Because of the contractual arrangements under which capability partnerships are managed, the personnel they supply are not technically counted as PSP or contractors under Defence's definition. Nonetheless, people employed by the private sector are providing skills and capacity within Defence very much akin to that previously done by PSP/contractors.

Defence Remuneration

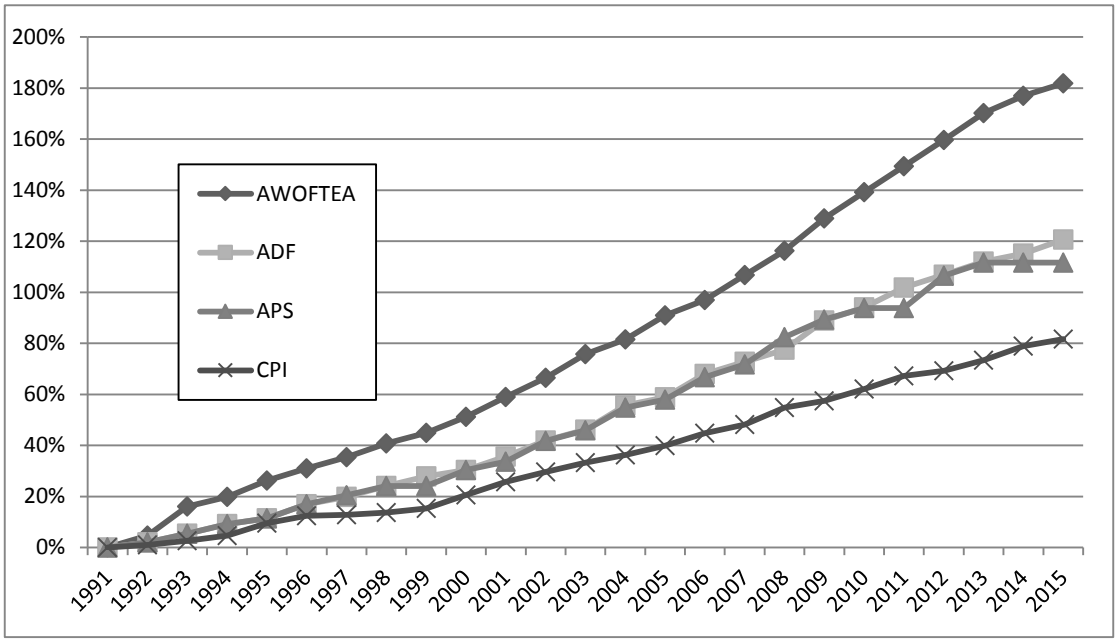
The PBS doesn't deal with Defence remuneration. But, because the largest single slice of the Defence budget goes towards civilian and military salaries, we've included a short summary of the key data. Figure 2.5.11 shows Defence military and civilian salaries circa late 2015, benchmarked against the latest available Average Weekly Ordinary-Time Earnings for Full-Time Earning Adults (AWOFTEA) from November 2015. (SES civilian and military two/three-star data are for 2014-15.)

Note that the military figures in Figure 2.5.11 include both salary and the service allowance of $12,121 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. Note that the three graphs do not use the same scale.

The comparison of defence salaries with AWOFTE in Figure 2.5.12 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 2.5.11 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).

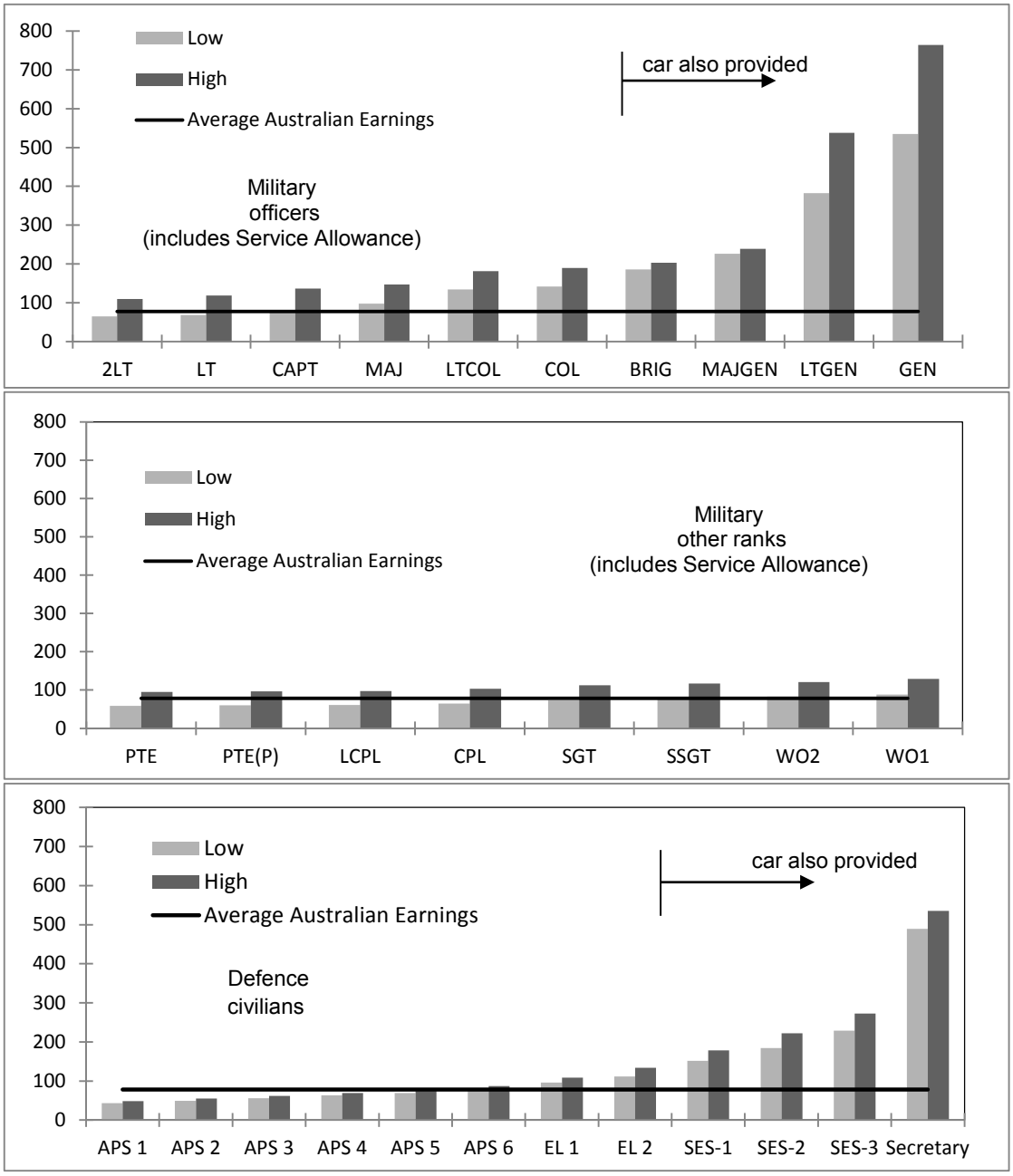
Care is needed in interpreting the relative growth in average earnings, defence salaries and consumer prices. Structural changes to the Australian economy over the period will have altered the type and value of employment relative to that performed within the ADF.

Figure 2.5.11: Defence civilian and military salaries – rate of increase



Source: ABS weekly ordinary full time earnings data and Defence pay rates.

Figure 2.5.12 Defence salaries, circa November 2015 ($ thousands)



Source: ABS; Military and APS pay rates as at November 2015, SES, Mag Gen, Lt Gen and Gen as at 2014-15

Finally, it is important to note that Defence executive remuneration isn't limited by the salary increases granted to the rank and file. Over the past six years, the Defence annual report disclosed salary ranges for various levels of employee. As Table 2.5.11 shows, it has been a particularly good time for senior executives and star-ranked officers. The range of increases corresponds to changes to the upper and lower levels of the salary range in each case.

Table 2.5.11: Senior executive salary increases 2006 to 2015

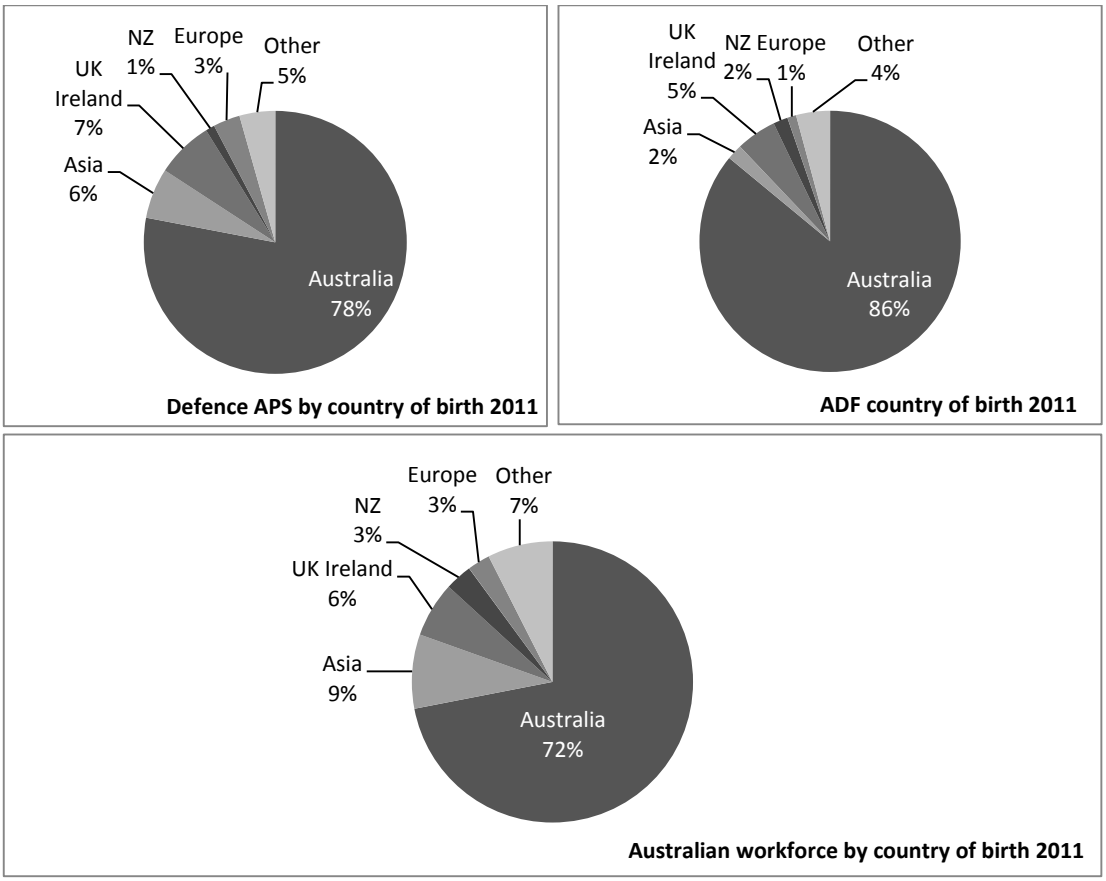
	Increase in minimum salary	Increase in maximum salary
Civilian level		
Secretary	undisclosed	undisclosed
Deputy Secretary (SES-3)	44.3%	33.3%
First Assistant Secretary (SES-2)	43.7%	30.8%
Assistant Secretary (SES-1)	44.3%	38.4%
Non-executive APS salary increase	31.4%	31.4%
Military level		
General (CDF)	86.6%	166.6%
Lieutenant General (3-star)	67.7%	144.0%
Major General (2-star)	62.4%	71.1%
Brigadier (1-star)	36.0%	62.7%
Non star-rank military salary increase	27.8%	64.5%

Source: 2005-06 and 2014-15 DAR. Non-executive figures are ADF pay rates for Major and civilian APS6.

Demographics of the ADF

The defence force is disproportionately drawn from the Anglo-Celtic part of the Australian population. The extent of over-representation is difficult to fully assess because the only available data concerns country of birth and not family background. Even so, as Figure 2.5.13 shows, there are significant differences between the defence force and the community. Note that the demographic skewing extends to the Defence's civilian workforce.

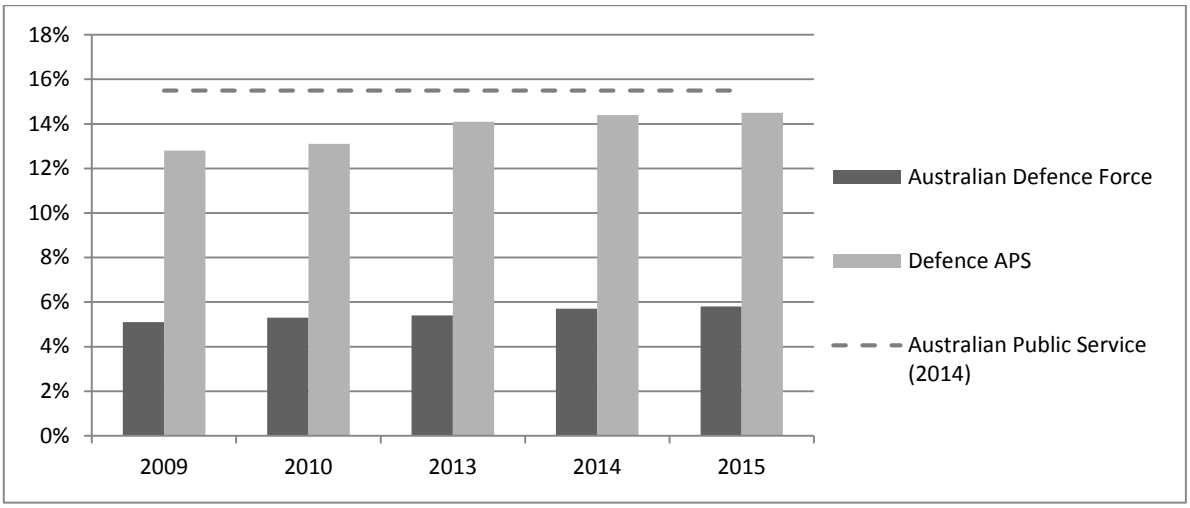
Figure 2.5.13: Composition of the ADF, Defence APS and Australian workforce by birth



Sources: Defence military and civilian figures from the 2011 Defence Census; all other figures from Census 2011 conducted by the Australian Bureau of Statistics

Another perspective on Defence's cultural diversity can be gained by looking at the proportion of persons from non-English speaking background in comparison with those in the broader APS, Figure 2.5.14. Note that slow but steady progress is being made.

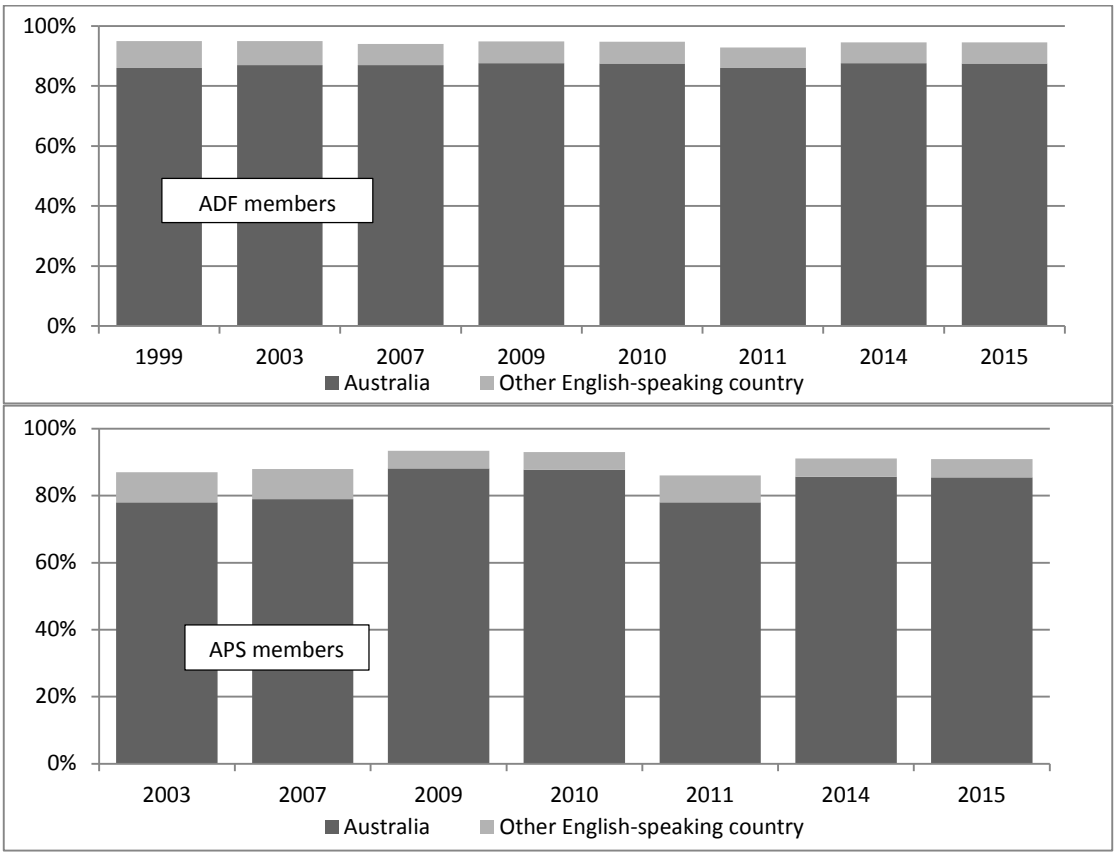
Figure 2.5.14: Percentage non-English speaking background



Sources: Various DAR; Australian Public Service Commission 2014

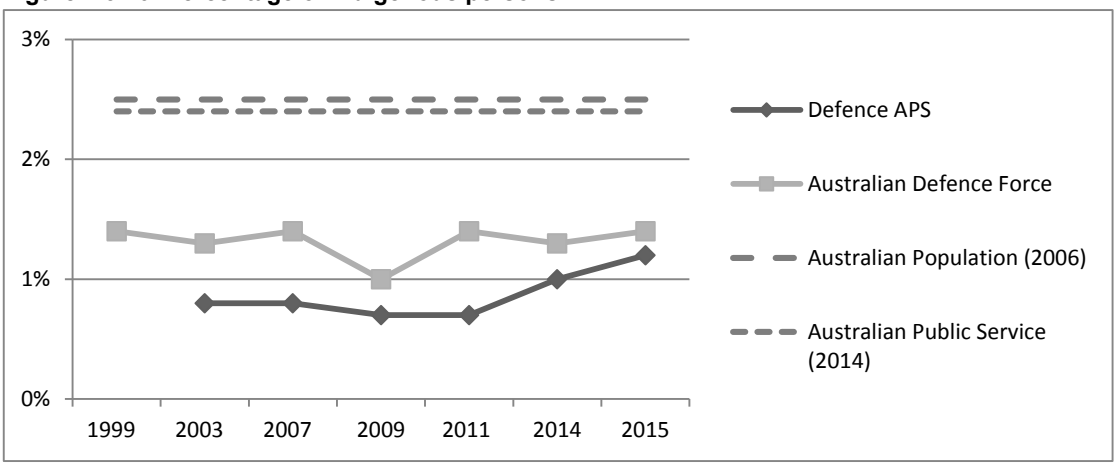
The difference between the ADF/Defence and broader Australian society is not a new issue, as Figure 2.5.15 demonstrates. And, as Figure 2.5.16 shows, the ADF and Defence APS have a smaller share of indigenous Australians than either the general population or APS.

Figure 2.5.15: ADF and APS members by country of birth 1999-2015



Sources: Defence Census 2003, 2007, 2011; Various DAR; Other English speaking country = UK, NZ, Ireland in Defence Census; Other English speaking country = UK, NZ, US, Canada in Defence HR System.

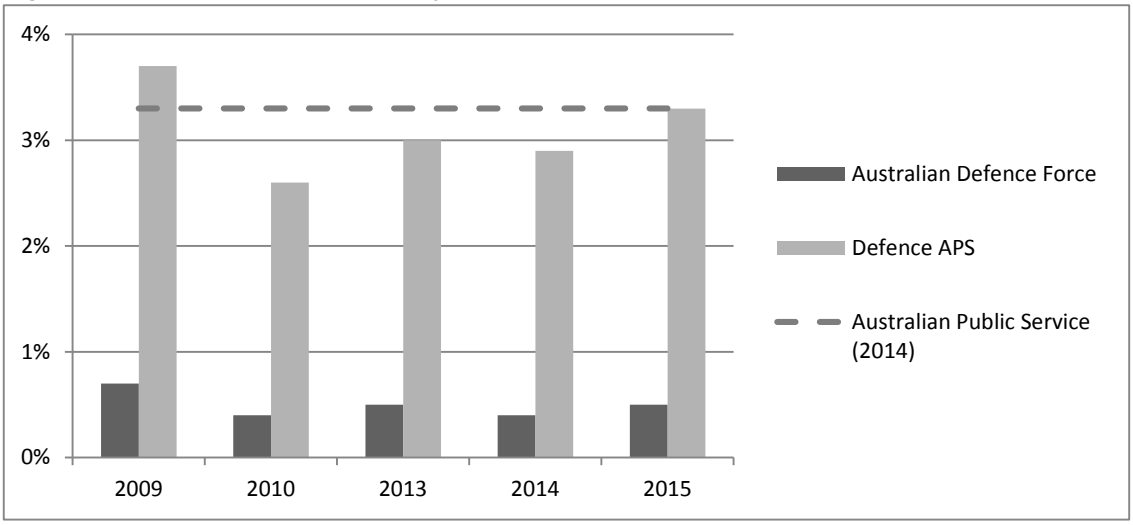
Figure 2.5.16: Percentage of indigenous persons



Sources: Defence Census 1999, 2003, 2007, 2011; Defence HR 2009, various DAR

Defence employment of people with a disability is compared with the broader APS in Figure 2.5.17. The relatively low proportion of disabled persons in the ADF is unsurprising, and the result for the Defence APS is only slightly below the APS comparator.

Figure 2.5.17: Persons with a disability in Defence



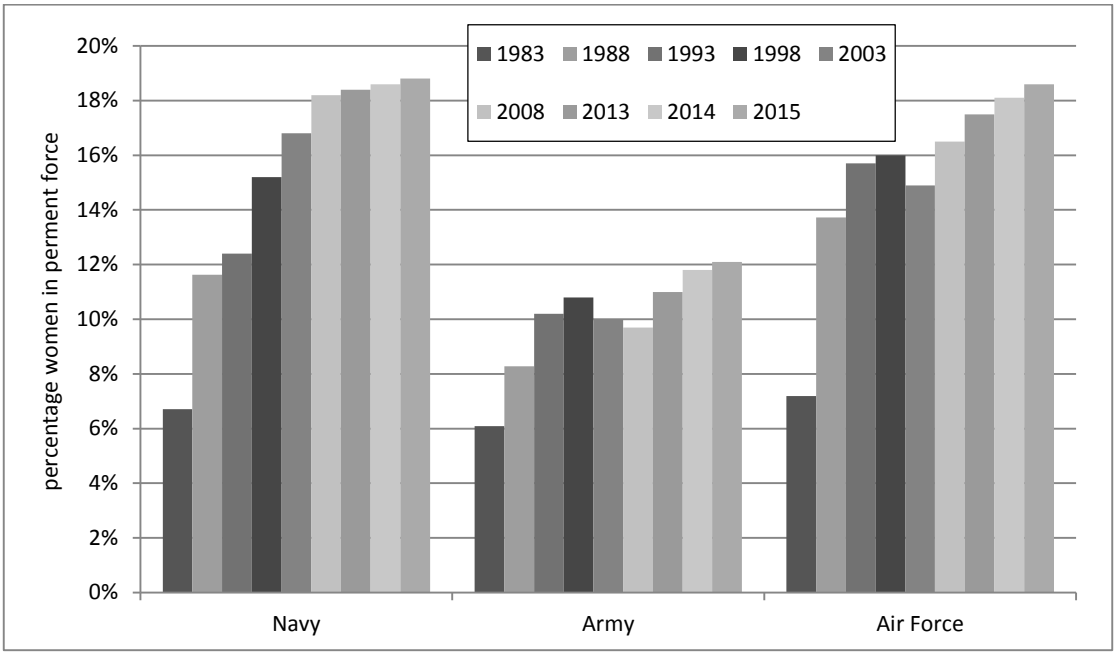
Source: Defence HR 2009, 2013, 2013-14 & 2014-15 DAR.

Another area where the demographics of the Australian defence force and the society differ is gender.

It's not that the defence force has ignored the issue in the past. Over the past fifteen years, a serious effort has been made to recruit and retain women in the force. A zero-tolerance policy towards sexual harassment is now in place across the entire force. Recruiting advertisements depict women as integral members of the defence force and highlight the opportunities available to them (and the same has more recently become true for persons from diverse ethnic backgrounds). All combatant positions being opened up to women across the three Services and an increasing number of women are reaching the higher ranks. Finally, more flexible arrangements are now in place to help all ADF members manage the dual demands of career and family, and childcare facilities have been established in and around most military bases.

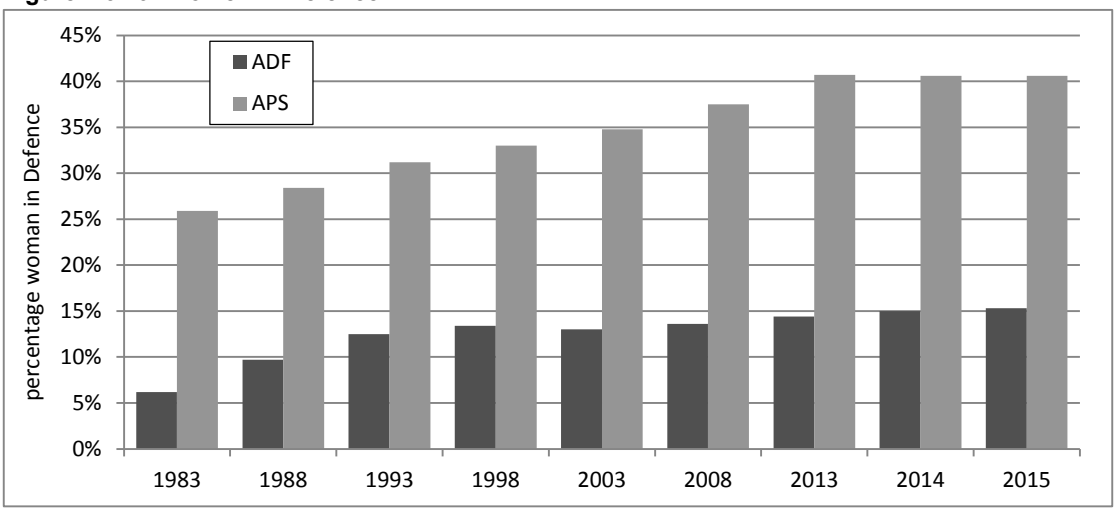
Yet the proportion of women in the force has grown from only 12.8% to 14.4% over the decade, see Figures 2.5.18 and 2.5.19. Although the proportion of women in allied forces is similarly low, that doesn't mean that the defence force should relax its effort to attract women to serve. The defence force needs the best people it can find and women represent the largest under-utilised pool of potential recruits in the community.

Figure 2.5.18: Women in the defence force



Source: 1982-82 to 2014-15 DAR

Figure 2.5.19: Women in Defence



Source: 1982-82 to 2014-15 DAR

2.6 Outcomes and planned performance

The Cost of Outcomes and Programs

Under the framework explained in Chapter 1.3 of this Brief, the government funds Defence to achieve designated outcomes via a series of programs. The core of the Defence Budget is a statement of the costs and planned performance of outcomes and programs on p.27–98 of the PBS. Unfortunately the 2008-09 transition from 'output groups' to 'programs' was accompanied by the abandonment of 'outputs', which contained a more granular explanation of capabilities held by the three Services. Specifically, twenty-two capability related outputs were coalesced into a mere three programs resulting in a seven-fold reduction of fidelity. Current departmental expenses appear in Table 2.6.1.

Table 2.6.1: Departmental outcome and program expenses ($m)

Outcome 1: The protection and advancement of Australia's national interests through the provision of military capabilities and the promotion of security and stability	**Net Cost 09-10 actual**	**Net Cost 10-11 actual**	**Net Cost 11-12 actual**	**Net Cost 12-13 actual**	**Net Cost 13-14 actual**	**Net Cost 14-15 project**	**Net Cost 15-16 est.**	**Net Cost 16-17 budget**
Program 1.1: Strategy & Intelligence	196	146	180	150	162	169	233	867
Program 1.2: Navy Capabilities	3,745	4,045	3,991	4,187	4,401	5,103	5,494	5,917
Program 1.3: Army Capabilities	5,093	5,306	5,290	5,196	5,685	6,498	7,187	7,329
Program 1.4: Air Force Capabilities	3,699	3,908	4,223	4,278	4,384	5,164	5,713	5,830
Program 1.5: Joint Operations Comd.	103	37	38	32	45	43	49	49
Program 1.6: Intelligence Capabilities	562	572	544	539	550	558	536	
Program 1.6: VCDF	1,012	1,103	1,383	1,337	1,403	1,165	1,309	1,466
Program 1.7: CASG							591	692
Program 1.8: Defence Executive Support							200	194
Program 1.9: Estate & Infrastructure	3,319	3,429	3,844	3,660	3,624	3,977	4,239	4,145
Program 1.10: Chief Information Officer	806	842	1,076	908	970	1,254	1,059	1,632
Program 1.11: Defence People	286	269	305	351	427	444	501	511
Program 1.12: Science & Technology	403	418	450	434	426	416	464	438
Program 1.13: Chief Finance Officer	317	402	465	458	541	111	280	185
Program 1.14: Capability Development	365	482	258	-50	444	589	400	
Outcome 1	**19,906**	**20,959**	**22,047**	**21,480**	**23,063**	**25,493**	**28,255**	**29,256**
Outcome 2*:* The advancement of Australia's strategic interests through the conduct of military operations and other tasks as directed								
Program 2.1: Immediate neighbourhood	161	182	176	133	21	4	-	1
Program 2.2: Wider interests	892	889	783	798	598	785	864	737
Outcome 3: Support for the Australian community and civilian authorities as requested by Government								
Program 3.1: Defence Contribution to National Support Tasks in Australia	11	11	118	15	29	68	49	22
Total net cost (non-administered)	**20,970**	**22,041**	**23,124**	**22,426**	**23,711**	**26,348**	**29,168**	**30,016**

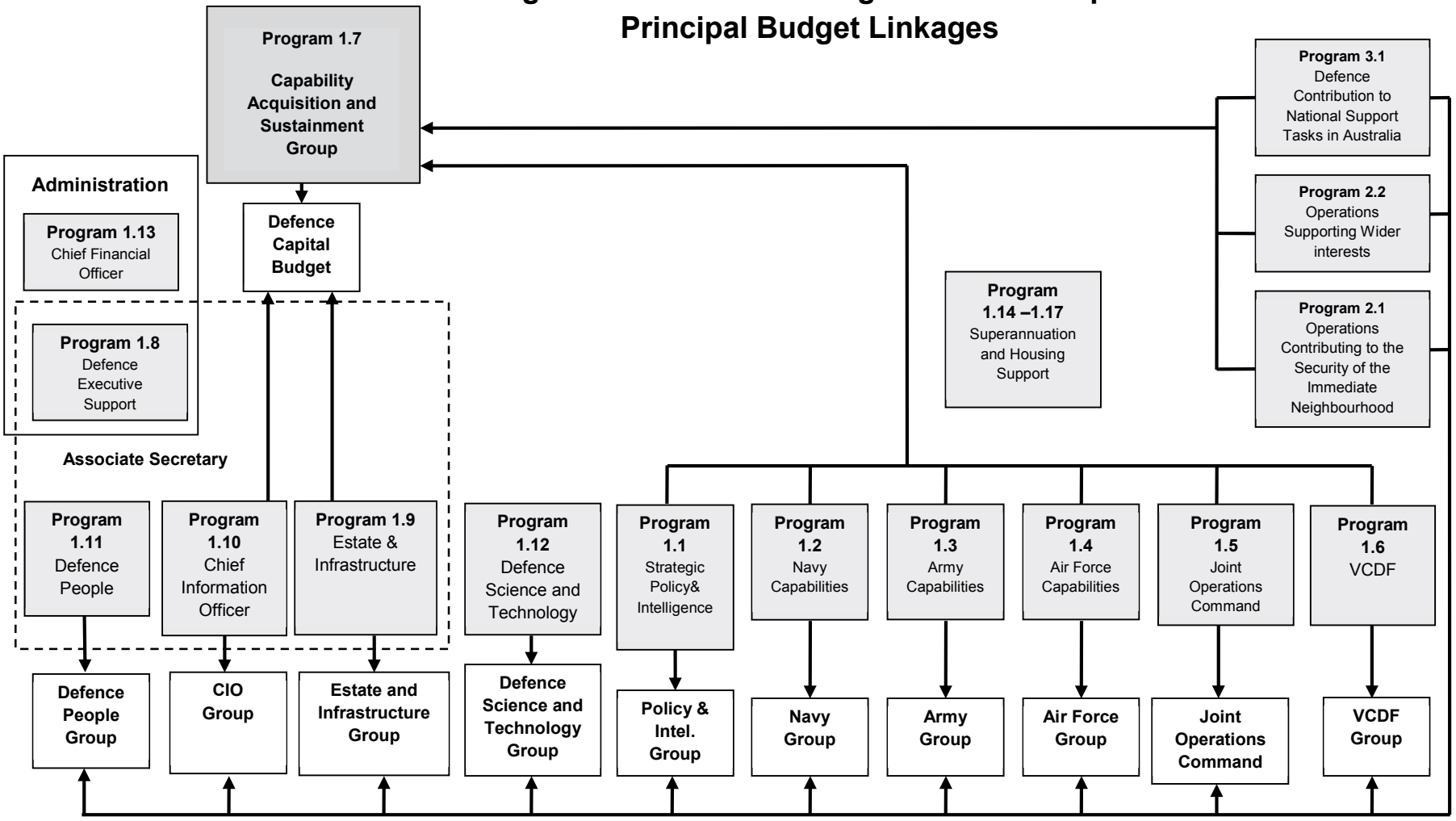
Source: 2016-17 PBS and various DAR (Note: Programs were re-enumerated in the 2013-14, 2015-16 and 2016-17 PBS, we've done our best to retain consistency.)

Note that, in order to capture the overall cost of delivering programs, non-cash expenses due to the depreciation of equipment are included in the net cost in Table 2.6.1. Also funds appropriated for administered programs (which are not controlled by Defence) for home-loan assistance and military superannuation and retirement benefits have been omitted.

To the extent that operational supplementation does not have a large capital investment component, Outcome 2 represents the net additional cost of operations undertaken by the ADF.

As mentioned in Chapter 1, the present outcomes and programs 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've tried to capture the situation in Figure 2.6.1. The essential points are as follows. The programs under Outcome 2 and 3 don't align with any single organisational entity. Instead, they capture the net additional expense of operations apportioned to those groups that actually support and deliver the operations, including CASG. At the same time, the CASG sustainment budget is reflected in the costs attributed to the various programs, principally Navy, Army and Air Force.

Figure 2.6.1: Defence Programs and Groups Principal Budget Linkages



Program Statements

For each of the programs, the PBS contains an entry detailing the objectives, deliverables, purposes and key performance criteria and a cost summary. In many cases, the information reads like entries in a corporate plan. For example, Strategic Policy and Intelligence has two purposes:

> Purpose 1 – Provide advice to Government.
> Purpose 2 – Deliver and sustain Defence capability and conduct operations.

The same program lists twelve dot-points under the heading 'Delivery', including;

> Ensuring effective intelligence support to Government decisions and ADF operations.

Its two performance criterion are;

> Minister expresses high to very high confidence in Defence Advice.
> Whole-of-Government and ADF intelligence requirements are met.

Little would be gained by repeating the very large number of equally sensible key performance indicators that appear in the PBS. Of more interest are the concrete performance measures set out for the military capability outputs.

Capability Performance

There are three overarching key performance measures for the capability related programs; preparedness, core skills and quantity. These same performance measures have been employed in Defence Annual Reports and PBS in one way or another since 1999. We explore these three measures below. In doing so, it's important to remember that many capability programs have additional specific performance measures.

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 is worth recounting.

To begin with, the government's White Paper sets 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 a series of *Military Response Options* for each strategic task 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, as a purely illustrative example, the Army 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'.

Core Skills: Preparedness targets 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 the capability programs is to 'achieve a level of training that maintains core skills and professional standards across all warfare areas'. The assessment of what's to be achieved, and whether it has been achieved, is ultimately based on the professional military judgement of the Service Chiefs.

Quantity: All of the capability programs 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.

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.

Navy: The basic measure of quantity used by Navy relates to the availability of ships and their crew to undertake a mission. Unit Ready Days (URD) are the number of days that a force element is available for tasking by the Maritime Commander, within planned readiness requirements. Unit Availability Days (UAD) are the number of day when a unit is materially ready and its personnel state and level of competence enables the unit to immediately and safely perform tasks in the unit's normal operating environment.

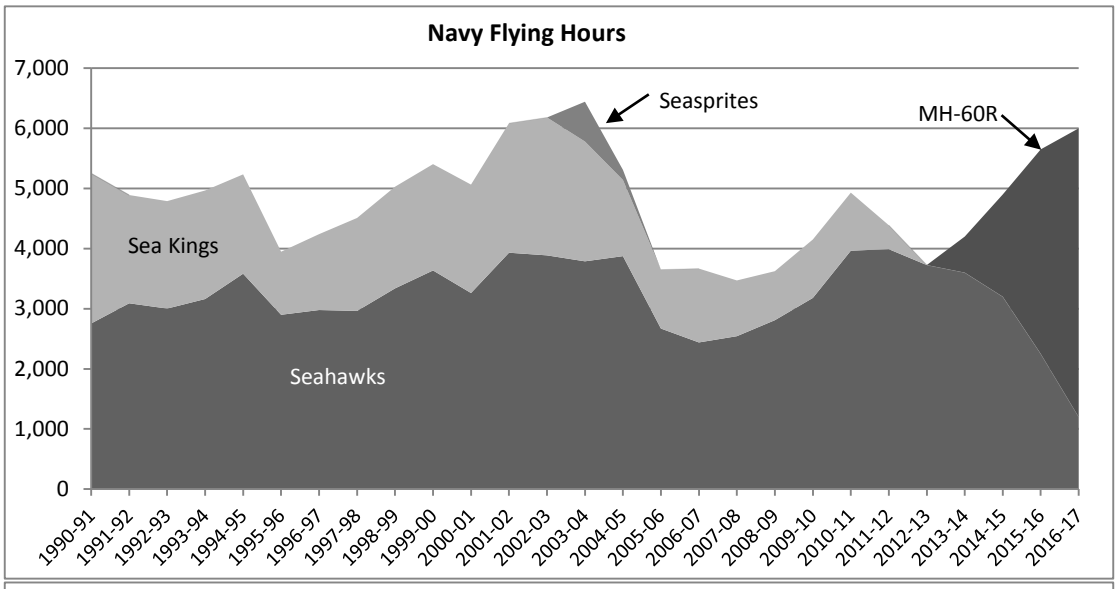
Air Force: The quantity measure used by Air Force and Naval and Army Aviation is the number of flying hours undertaken by the Program. These measures have been applied consistently for over a decade and constitute a useful diagnostic tool, given the established baseline. (It would be useful if Navy's steaming-days and Army's track-miles were disclosed as they were in the past). Short- and long-term trends in ADF flying hours can be found in Table 2.6.2 and Figure 2.6.2.

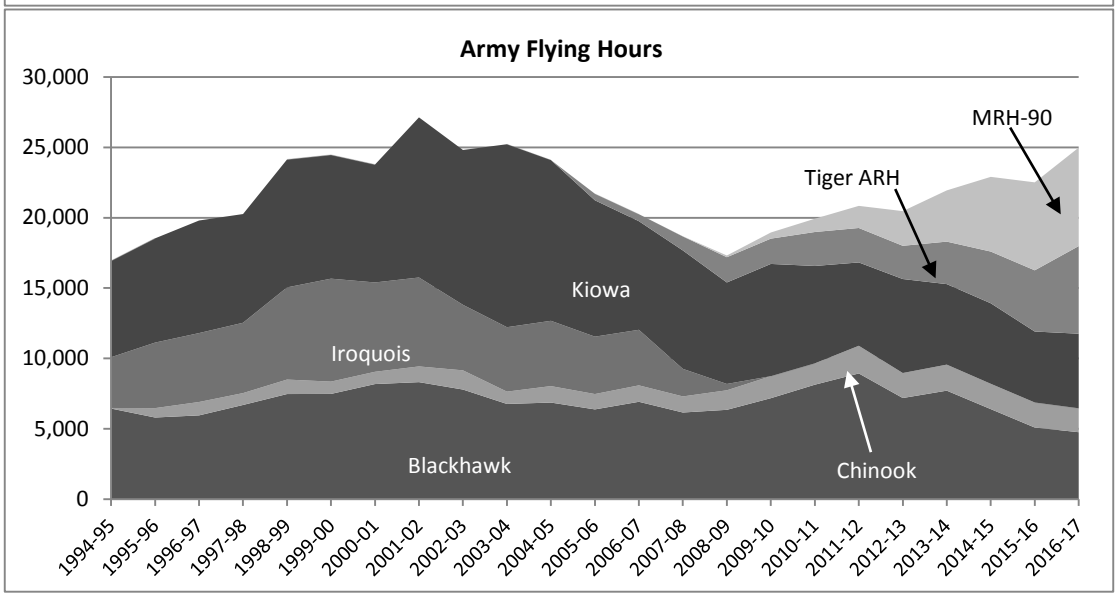
Table 2.6.2: Planned (budgeted) ADF flying hours 2015-16 and 2016-17

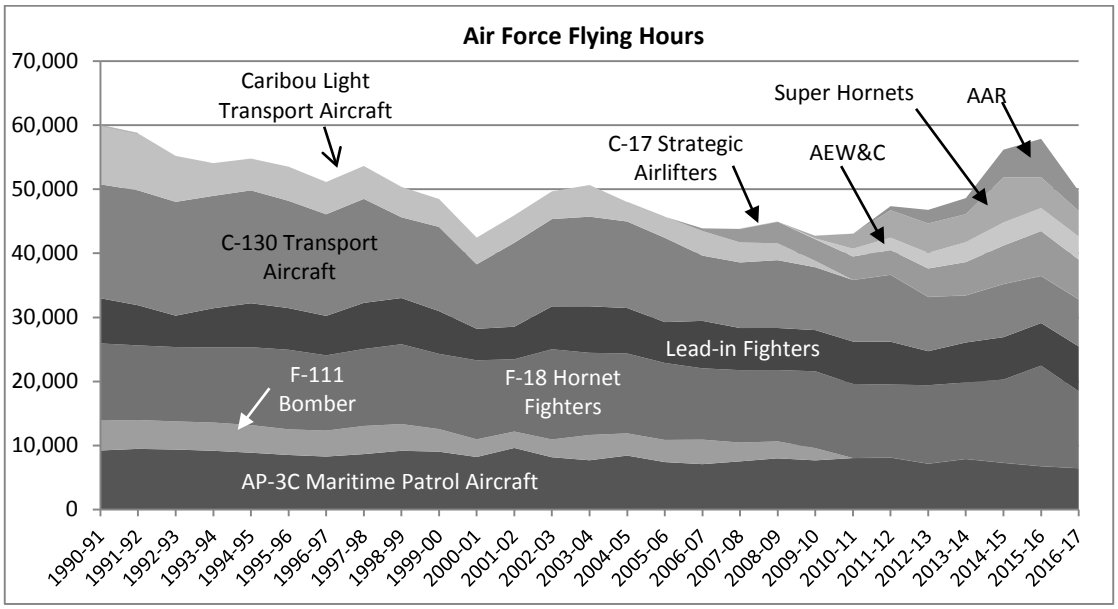
Platform	2015-16	2016-17	Change	Remarks
F/A-18 fighter	12,000	12,000	0	To be replaced at decade's end
F/A-18 Super Hornet	5,200	4,000	-1,200	
C-130 transport	7,350	7,350	0	
AP-3C Orion	6,770	6,465	-295	To be replaced at decade's end
C-17 transport	6,200	6,200	0	Fleet expanding
Hawk Lead-in fighter	7,000	7,000	0	
AEW&C	3,600	3,600	0	
Chinook helicopter	1,700	1,700	0	Transitioning to new a/c
Black Hawk helicopter	4,230	4,552	+332	Transitioning out of service
Kiowa helicopter	6,000	5,500	-500	Service life extended to 2019
Armed recon helicopter	5,846	6,227	+381	Fleet entering service
MH-60 Romeo	3,400	4,800	+1,000	Fleet entering service
MRH-90 helicopter	7,100	7,000	+100	Fleet entering service
S-70B-2 Seahawk helicopter	2,250	1,200	-1,050	Transitioning out of service

Source: 2015-16 and 2016-17 PBS

Figure 2.6.2: Long-term trends in ADF flying hours







Recent Performance

Table 2.6.3 summarises the non-quantitative key performance indicators from the 2014-15 Annual Report. Defence uses a four-point performance scale of 'not met', partially met', 'substantially met' and 'met'. For simplicity of presentation, the scale is expressed as 0 to 3 ticks in the table below. The 'overall' assessment in Table 2.6.3 is the percentage of ticks received out of those possible for all performance indicators and deliverables. The arrows indicate movement relative to previous year results.

Table 2.6.3: Output Performance/Deliverables from the 2014-15 Defence Annual Report

Output	Advice	Preparedness	Core Skills	Overall
1.1 CDF Secretary	✓✓✓			100% ↑
1.2 Navy	✓✓✓	✓✓✓ ↑	✓✓✓ ↑	89%
1.3 Army	✓✓✓	✓✓↓	✓✓✓	79% ↓
1.4 Air Force	✓✓✓	✓✓✓ ↑	✓✓✓ ↑	94% ↑
1.5 Intelligence	✓✓✓			86% ↓
1.6 Defence Support & Reform	✓✓✓ ↑			82% ↑
1.7 Chief Information Officer				70% ↑
1.8 People	✓✓			81% ↓
1.9 Science & Technology	✓✓✓			94%
1.10 VCDF	✓✓ ✓			97% ↑
1.11 Joint Operations Command				92% ↑
1.12 Capability Development	✓✓			86% ↑
1.13 CFO	✓✓✓			100%
2.1 Operations - neighbourhood				100%
2.2 Operations - wider interests				100%
3.0 National Tasks				100%

Source: 2014-15 DAR

Table 2.6.4 shows the planned and actual key performance indicators for quantity (URD and flying hours) for the major platforms operated by the three services. The results have been rated on the four-level scheme as follows; above 95% =✓✓✓, 95% to 75% =✓✓, below 75% =✓. Note that Navy drastically reduced the information it discloses in 2009-10, and again in 2014-15 when they ceased disclosing achieve days and hours.

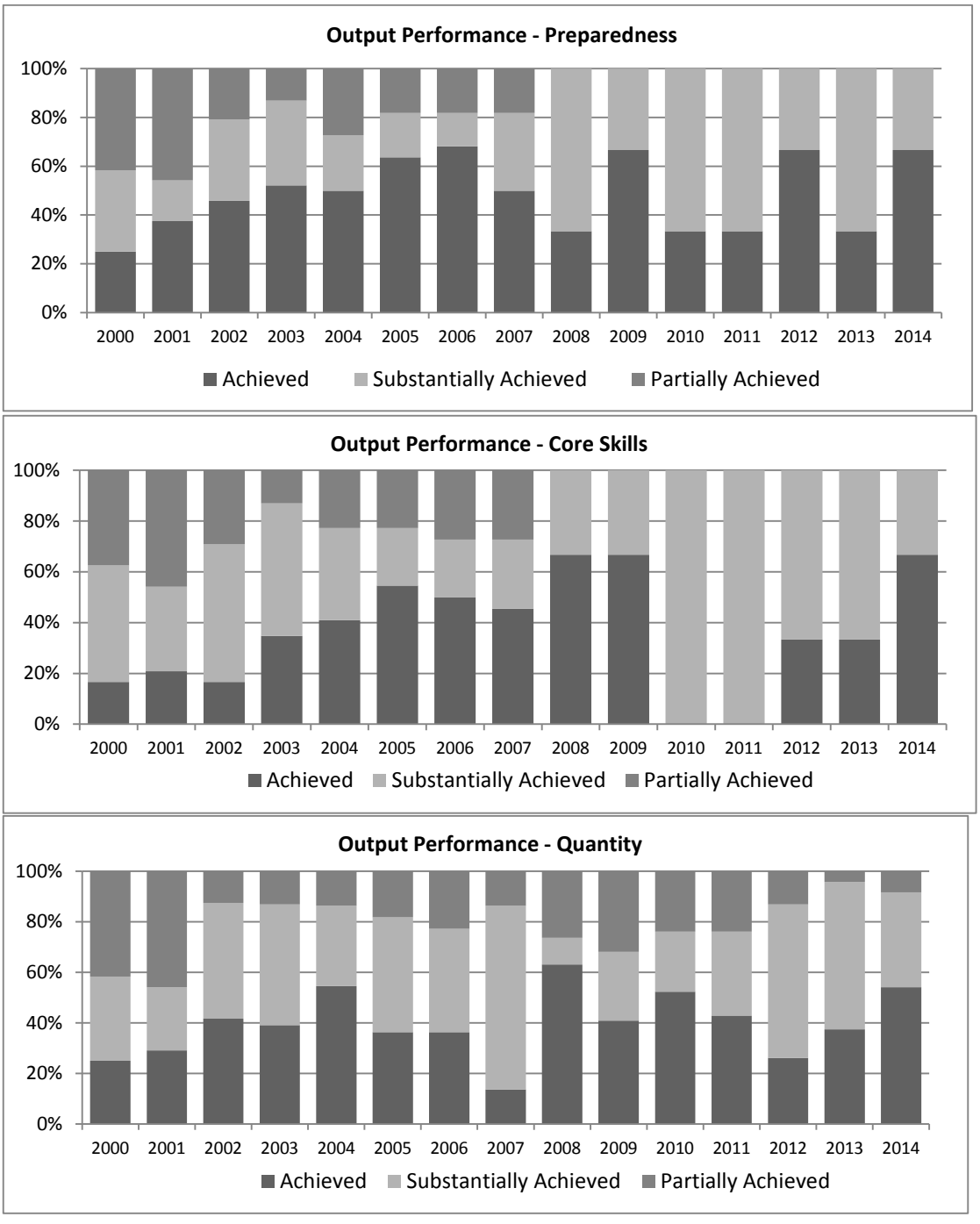
Table 2.6.4: Capability quantity planned (PBS) and delivered (Annual Report) 2014-15

Output	Planned	Reported	Percentage	Assessment
Navy fleets				
Frigates (FFG)	2,986 days	2,986 days	100%	✓✓✓
Frigates (FFH)				
Submarines				
Oil Tanker	1,508 days	1,508 days	100%	✓✓✓
Replenishment Ship				
Amphibious Ships				
Heavy Landing Ship				
Landing Craft Heavy				
Coastal Mine Hunters	4,837 days	undisclosed	-	✓✓
Auxiliary Mine Sweepers				
Patrol Boats				
Hydrographic Ships	2,810 days	undisclosed	-	✓✓✓
Survey Motor Launches				
Met Centre/Support				
Seahawks	2,800 hours	2,800 hours	100%	✓✓✓
Seahawks-Romeo	- hours	1,700 hours	-	-
Squirrels	3,600 hours	3,600 hours	100%	✓✓✓
LADS aircraft	980 hours	980 hours	100%	✓✓✓
Army fleets				
Black Hawk	5,090 hours	5,090 hours	100%	✓✓✓
Chinook	1,700 hours	1,700 hours	100%	✓✓✓
Kiowa	6,150 hours	5,043 hours	82%	✓✓
Armed Recon Helicopter	4,726 hours	3,675 hours	78%	✓✓
MH-90	5,400 hours	5,308 hours	98%	✓✓✓
Air Force fleets				
F/A-18 Hornets	13,000 hours	13,000 hours	100%	✓✓✓
F/A-18 Super Hornet	5,050 hours	7,050 hours	72%	✓
F-35 Lightning II	-	201 hours		
Lead-in fighter	7,500 hours	6,612 hours	88%	✓✓
KC-30A (refuelling)	3,100 hours	4,100 hours	132%	✓✓✓
C-130 transports	7,350 hours	7,350 hours	100%	✓✓✓
AEW&C	3,600 hours	3,000 hours	83%	✓✓
C-27J Spartan	1,000 hours	196 hours	20%	✓
C-17 Transports	5,200 hours	6,000 hours	115%	✓✓✓
AP-3C Maritime Patrol	7,900 hours	7,300 hours	92%	✓✓
B737 BJ VIP Transport	1,600 hours	1,434 hours	90%	✓✓
PC-9 aircraft	17,852 hours	15,098 hours	85%	✓✓
B300 King Air 350	11,400 hours	10,000 hours	88%	✓✓

Source: 2014-15 PBS and Annual Report

Figures 2.6.3 plots the delivery of Defence capability programs (previously outputs) as reported in the Defence annual reports between 2000-01 and 2014-15. Some care needs to be exercised in comparing the results from 2008-09 onwards with that from earlier years due to the substantial reduction in detail that arose in that year. The move from twenty-two capability sub-programs to a mere three (one for each Service) inevitably results in a reporting regime constrained to a smaller number of possible outcomes for preparedness and core skills. Nonetheless, note the recent improvement in the maintenance of core skills.

Figure 2.6.3: Output performance



Source: 2000-01 to 2014-15 DAR

Program Summaries

To augment the information provided in the PBS, we've prepared short program summaries containing background and historical performance information. In doing so, we've sought to complement, rather than reproduce, the material in the PBS. Given the acute paucity of information provided in the PBS on what is to be delivered at the sub-program level, only a limited picture is possible. Information has been drawn from a variety of sources, including the Defence website.

Because the program structure more or less aligns with the actual organisational structure of Defence, we've sketched out the key elements in each of the programs. However, because of the interim state of Defence's programs and organisational structure, there's not been time to update the organisational diagrams this year. Indeed, in many instances the structure is pending the implementation plan for the recommendations of the First Principles Review. Thus, we've largely retained the presentation from last year, pending the finalisation of the new structure.

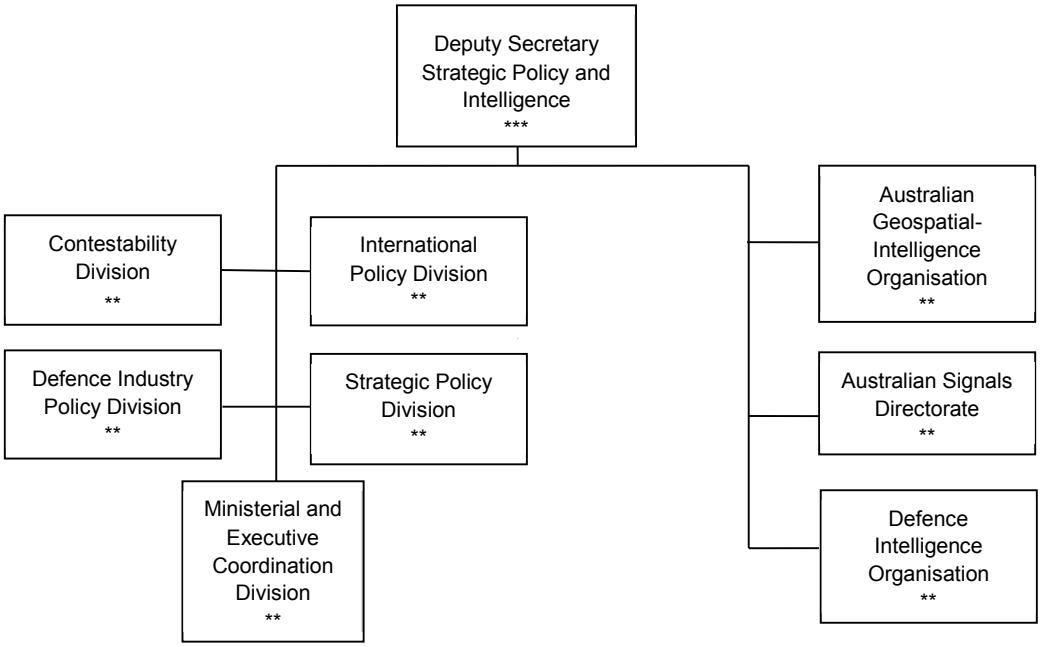
For those readers not familiar with the senior military and civilian levels, Table 2.6.5 details the correspondence of executive levels across the three services and civilian Senior Executive Service (SES).

Table 2.6.5: Executive comparison

Civilian	Navy	Army	Air Force	Star Rank
Assistant Secretary (SES-1)	Commodore	Brigadier	Air Commodore	*
First Assistant Secretary (SES-2)	Rear Admiral	Major General	Air Vice-Marshal	**
Deputy Secretary (SES-3)	Vice Admiral	Lt General	Air Marshal	***
Secretary	Admiral	General	Chief Air Marshal	****

Program 1.1 – Strategic Policy and Intelligence

Department outputs 2016-17: $867 million



Deputy Secretary Strategy manages five divisions and is responsible for a further three intelligence organisations (see below).

International Policy Division provides policy advice on international issues (including current and prospective operations) and manages Defence's day-to-day international relationships. Responsibilities include the oversight of Defence's overseas representatives in 33 countries around the world (mostly within Australian diplomatic missions), with cross-accreditations to a further 31 countries.

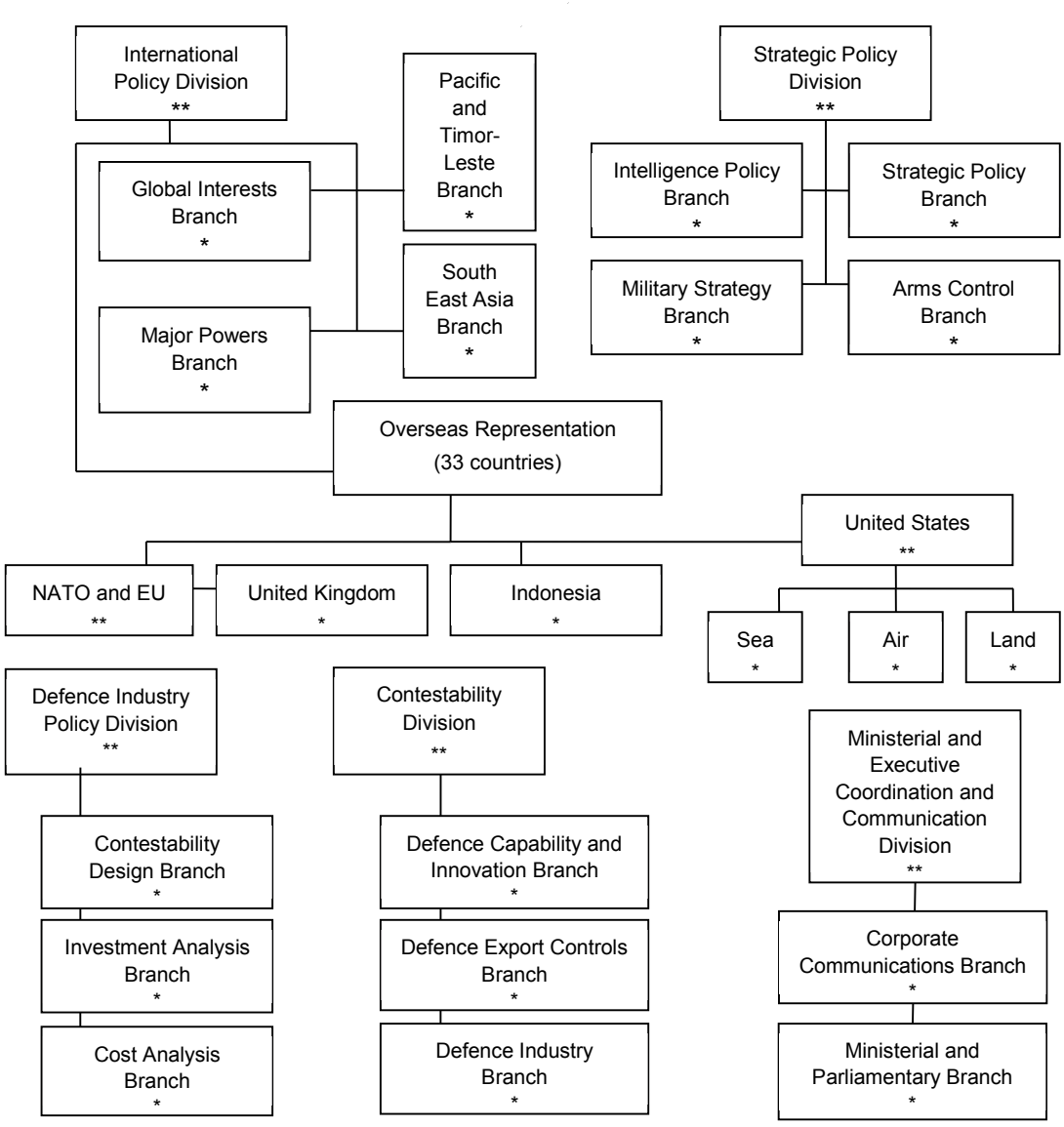
Strategic Policy Division provides strategic policy guidance to support Government decision-making. This guidance supports decisions in relation to Defence International Relationships and Defence's strategic policy, posture and capability development. The Division also manages Australia's arms and export controls. Responsibilities include improved collaboration between intelligence and policy functions across the Department; policy, regulation and compliance for various international conventions and agreements; and managing access by non-Defence-users to the Woomera Prohibited Area.

Ministerial and Executive Coordination and Communication Division supports the Defence organisation and its Ministers, other government agencies, Parliament and the community. MECC is comprised of two branches; Corporate Communication and Ministerial and Parliamentary. The Corporate Communication Branch focuses on day-to-day media operations across Defence; engagement with the media, providing media and public affairs support to ministers, senior Defence leaders and Defence Services and Groups; corporate events; collation and distribution of Defence imagery and video; and producing the Navy, Army and Air Force newspapers and the Defence Magazine. The Ministerial and Parliamentary Branch coordinates and delivers accurate ministerial and parliamentary advice

and products, including: Senate Estimates briefs, responses to Questions on Notice and parliamentary reports, Cabinet submissions, and other parliamentary products, for the Minister, Minister for Defence Materiel, Assistant Minister, Secretary and Chief of the Defence Force and areas within Defence.

Defence Industry Policy Division was established on 14 December 2015. The division was created to inform and improve Defence's approach to industry engagement and innovation. It's responsible for facilitating the implementation of the Government's Defence industry policy, the creation of a strategy-led program of industry engagement and innovation, and managing Defence export controls.

Contestability Division is staffed by civilian and military personnel and provides independent analysis and contestability of capability proposals within the Integrated Investment Program as its core function. The Division is currently divided into three core branches; Contestability Design, Investment Analysis and Cost Analysis.



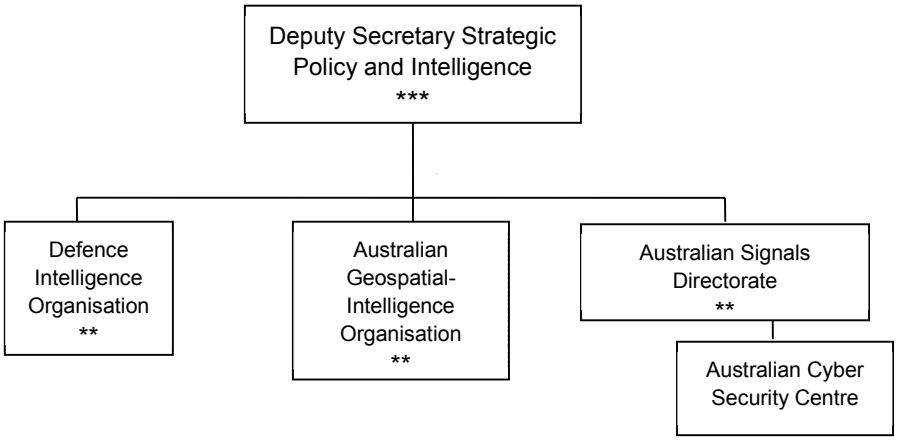
The Strategic Policy and Intelligence Group includes the Defence Intelligence Organisation (DIO), the Australian Geospatial-Intelligence Organisation (AGO) and the Australian Signals Directorate (ASD). The SP&I Group is responsible for the management and administration of the intelligence agencies, which are also part of the Australian Intelligence Community (AIC). The AIC has wider government reporting and oversight mechanisms. The Defence-based agencies (along with the non-Defence agencies ASIS, ASIO and ONA) contribute to the AIC's collection and assessment of intelligence in support of Australia's strategic and national interests, including support to ADF operations.

The Australian Signal Directorate (ASD) provides foreign signals intelligence, to the Australian Government to support military and strategic decision-making.

ASD also provides information security advice and services, predominantly to Commonwealth and state government agencies, as well as working closely with industry to develop and deploy secure cryptographic products. The Australian Cyber Security Centre is a whole-of-government organisation that ASD supports.

Australian Geospatial-Intelligence Organisation (AGO) includes an HQ at Russell Offices in Canberra and the Geospatial Analysis Centre in Bendigo. AGO obtains and produces geospatial intelligence about the capabilities, intentions or activities of people or organisations outside Australia. It supports ADF operations, targeting and training, as well as Commonwealth and state authorities in carrying out national security functions. AGO also sets technical standards for imagery and geospatial products, and provides Commonwealth and state authorities, and other bodies approved by the Minister, with non-intelligence products, technical assistance and support to carry out their emergency response functions.

Defence Intelligence Organisation (DIO) at Russell Offices in Canberra provides all-source intelligence assessments focusing on global and regional security trends, foreign military capabilities, transnational terrorism, defence economics, and science and technologies with military applications. DIO produces assessments and advice on current and emerging threats to Australia's security and strategic environment in support of Defence and whole-of-government decision-making—including the planning and conduct of ADF operations.



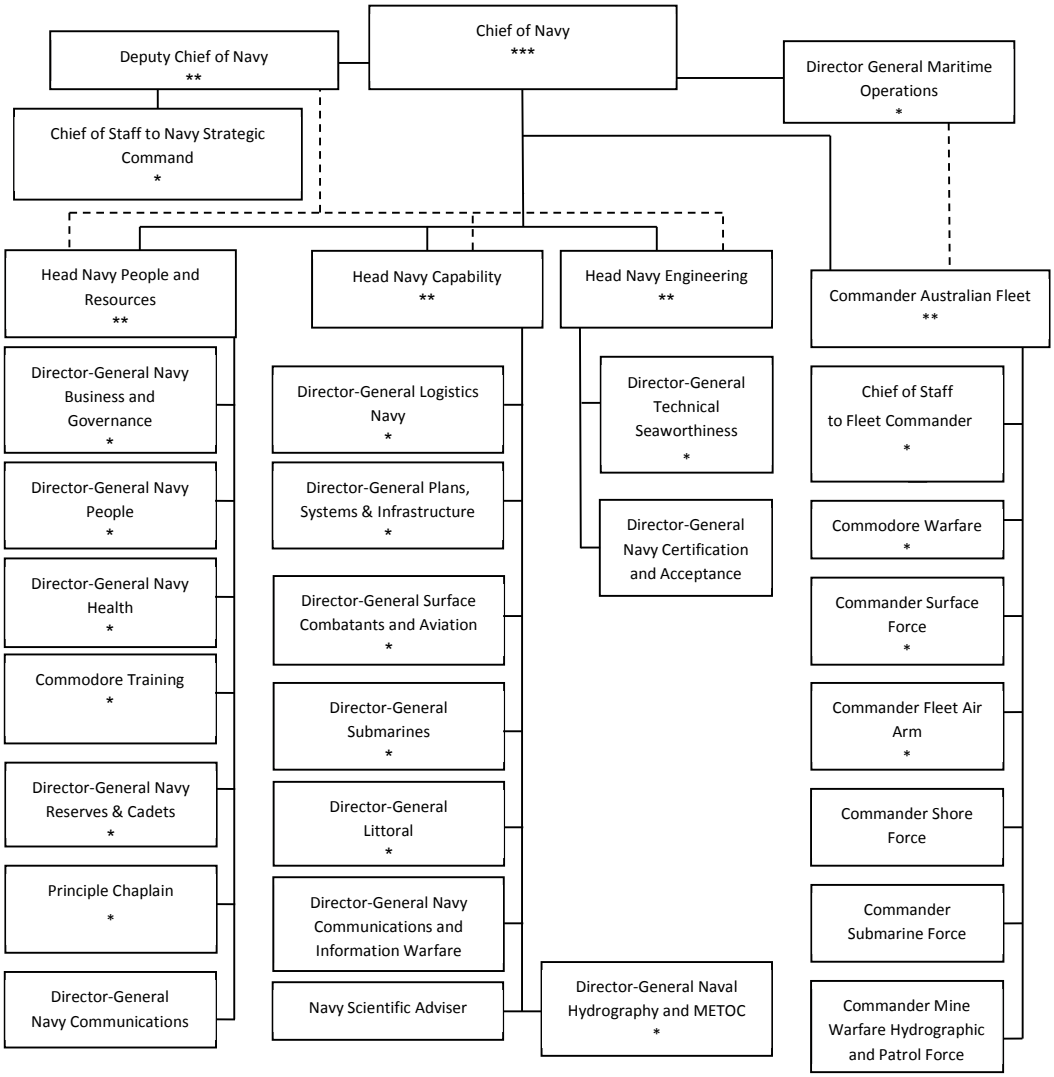
Program 1.2 – Navy Capabilities

Department outputs 2016-17: $5,920 million

The Navy's organisational structure comprises Navy Strategic Command and the subordinate Fleet Command. Strategic Command is responsible for capability development and management, plans, personnel, training, administration and technical regulation, while Fleet Command is responsible for the day-to-day operation of the fleet and the provision of competent forces to support joint operations.

Structure and performance

The structure and performance of the Navy is set out below and overleaf. Because of the reduction in disclosure, it has not been possible to provide as much detail as in the past.



Major combatants

Surface combatants

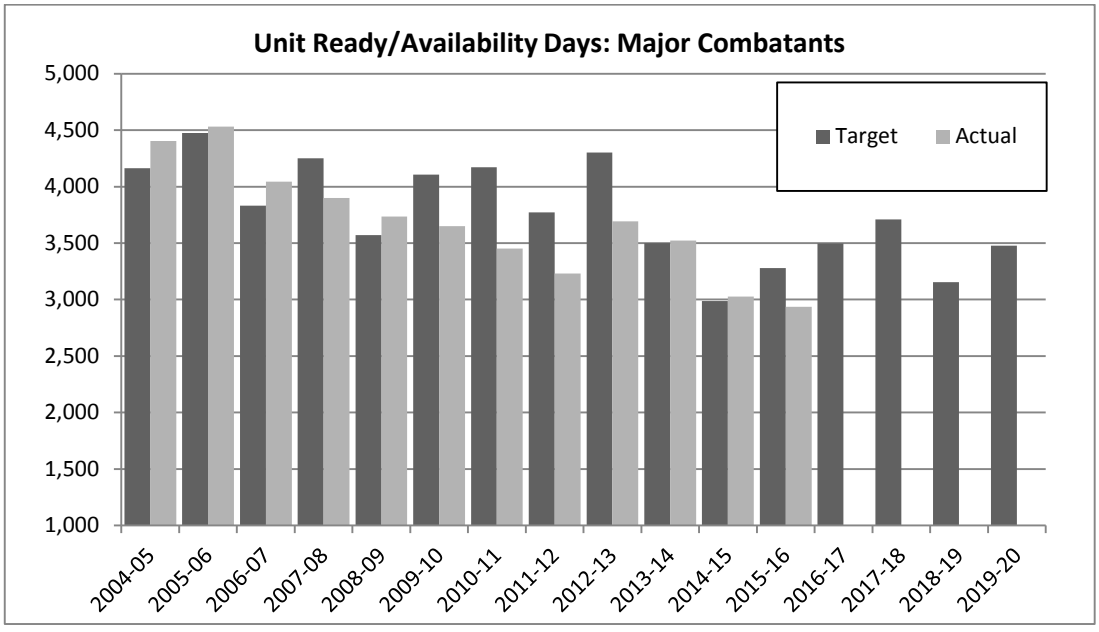
The Navy has three 1980s Adelaide class (US Oliver Hazard Perry class) Guided missile frigates (FFG) plus eight newer German-designed and Australian-built Anzac class frigates (FFH). Both classes carry Harpoon anti-shipping missiles, anti-submarine torpedoes and Evolved Sea Sparrow surface-to-air missiles. Only the FFGs are equipped with the more capable Standard SM-2 surface-to-air missile. Both classes of vessel can embark a Seahawk anti-submarine warfare helicopter.

The FFH are progressively being fitted with a range of new systems including an anti-ship missile defence (ASMD) suite. In addition, three new Air Warfare Destroyers are presently under construction. Three FFG have been withdrawn from operational service and a further vessel was planned to depart in March 2017. Unless FFG are extended in service, there will be a capability gap due to delays in the AWD program.

Submarines

The RAN has six Collins Class submarines. 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 delay in the introduction of the Collins class into service as the Oberon class left service disrupted both submariner training and the retention of skilled personnel. The resulting shortage of submariners reduced the delivery of capability. Longer than expected maintenance periods coupled with mechanical problems further compromised the availability of boats. Following the Coles review of Collins sustainment, steps have been taken to improve vessel availability with encouraging early success. Moreover, Navy has had some success in growing the numbers of trained submariners, though it has recently been necessary to increase retention incentives for submariners.



Minor combatants

Patrol boats

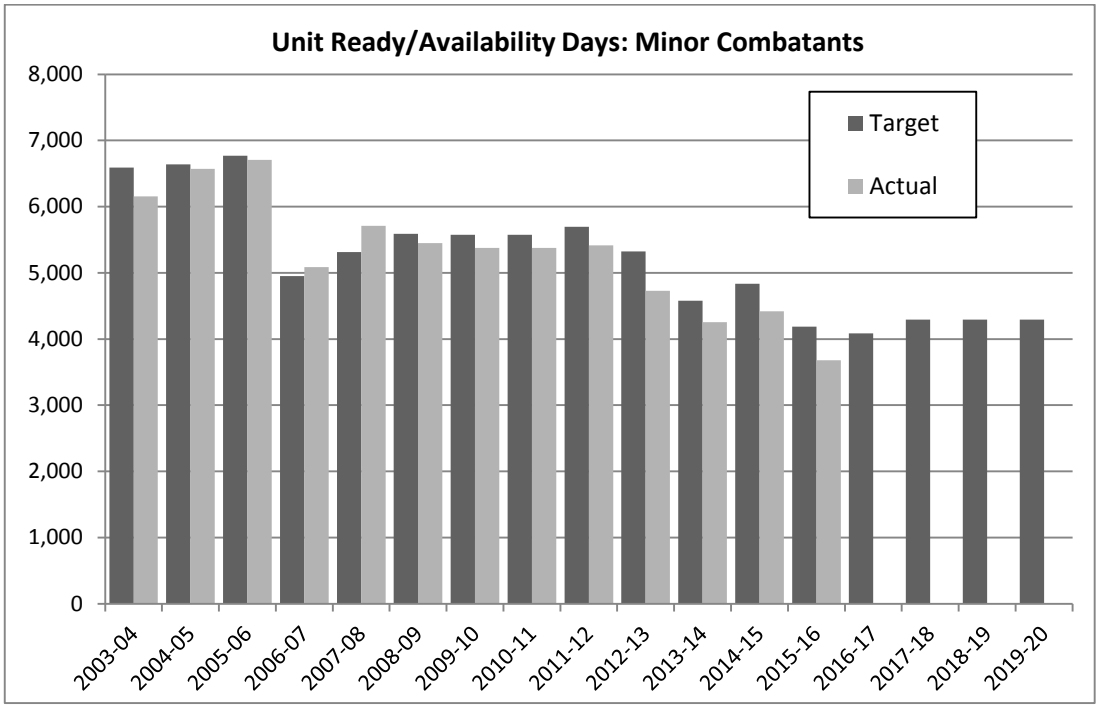
The Navy has thirteen Armidale Class Patrol Boats (ACPB). There were originally fourteen, but one vessel was decommissioned in December 2014. Since mid-2015, Navy has also operated two Cape Class Patrol Boats (CCPB). These vessels are mainly tasked in support of the civil surveillance program through Border Protection Command. They can also be used for the insertion and extraction of army patrols on the coast, including Special Forces.

Through an innovative program, the Navy initially multi-crewed the Armidale class vessels, in order to reduce the burden on sailors and their families while maintaining a high utilisation of the assets. Under the original scheme, there were 21 crews spread across 14 vessels. In recent times maintenance issues have challenged the fleet. ACPB returned to a single crewing model in August 2015 and the CCPB are operated with a double crewing model (two crews per boat). The remaining ACPB crews were utilised to develop a patrol boat support squadron.

Mine warfare vessels

The Navy has 6 Huon Class Coastal Mine Hunters (MHC). These 720 tonnes displacement vessels have glass-reinforced plastic hulled, and were Italian-designed and built in Australia in the late 1990's. The MHC employ sonar to search for mines, which can then be destroyed using a remote-controlled mine disposal vehicle or by other means. There are also two Clearance Diving Teams, one on each coast, at Sydney and Perth, capable of clearing mines and other ordinance, clandestine survey and obstacle clearance, and battle damage repairs.

The health of the RAN minesweeping capability is under question. Training was interrupted by the use of two of the Huon class vessels for border patrol duties up until 2015, and since 2009 two of the Huon class have been placed in extended readiness. It's been estimated that it would take five years to get the full fleet operational again.



Amphibious and afloat support

Amphibious lift

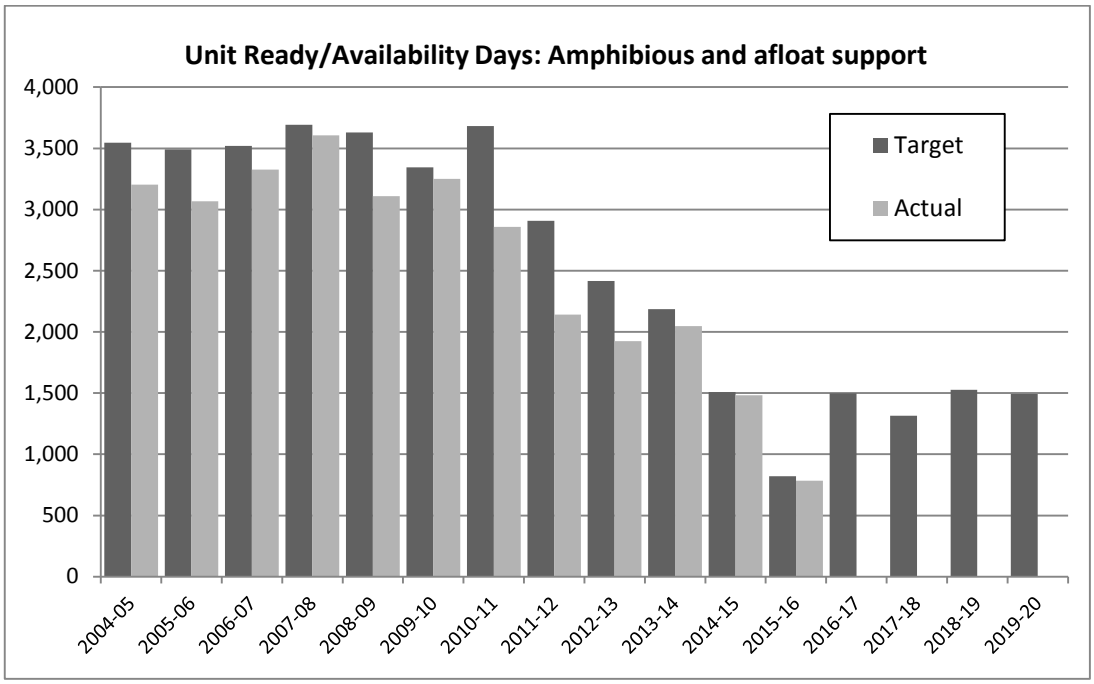
Until 2012, the fleet included two Kanimbla Class Landing Platforms Amphibious (LPA), HMAS *Manoora* and HMAS *Kanimbla,* refurbished in the mid-to-late 1990's from two second-hand 1970's US Newport Class Landing Ship Tank vessels, and one Heavy Landing Ship (HLS), HMAS *Tobruk*, a 1980's UK-designed and Australian-built vessel. In February 2011, the amphibious fleet suffered a critical and unexpected failure of availability and HMAS *Manoora* and HMAS *Kanimbla* were subsequently decommissioned. Amphibious heavy lift was maintained by acquiring a second-hand Landing Ship Dock (LSD) from the United Kingdom, HMAS *Choules*. *Tobruk* was withdrawn from service in June 2015.

Two new large amphibious (Landing Helicopter Dock)—HMAS *Canberra* and HMAS *Adelaide*—are now in commission. These 27,000 tonnes vessels carry 1,000 troops plus helicopters and vehicles.

Afloat support

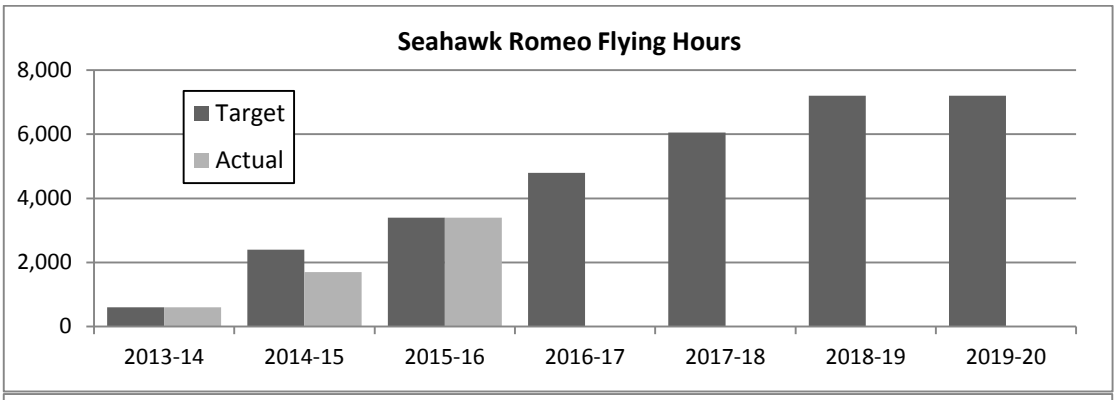
The afloat support force refuels and re-supplies Navy vessels and embarked helicopters at sea and provides logistics support to land operations. The fleet comprises two vessels: HMAS *Sirius* is a South Korean-built 46,017 tonne full displacement commercial vessel which was refitted to Navy specifications as an Auxiliary Tanker (AO) and HMAS *Success* is a 1980s French-designed, Australian-built 17,900 tonnes full displacement Auxiliary Replenishment Tanker (AOR).

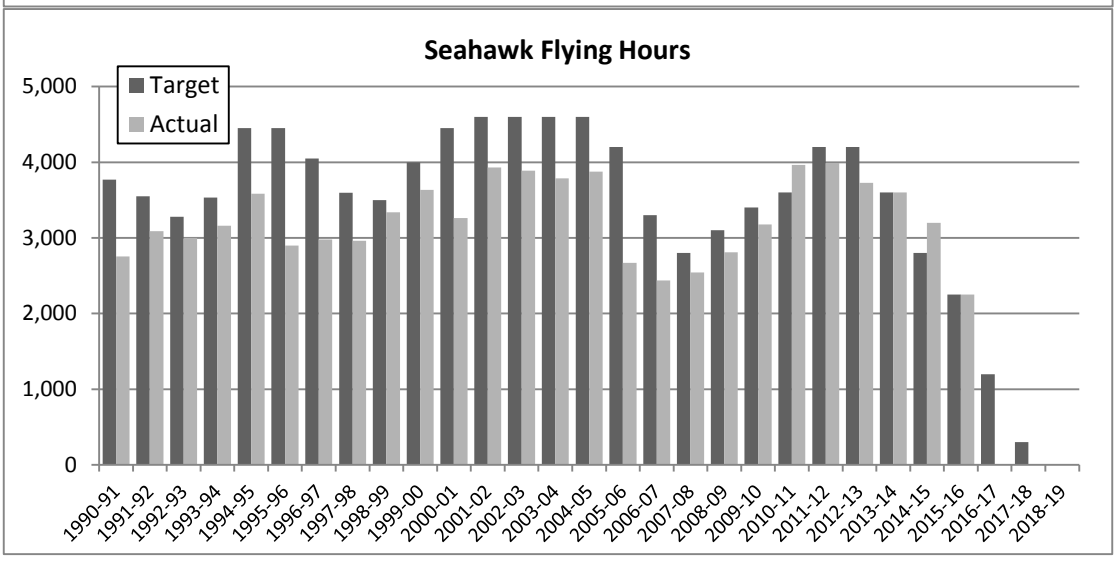
Although HMAS *Sirius* has been touted as an example of how commercial-off-the-shelf equipment can meet ADF requirements quickly and at reduced cost, the ship does not have the full range of capabilities and operational flexibility of a purpose built ship.



Naval aviation

The RAN operates sixteen 1980s US-designed S-70B-2 Seahawk helicopters that can be embarked on the FFH and FFG class frigates. They are configured for anti-submarine and surface search/targeting. Twenty-four new Seahawk MH-60R aircraft are in the process of entering service to replace both the B-model Seahawk and the capability sought from the cancelled Super-Seasprite program. Six MRH-90 aircraft (reported under Army outputs) have replaced the retired UK-built Sea King helicopters as fleet utility aircraft. Thirteen Squirrel light helicopters are used for training and short-term operations at sea.





Hydrographic, meteorological & oceanographic fleet

The Navy produces maritime military geospatial information for the ADF and undertakes hydrographic surveying and charting for civil use. The hydrographic component is supported by the Australian Hydrographic Office (AHO) in Wollongong, NSW, and also comprises two Deployable Geospatial Support Teams (DGST). As recommended to Defence under the First Principles Review, the AHO is in the process of consolidation within the Australian Geospatial Intelligence Organisation. The fleet includes:

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

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

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

Program 1.3 – Army Capabilities

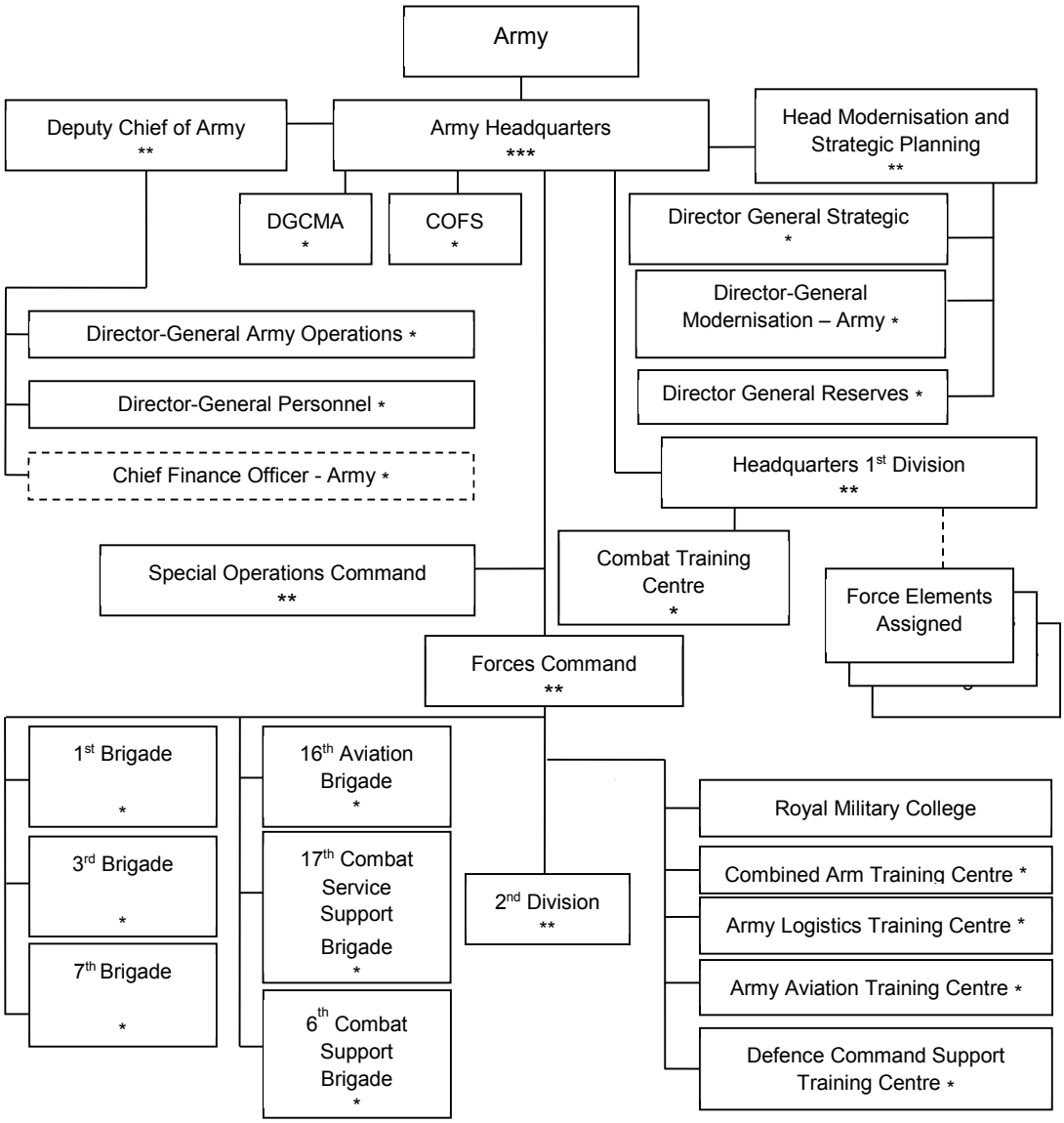
Department outputs 2016-17: $7,239 million

The Army is structured around three functional commands. The three functional commands and their roles are as follows:

Special Operations Command is responsible to force generate and command Army's Special Operations Forces.

Forces Command is responsible for the force generation of Army individual and collective conventional capabilities based on Foundation Warfighting skills.

1st Division focuses on the force preparation of conventional Army force elements for specified operations and contingencies. It also forms the basis of the Deployable Joint Force Headquarters, capable of providing Command and Control to Australian and coalition forces at short notice.



Headquarters 1st Division

Headquarters 1st Division is based in Brisbane, and prepares and certifies Army conventional force elements, as assigned by Chief of Army, in order to meet the specific operational and contingency requirements directed by Chief Joint Operations.

Headquarters 1st Division prepares and certifies forces for operations and commands a number of supporting specialist units. These are the 1st Signals Regiment (Brisbane), the Combat Training Centre (Townsville), the 39th Operational Support Battalion (Randwick, Sydney) and the 2nd/30th Training Group (Butterworth, Malaysia).

Special Operations Command

The Special Air Services Regiment (SASR) in Western Australia provides special recovery (including domestic and overseas counter-terrorism by the west coast Tactical Assault Group (TAG)), long-range reconnaissance and offensive operations. The 2nd Commando Regiment (2 Cdo Regt) in Sydney (including east coast TAG) and the 1st Commando Regiment (a reserve unit split between Sydney and Melbourne) are the Army's two commando regiments. Commando roles include special recovery and land, sea- and air-borne offensive raids. There is also a Special Operations Engineer Regiment based in Sydney, a Special Forces Logistics Squadron in Sydney, a Special Forces Training Centre in Sydney and Parachute Training School in Nowra.

Forces Command

1st, 3rd and 7th Brigades Forces Command includes three combat brigades. Each Brigade contains two Infantry Battalions of the Royal Australian Regiment (RAR) and an armoured cavalry regiment equipped with M113AS4 armoured personnel carriers and Australian modified ASLAV light armoured vehicles. Two of the three armoured cavalry regiments also include the reconditioned US-made M1A1 Abrams tank. Each Brigade also contains an Artillery Regiment equipped with towed M777 155mm Lightweight Towed Howitzers. In addition, each Brigade includes command and control, combat support and combat service support elements based in a Brigade Headquarters, Signals Regiment, Combat Engineer Regiment and Combat Service Support Battalion.

1st Brigade The 1st Brigade is headquartered in Darwin and has units located in both Darwin and Adelaide. The 1st Armoured Regiment is the Brigade's armoured cavalry regiment. The 5th Battalion, The Royal Australian Regiment is based in Darwin while the 7th Battalion, The Royal Australian Regiment is based in Adelaide.

3rd Brigade The 3rd Brigade is headquartered in Townsville. The 2nd Cavalry Regiment is the Brigade's armoured cavalry regiment. In addition to its two standard infantry battalions (1st and 3rd Battalions, The Royal Australian Regiment), 3rd Brigade also commands the 2nd Battalion, which is Army's dedicated unit supporting the ADF amphibious capability development.

7th Brigade The 7th Brigade is headquartered in Brisbane. The 2nd/14th Light Horse Regiment (Queensland Mounted Infantry) is the Brigade's armoured cavalry regiment. Its two standard infantry battalions are 6th and 8th/9th Battalion, The Royal Australian Regiment.

6th Combat Support Brigade

Headquartered at Victoria Barracks in Sydney, the 6th Combat Support Brigade commands a diverse collection of units including:

- 1st Intelligence Battalion (Brisbane)
- 16th Air Land Regiment (Woodside SA) equipped with the Swedish RBS 70 shoulder launched, optically guided, surface-to-air missiles, as well as Giraffe sense and warn Agile Multi-Beam (GAMB) radars.
- 20th Surveillance and Target Acquisition Regiment (Brisbane)
- 7th Signals Regiment - Electronic Warfare (Carbalah, Queensland)
- 19th Chief Engineer Works (Randwick Barracks)
- 6th Engineer Support Regiment (Brisbane) comprising:
    - 17th Construction Squadron (Sydney)
    - 21st Construction Squadron (Brisbane)
    - 20th Explosive Ordnance Disposal Squadron (Enoggera, Queensland).

17th Combat Support Brigade

The 17th Brigade, headquartered at Randwick Barracks in Sydney, is a brigade-sized grouping of reserve, integrated and permanent Army units which provide supply, fuel, communications, transport (surface vehicle and small watercraft), repair, and health and psychology capabilities. The Brigade comprises of the following units:

- 9th Force Support Battalion (Amberley, Queensland)
- 10th Force Support Battalion (Townsville)
- 2nd Force Support Battalion (reserve - Glenorchy, Tasmania)
- 1st Close Health Battalion (headquartered in Sydney)
- 2nd General Health Battalion (Brisbane)
- 3rd Health Support Battalion (reserve - headquartered in Adelaide)
- 1st Psychology Unit (Sydney).
- 1st Military Police Battalion (Brisbane)

2nd Division

The 2nd Division commands all those Reserve units not integrated into other formations. It is structured around six infantry brigades, each of which has a HQ, two/three infantry battalions, a cavalry unit in some cases, and combat and combat service support units. These brigades are:

- 4th Brigade (Melbourne and Victoria)
- 5th Brigades (Sydney and southern New South Wales)
- 8th Brigade (Sydney and northern New South Wales)

- 9th Brigade (South Australia and Tasmania)
- 11th Brigade (Queensland, south of Cairns)
- 13th Brigade (southern Western Australia and Perth).

The Division also includes three regional surveillance units predominately manned by Reserve personnel. These are:

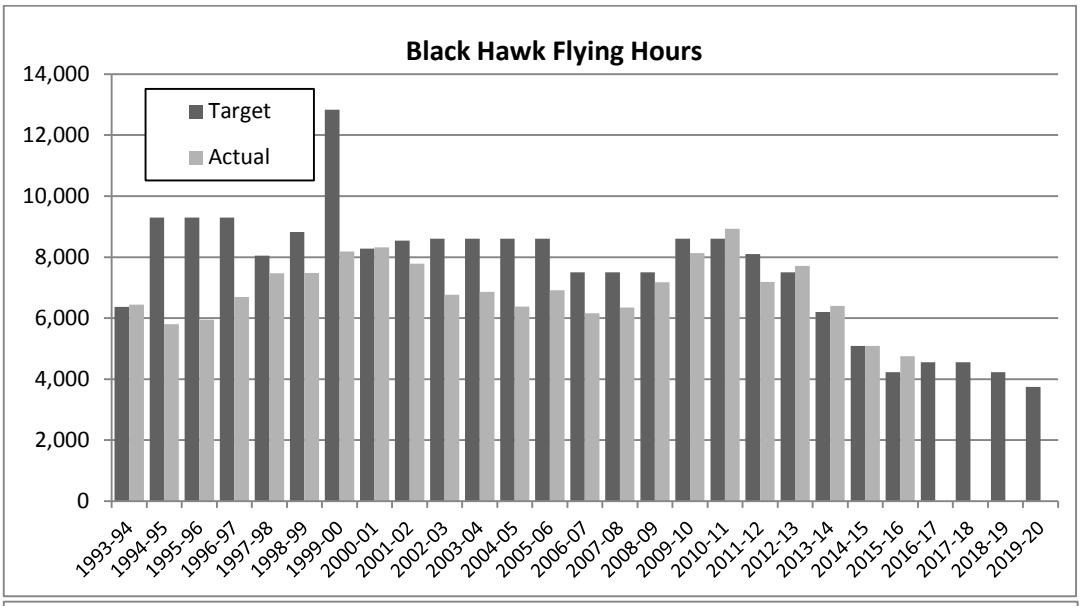
- 51st Battalion Far North Queensland Regiment responsible for conducting reconnaissance and surveillance over 640,000 square km in Far North Queensland and the Gulf country.
- The Pilbara Regiment, with 1.3 million square km to cover from the Kimberley boundary in the north, to Shark Bay in the south, then east to the NT/SA/WA border.
- North West Mobile Force (NORFORCE), 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.

16th Aviation Brigade

Army aviation support is generated by 16th Aviation Brigade, headquartered in Brisbane. The Brigade commands the 1st Aviation Regiment (Tiger) in Darwin, the 5th Aviation Regiment (MRH-90 Taipan and CH-47F Chinook) in Townsville, and the 6th Aviation Regiment (Black Hawk, MRH-90 Taipan and CH-47F Chinook) in Sydney. 16th Aviation Brigade provides the following capability in support of Joint Land Combat and Amphibious Operations: Reconnaissance, Escort, Attack, Airmobile Operations, Aero Medical Evacuation, Combat Service Support, and support to Special Operations.

22 Tiger Armed Reconnaissance Helicopters, and 47 MRH-90 Taipan Troop-Lift Helicopters (40 for Army and 7 for Navy), are being introduced into service with Full Operational Capability expected in 2016 and 2021 respectively, while the Black Hawk fleet will be retired commensurate with MRH-90 introduction. The CH-47D Medium-Lift Helicopter fleet is in the process of replacement by ten CH-47F Chinooks over the period 2015-2019 under project AIR 9000 Phase 5C and LAND 4502 Phase 1.

Current assets include: 34 Black Hawk troop-lift helicopters, 29 Kiowa light observation and training helicopters, 9 Chinook medium-lift helicopters. All these helicopters are of US design. There are also 22 European-designed Tiger Armed Reconnaissance Helicopters (ARH) and 47 MRH-90 troop-lift helicopters are being progressively brought into service.


Black Hawk Flying Hours
Target
Actual
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
1993-94
1994-95
1995-96
1996-97
1997-98
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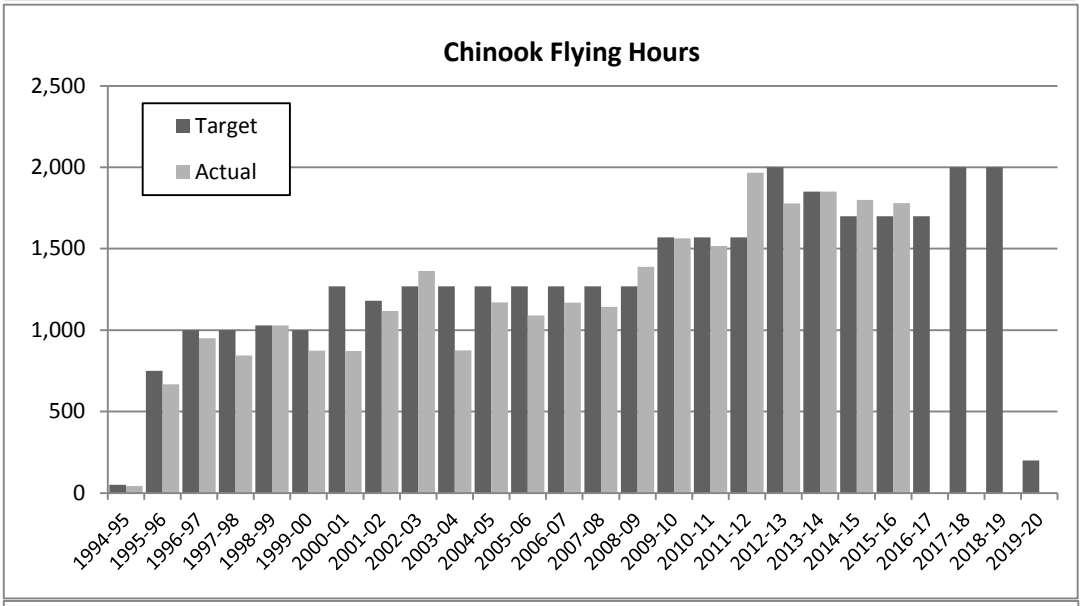
Chinook Flying Hours
Target
Actual
2,500
2,000
1,500
1,000
500
0
1994-95
1995-96
1996-97
1997-98
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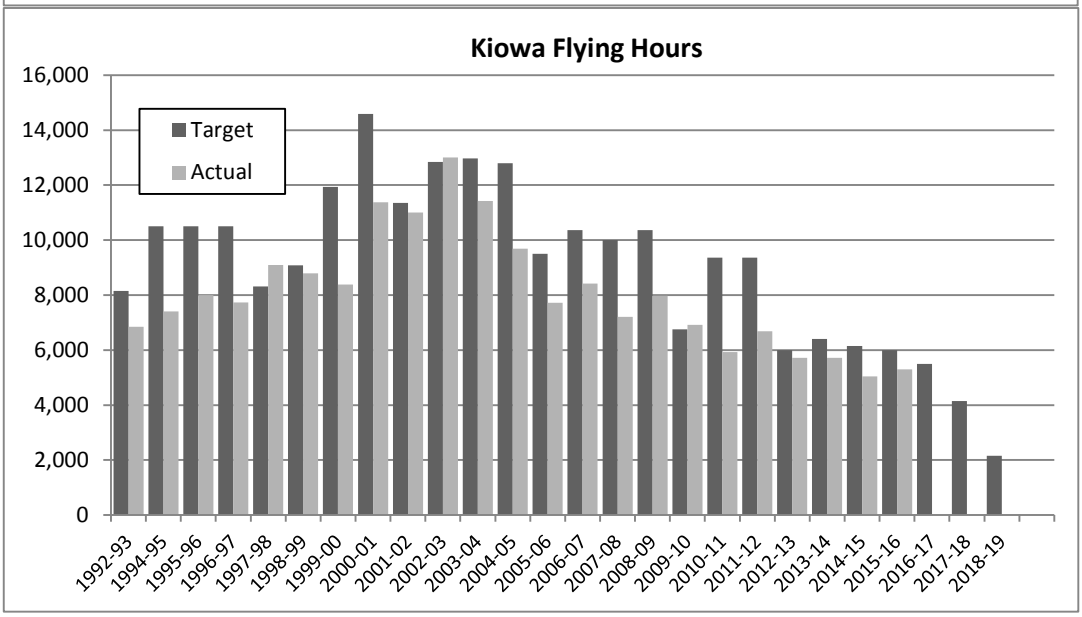
Kiowa Flying Hours
Target
Actual
16,000
14,000
12,000
10,000
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6,000
4,000
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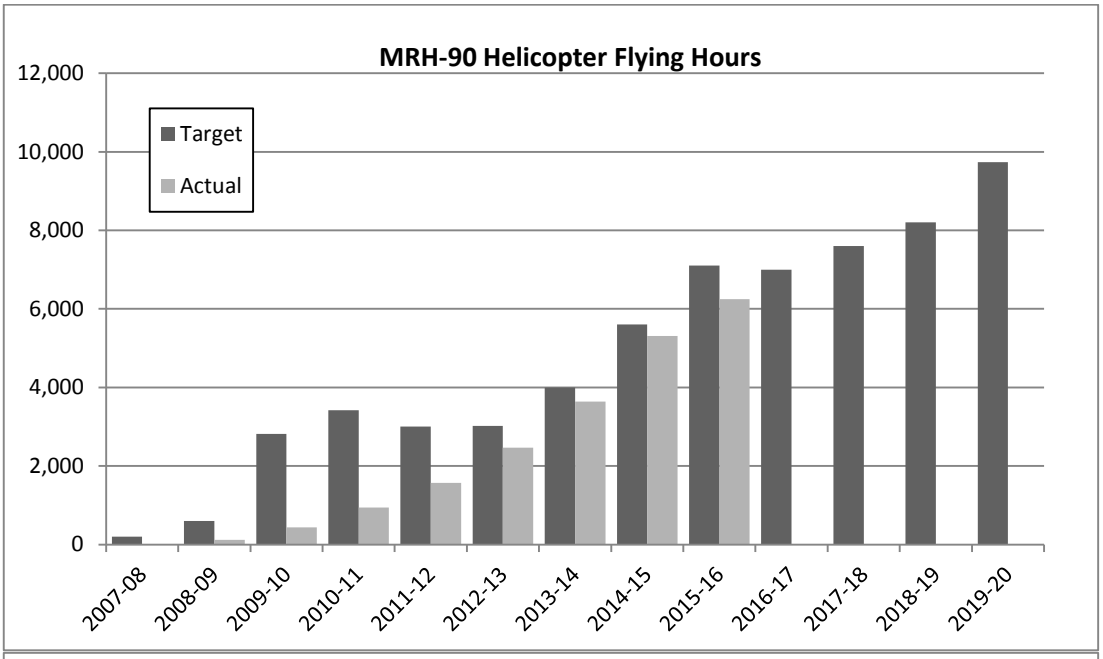
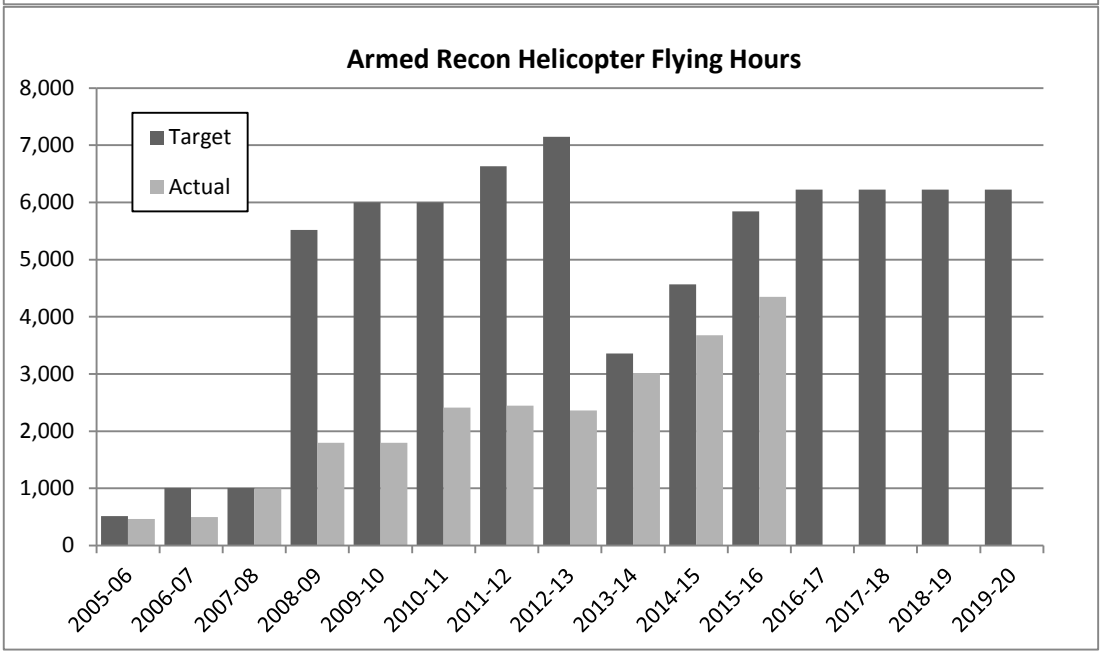




Royal Military College of Australia (RMC-A)

The Royal Military College of Australia is headquartered in Canberra and is responsible for the delivery of individual foundation training for Officers and Soldiers, including the first Appointment Course, Recruit Training and Promotion courses. RMC-A includes the Royal Military College – Duntroon (in Canberra), 1st Recruit Training Battalion (Wagga Wagga) and other schools with presence in all states and territories.

Army Logistic Training Centre (ALTC)

The Army Logistic Training Centre (ALTC) is principally centred in Albury-Wodonga, however, conducts training in Darwin, Townsville, Brisbane, Sydney and Puckapunyal through two training wings and four On-the-Job Training cells. ALTC delivers training in logistics, ordnance, road and maritime transport, medical, health and electrical and mechanical engineering. ALTC consists of the following schools:

- Army School of Logistics Operations (Albury-Wodonga)
- Army School of Ordnance (Albury-Wodonga)
- Army School of Transport (Townsville and Puckapunyal)
- Army School of Health (Albury-Wodonga)
- Army School of Electrical and Mechanical Engineers (Albury-Wodonga).

Combined Arms Training Centre (CATC)
The Combined Arms Training Centre is headquartered at Puckapunyal and is the Australian Army's centre of excellence for individual combined arms training. The force structure includes:

- School of Armour (Puckapunyal)
- School of Artillery (Puckapunyal)
- School of Infantry (Singleton)
- School of Military Engineering (Sydney).

Army Aviation Training Centre (AAVNTC)
The Army Aviation Training Centre is located in Oakey and is responsible for the effective instruction of Pilot, Aircrewmen and Groundcrewmen courses as well as the training of Aircraft Technicians for employment within Army Aviation. AAVNTC also contributes to the development of doctrine and materiel plans for Army Aviation. The training centre includes:

- Army Helicopter School
- RAEME Aircraft Maintenance School
- School of Army Aviation.

Defence Command Support Training Centre (DCSTC)
The Defence Command Support Training Centre is headquartered at Simpson Barracks in Melbourne and is responsible for the conduct of Intelligence, Signals, Police and Music training, training design and trade management for members of the Australian Defence Force. The training centre also provides training for selected members of the Australian Public Service and nominated students from Defence forces of other nations. DCSTC comprises the following Units:

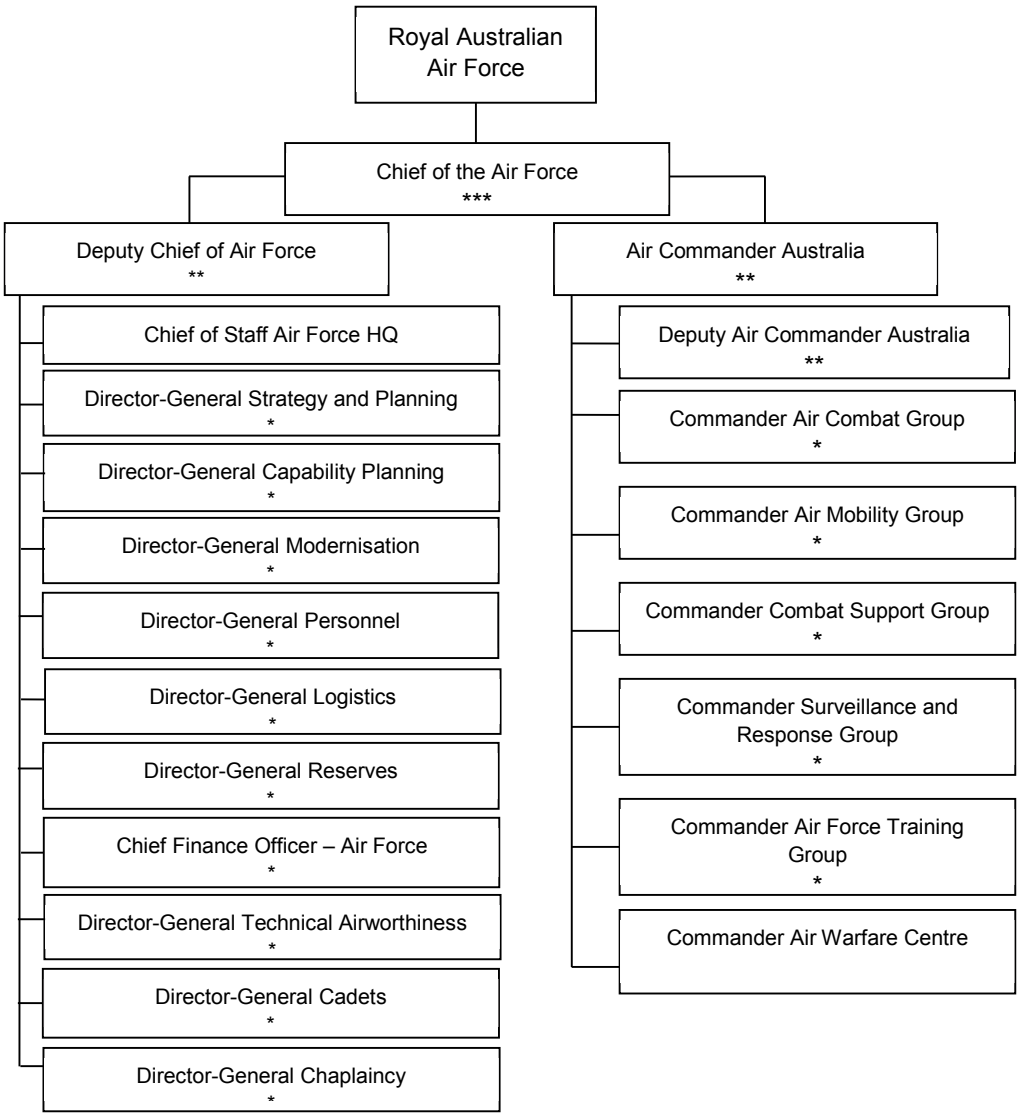
- Defence Force School of Intelligence (Canungra)
- Defence Force School of Music (Melbourne)
- Defence Force School of Signals (Melbourne)
- Defence Force School of Police (Sydney).

Program 1.4 – Air Force Capabilities

Department outputs 2016-17: $5,830 million

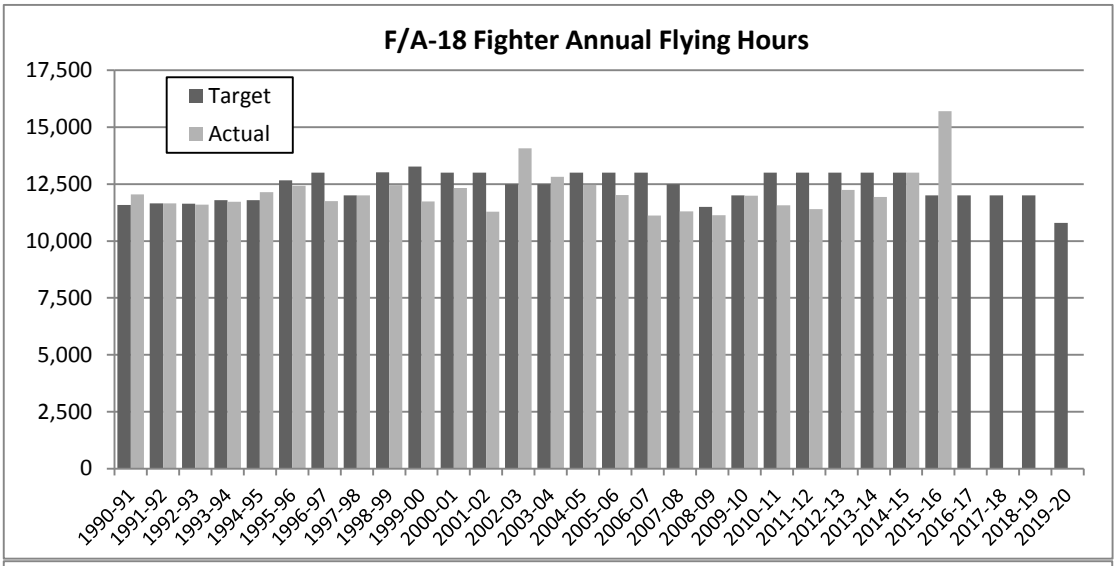
Of the three military services, the Air Force has the leanest and most streamlined organisational structure. The organisation is split into two parts. Corporate planning and administration occurs under the direction of the Deputy Chief of Air Force within Air Force Headquarters while Air Commander Australia takes care of Headquarters Air Command, the Air and Space Operations Centre and the six training, support and flying groups.

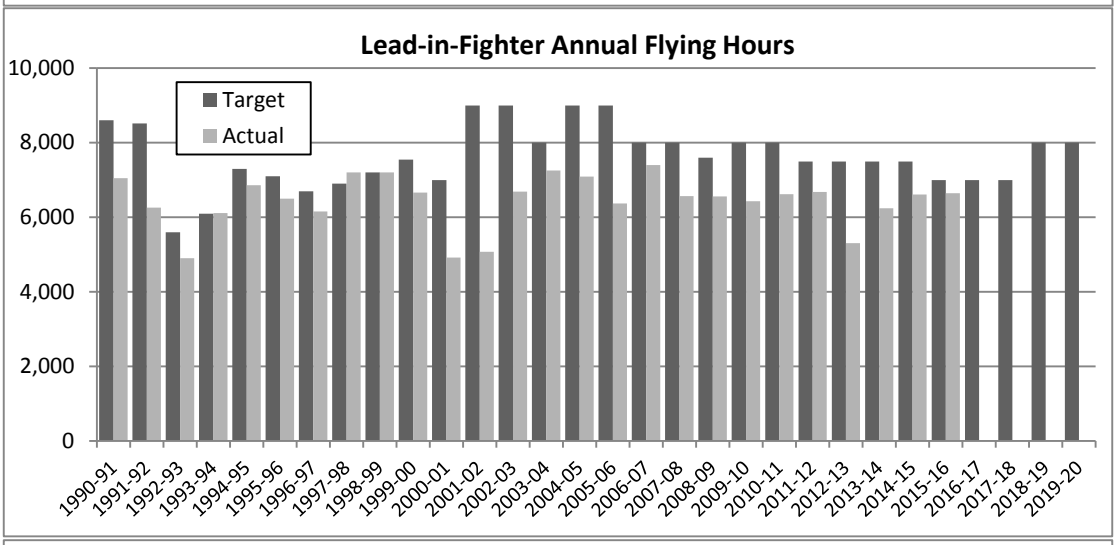
Air Force has recently introduced, or is preparing to introduce, several new fleets of aircraft into service. These include 7 replacement Air-to-Air Refuelling (AAR) aircraft, 24 F/A-18F Super Hornet, 10 C-27J Spartan battlefield airlifters, 8 P-8A Poseidon maritime intelligence, surveillance, reconnaissance and response aircraft and 12 E/A-18G Growler electronic warfare and attack aircraft. An additional two KC-30A MRTT will be acquired in the future. By around 2020, the Air Force plans to be operating F-35A Lightning II Joint Strike Fighter aircraft.

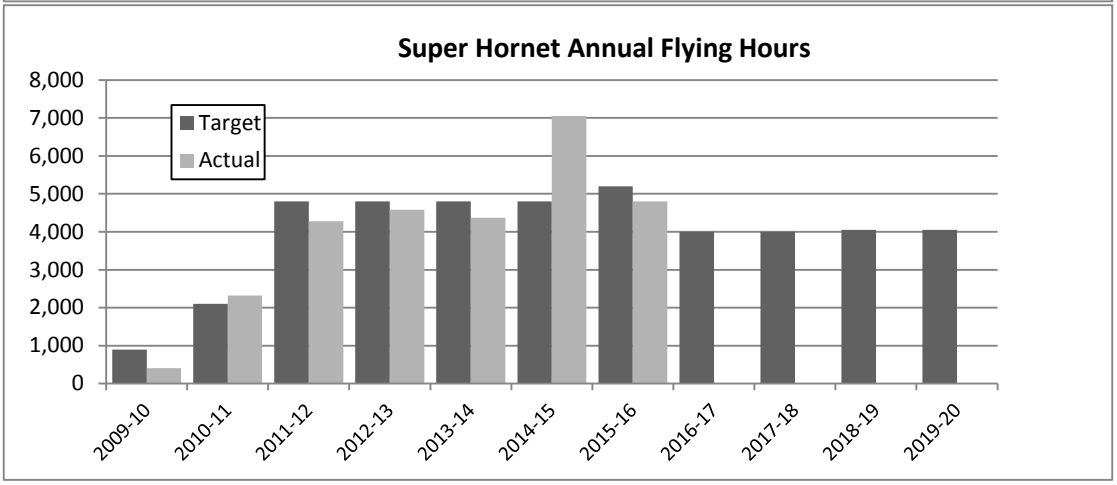


Air Combat Group

Air Combat Group comprises 71 F/A-18 A/B Hornet fighter aircraft and 24 F/A-18F Super Hornets, with 12 E/A-18G Growler expected to be delivered from 2016-17. In addition, 33 Hawk Lead-in Fighters (LIF) provide a training capability while 4 PC-9(F) forward air control aircraft are used to designate ground targets and train Joint Terminal Attack Controllers. Air Combat Group also supports and operates the leased Heron Remotely Piloted Aircraft which were deployed to Afghanistan.

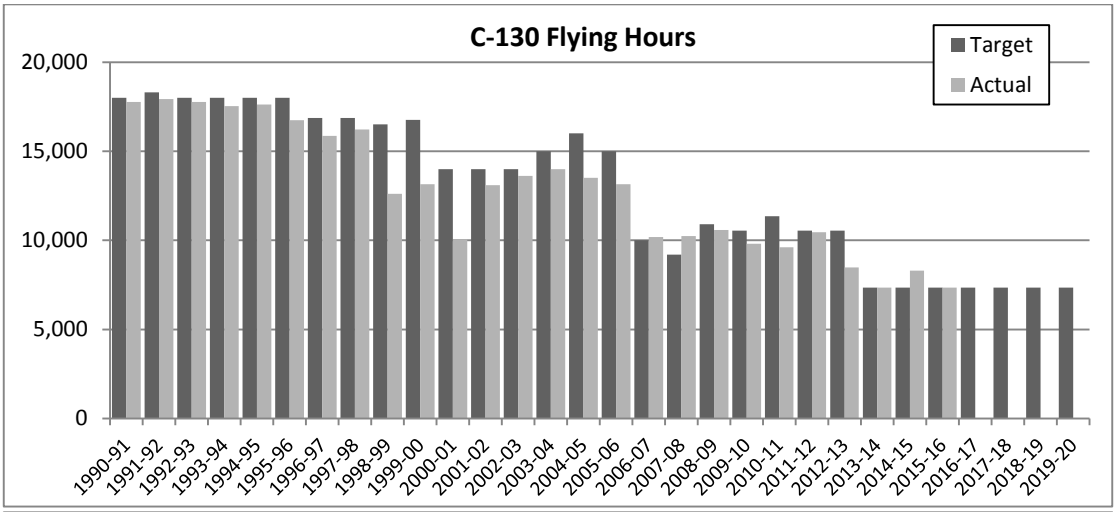


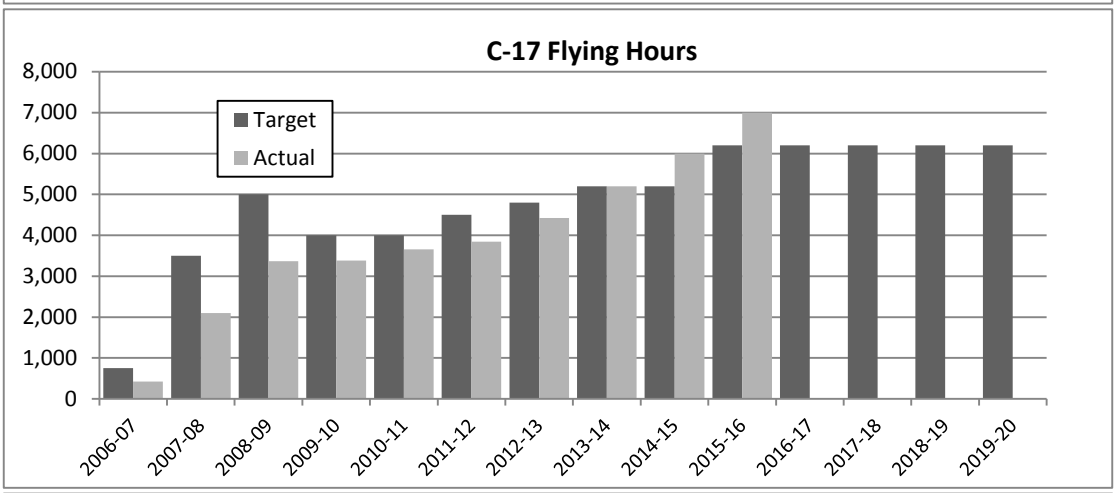


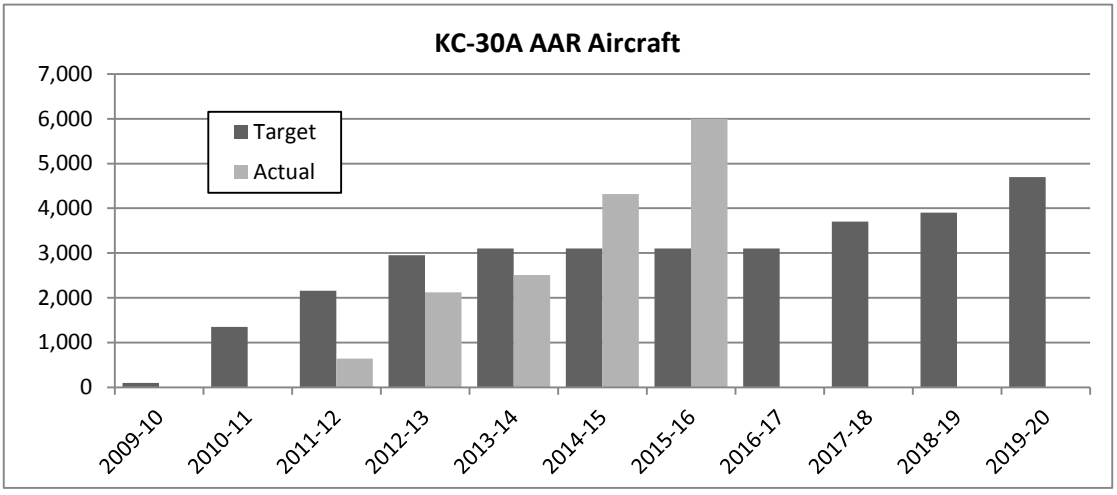


Air Mobility Group

The Air Force has 12 C-130J Hercules transport aircraft which are capable of a wide range of strategic and tactical airborne roles. The acquisition of 8 Boeing C-17A Globemaster IIIs provides the capability to transport large and heavy loads over long ranges whilst retaining tactical capabilities. Two Boeing 737 BBJ and 3 CL604 Challenger aircraft provide VIP transport for the government. Eight KA350 King Air aircraft, provide a light air transport role as an interim capability prior to the full introduction of 10 C-27J Spartan aircraft. Five KC-30A Multi-Role Tanker Transport aircraft currently perform a dual tanker and transport role.





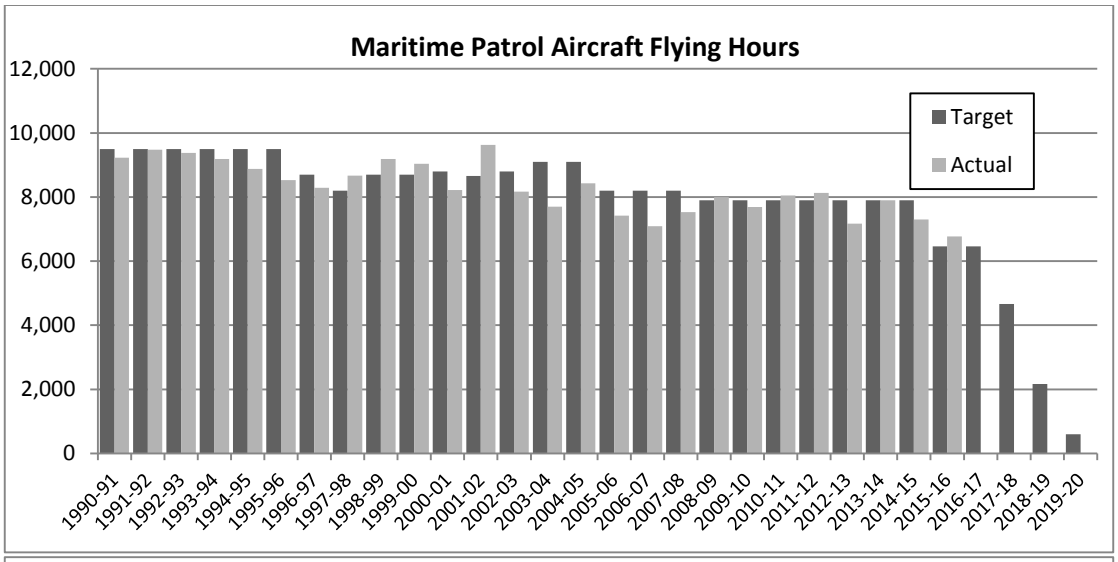


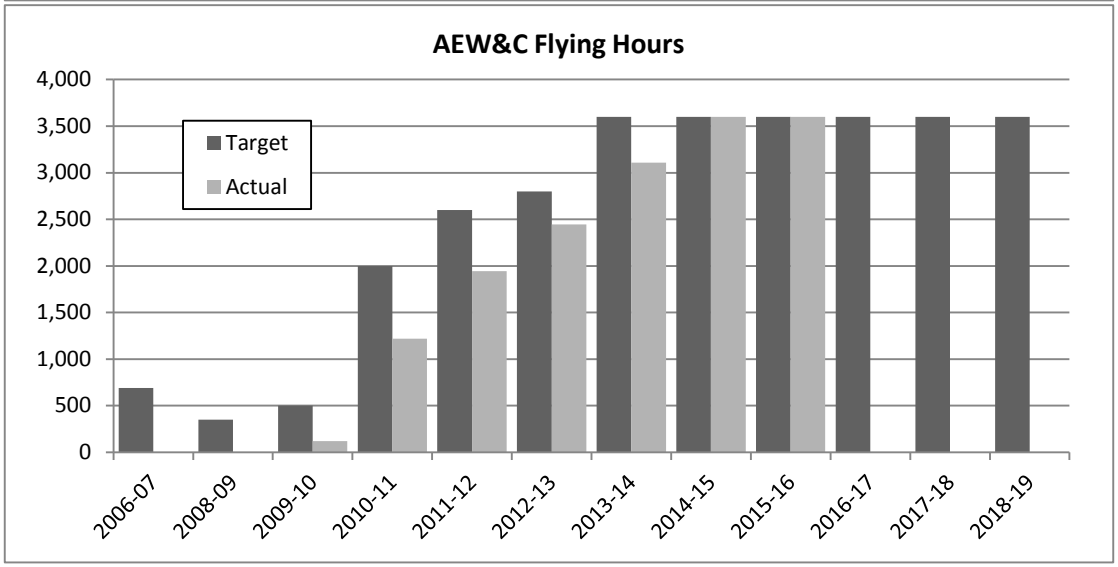
Surveillance and Response Group

The Surveillance and Response Group comprises a diverse range of capabilities including:

Fifteen 1970s vintage AP-3C Orion maritime patrol aircraft which undertake maritime patrol, maritime surveillance, reconnaissance, offensive air support, surface & sub-surface strike, and search and sea survivor resupply. All 15 aircraft have been upgraded to AP-3C standard through an Australian-unique upgrade program. They will be progressively replaced by the P-8A Poseidon from 2016-17 onwards and MQ-4C Triton in the early 2020s.

Ten Air Traffic Radars, including 9 fixed radar and 1 mobile for the control of ADF air traffic. Four Tactical Air Defence Radars: ground-based radar to detect hostile and own aircraft. The JORN Over-the-Horizon-Radar network, including radar sites in Laverton WA and Longreach Qld, and 17 coastal beacons in the north of Australia and Christmas Island. The network is run from the Jindalee Operational Radar Network Coordination Centre in Edinburgh, SA, and can detect both sea and air-borne moving objects. The Jindalee facility at Alice Springs serves a research and development function. JORN is operated by No. 1 Remote Sensor Unit. Six Wedgetail AEW&C aircraft based on Boeing 737-700 platform whose entry into service was delayed by more than four years are now fully in service.





Air Warfare Centre

The Air Warfare Centre provides a broad range of operational and technical support services to Defence in general and Air Force in particular. Key components of the Group include:

Information Warfare Directorate which provides electronic warfare, aeronautical information, intelligence and information operation products and services for Air Force air operations and the other Services.

Test and Evaluation Directorate which provides flight test, system engineering and aviation medicine products and services for extant and emerging ADF aviation capability.

Air Force Ranges Directorate provides an instrumented weapons test and evaluation range and Live, Virtual and Constructive simulation capability for Defence.

Combat Support Group

The Combat Support Group is the largest of the Air Force's force element groups. The role of Combat Support Group (CSG) is to provide combat support services to all Air Force operational formations and when applicable ADF and Coalition Aviation formations. CSG maintains the capacity to concurrently establish and maintain an expeditionary major air base in a low threat environment in the immediate region, establish an expeditionary small air base within the immediate region in a high threat level, and open and operate an airhead in a forward location to enable air power operations.

The capability for combat support of air operations provides for deployable tactical air base support. It encompasses Bare Base activation including the provision of engineering infrastructure (facilities, water, power and sewerage systems), aircraft arrestor barriers and airfield services, navigation aid and tactical communications, air movement, airfield defence, health support including AME, combat logistics and personnel support capabilities.

CSG provides deployed combat support, excluding aircraft technical maintenance, to ADF contingency air operations at main operating bases, forward operating bases and point of entry airfields in Areas of Operations (AO) either in Australia or overseas. It also provides command and cadre staff for RAAF fixed bases in northern Australia and management of the prepared Bare Bases at RAAF Learmonth (LMO), Curtin (CIN), and Scherger (SGR). The provision of secure airfields and combat support arrangements for the deployment of air assets will continue to be critical to the support of ADF operations.

CSG comprises of a HQ, a Combat Support Coordination Centre, 95 and 96 Wings and a Health Services Wing.

Air Force Training Group

The Air Force Training Group is made up of a headquarters and Air Training Wing, Ground Training Wing, RAAF College and Reserve Training Wing. The headquarters of the Air Training Group is located at RAAF Base Williams in Laverton, Victoria.

Air Training Wing conducts basic and instructor air training for ADF personnel including pilots, air combat officers and air traffic controllers. Basic pilot training employs PC-9/A aircraft while aircraft and navigator training occurs on B350 aircraft. Air Training Wing also includes the RAAF Roulettes, who provide fly pasts and displays, the RAAF Museum and the RAAF Balloon. The Air Training Wing is also responsible for air crew combat survival training.

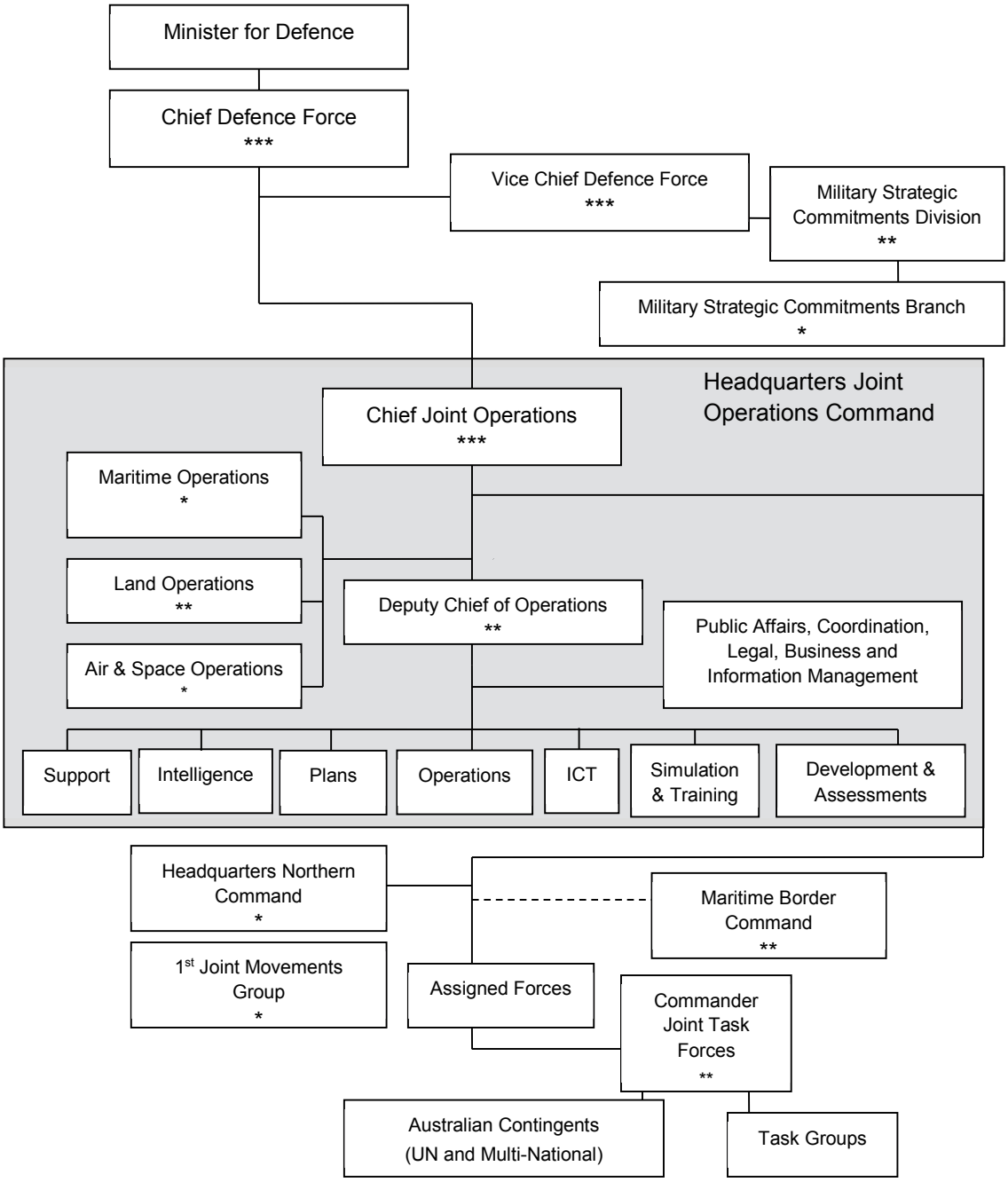
The RAAF College provides induction and professional military training for the Air Force. The RAAF College also maintains the RAAF Band.

Ground Training Wing provides initial and ongoing training for non-aircrew personnel, including security, fire and ground defence, administration and logistics, technical trades, and explosive ordnance.

Program 1.5 – Joint Operations Command

Department outputs 2016-17: $49 million

Joint Operations Command (JOC) is responsible for the planning, conduct and control of all ADF operations and joint exercises and is commanded by the Chief of Joint Operations on behalf of the Chief of the Defence Force. Located in a purpose-built command facility at Bungendore NSW, JOC is assigned forces for operations from the three Services. The ADF command arrangement is outlined below. At present, there are approximately 2,600 ADF personnel currently deployed on operations. Around 800 personnel are involved in planning, advising, commanding and supporting operations across JOC, Maritime, Land, Air and Special Operations staff elements.


Minister for Defence
Chief Defence Force
***
Vice Chief Defence Force
***
Military Strategic Commitments Division
**
Military Strategic Commitments Branch
*
Headquarters Joint Operations Command
Chief Joint Operations
***
Maritime Operations
*
Land Operations
**
Air & Space Operations
*
Deputy Chief of Operations
**
Public Affairs, Coordination, Legal, Business and Information Management
Support
Intelligence
Plans
Operations
ICT
Simulation & Training
Development & Assessments
Headquarters Northern Command
*
1st Joint Movements Group
*
Maritime Border Command
**
Assigned Forces
Commander Joint Task Forces
**
Australian Contingents (UN and Multi-National)
Task Groups

Program 1.6 – Vice Chief of the Defence Force

Department outputs 2016-17: $1,309 million

The Vice Chief of the Defence Force (VCDF) is the Chief of the Defence Force's deputy and is responsible for joint force integration, interoperability and designing the future force. In addition, the VCDF is responsible for preparedness settings, military strategy and is the integrator for all military enabling services. VCDF Group consists of the following:

Joint Enablers Division As an outcome of the FPR, the position of Head Joint Enablers was established to simplify the operational structure reporting to VCDF. Joint Enablers comprises the following Commands and Divisions:

> **Joint Logistics Command** provides logistics support to the Australian Defence Force including management of warehouses, maintenance, and distribution facilities.
>
> **Joint Health Command** is responsible for the delivery of all garrison health care to the ADF and exercises technical control through the Surgeon General Australian Defence Force.
>
> **Australian Defence College** was established to develop the skills and knowledge of Defence's future leaders with an emphasis on joint professional military education and the delivery of joint training programs. Learning is offered through several learning centres providing an education continuum from the Australian Defence Force Academy, to the Australian Command and Staff College and the Centre for Defence and Strategic Studies.
>
> **Cadet, Reserve and Employer Support Division** works to enhance the capacity of Reserves to support ADF capability and provides a governance and accountability framework for the ADF Cadet Scheme.
>
> **Australian Civil-Military Centre** is a whole-of-government initiative to improve Australia's effectiveness in civil-military collaboration for conflict and disaster management overseas.

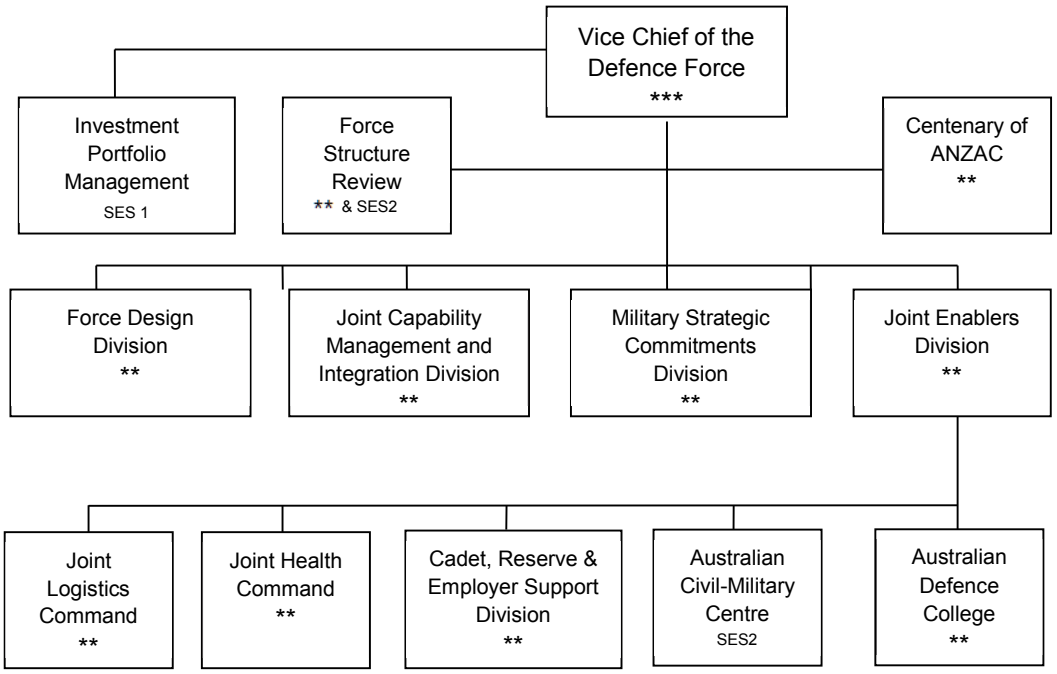
Military Strategic Commitments Division provides strategic level advice and support in the planning and execution of the ADF's current operations and future commitments, in order to enable the government to continuously review its national strategic interests. These responsibilities encompass the strategic coordination of current and future ADF commitments, development and synchronization of strategic communication, and the development and review of the nature of service for ADF commitments.

Force Design Division is a new Division formed as an outcome of the FPR which consolidates elements such as joint concepts, lessons, preparedness and doctrine, along with providing a centralised forum for concept and force structure analysis, and force options testing through experimentation, simulation and modeling. It retains VCDF Group responsibilities for Defence preparedness and reporting.

Joint Capability Management and Integration Division formed out of the Joint Capability Coordination Division as an outcome of the FPR, and executes the Joint Capability Management, C4ISR (command, control, communications and computers, intelligence,

surveillance, reconnaissance) Design Authority, Joint Test and Evaluation, and Integration and Interoperability assurance roles on behalf of VCDF. Existing functions including Counter Improvised Explosive Device Task Force, Special Programs Coordination, Category 1 Training Range Authority, and Joint and Allied Integration and Interoperability lead.

Investment Portfolio Management Branch is a new Branch formed as an outcome of the FPR which works closely with Force Design Division, but reports directly to VCDF. The Branch has key roles in maintaining the integrity of the Integrated Investment Program, supporting Investment Committee Capability Life Cycle work flows and Investment Committee decision-making on prioritisation of investment.



Program 1.7 – Capability Acquisition and Sustainment

Background

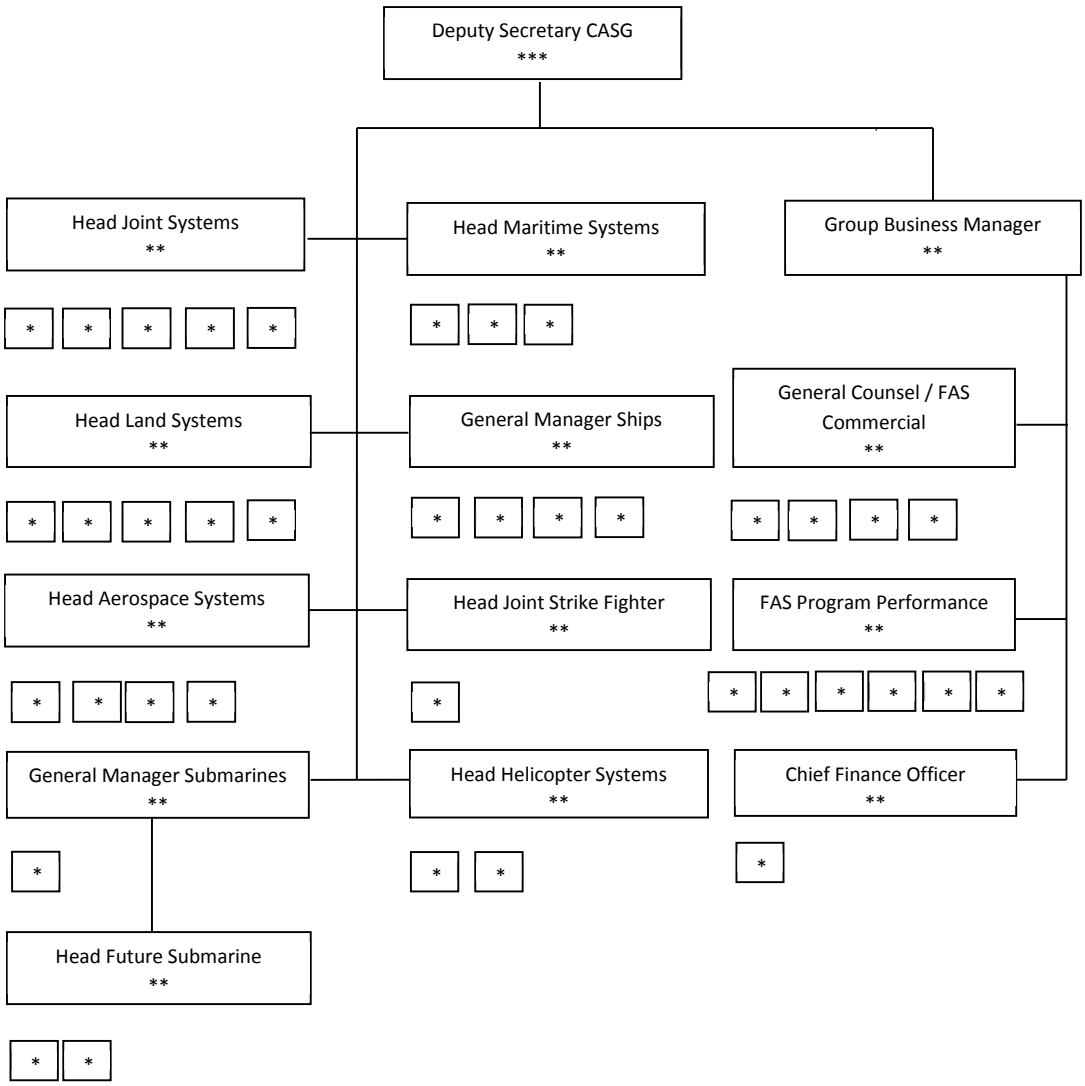
On 1 July 2005, the Defence Materiel Organisation (DMO) was established as a prescribed agency under the *Financial Management and Accountability Act 1997* and henceforth had its own independent part in the Defence portfolio PBS. However, DMO ceased to exist on 1 July 2015 and its functions were reabsorbed into Defence with some functions being placed in other Groups, but most within the new Capability Acquisition and Sustainment Group (CASG).

Organisational structure

CASG contains ten divisions, each headed by a band-2 SES civilian or 2-star military officer.

Three of the divisions are set up on the traditional environmental domains of land, sea, and air, plus five specialist divisions including joint capability and helicopters. They manage and deliver the vast bulk of the approximate 170 major equipment acquisition projects (and 20 minor acquisition projects) that CASG is responsible for, and take care of the materiel support of existing capabilities—some 110 major fleet groupings—across all domains. Some divisions acquire high profile capabilities of strategic significance. That is, if a project is big, important (and politically sensitive) enough it gets its own dedicated division. At the moment there are three such programs: New Air Combat Capability (Joint Strike Fighter), Submarines and Ships.

There are also two 'Commercial' divisions headed by the Group Business Manager (GBM) that provide business support services and take care of specific areas. These are General Counsel and Commercial and Program Performance. The GBM is also indirectly responsible for the other eight Divisions and the CASG Chief Finance Officer (CFO). The CASG CFO is an embedded component of Defence CFO Shared Service and as such directly answerable to the Defence CFO.



Source: CASG Website and advice from Defence

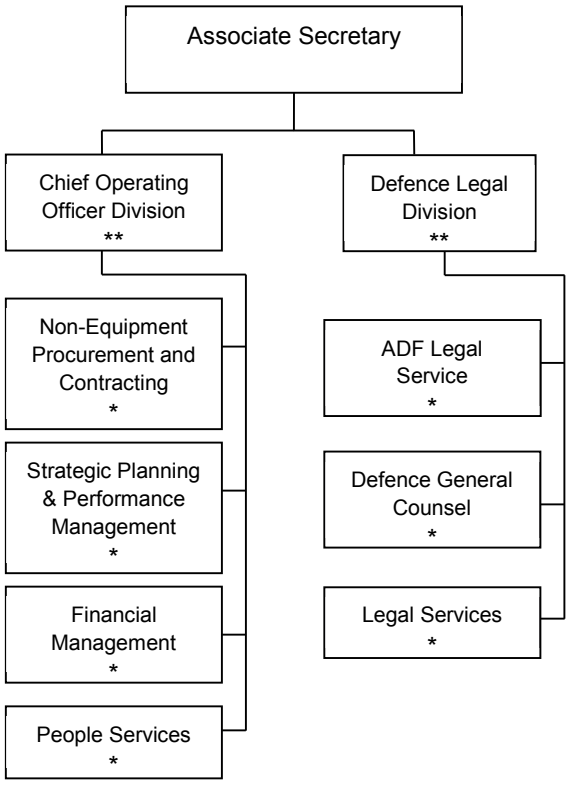
Associate Secretary – Overview

The Associate Secretary position was created as a result of the Black Review of the Defence Accountability Framework. The position came into effect on 17 February 2012 and, *inter alia*, oversees Programs 1.8 Defence Executive Support, 1.9 Estate and Infrastructure, 1.10 Chief Information Officer (CIO) and 1.11 Defence People.

Program 1.8 – Defence Executive Support

Department outputs 2016-17: $194million

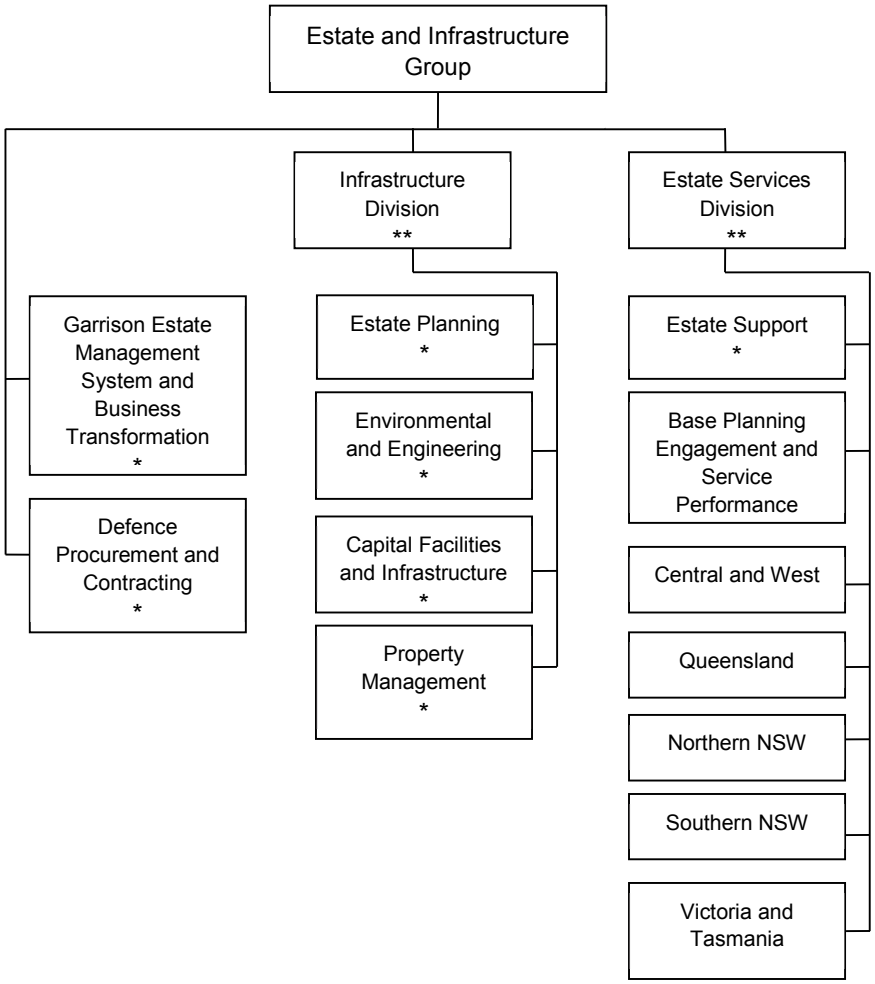
As best we can infer, the Defence Executive Support Group includes two divisions under the Chief Operating Officer; Defence Legal Division and the Chief Operating Officer Division.



Program 1.9 – Estate and Infrastructure

Department outputs 2016-17: $4,145 million

Estate and Infrastructure Group provides a range of administrative, garrison, personnel and estate services to Defence. The Group consists of two divisions. Infrastructure Division which plans, builds and upgrades the Defence estate. Estate Services Division provides on-the-ground services and support to Defence personnel throughout Australia. This includes facilities maintenance, and other services, including grounds maintenance, hospitality and catering, training area management, base security, transport, air support and fire-fighting and rescue services. Defence Procurement and Contracting Branch is responsible for the provision of a broad range of services to Defence including publishing, insurance, travel, information and systems management and a range of procurement and contracting activities.



Program 1.10 – Chief Information Officer

Department outputs 2016-17: $1,633 million

The Chief Information Officer Group is responsible for providing Information and Communications Technology (ICT) to Defence. The Group comprises five divisions.

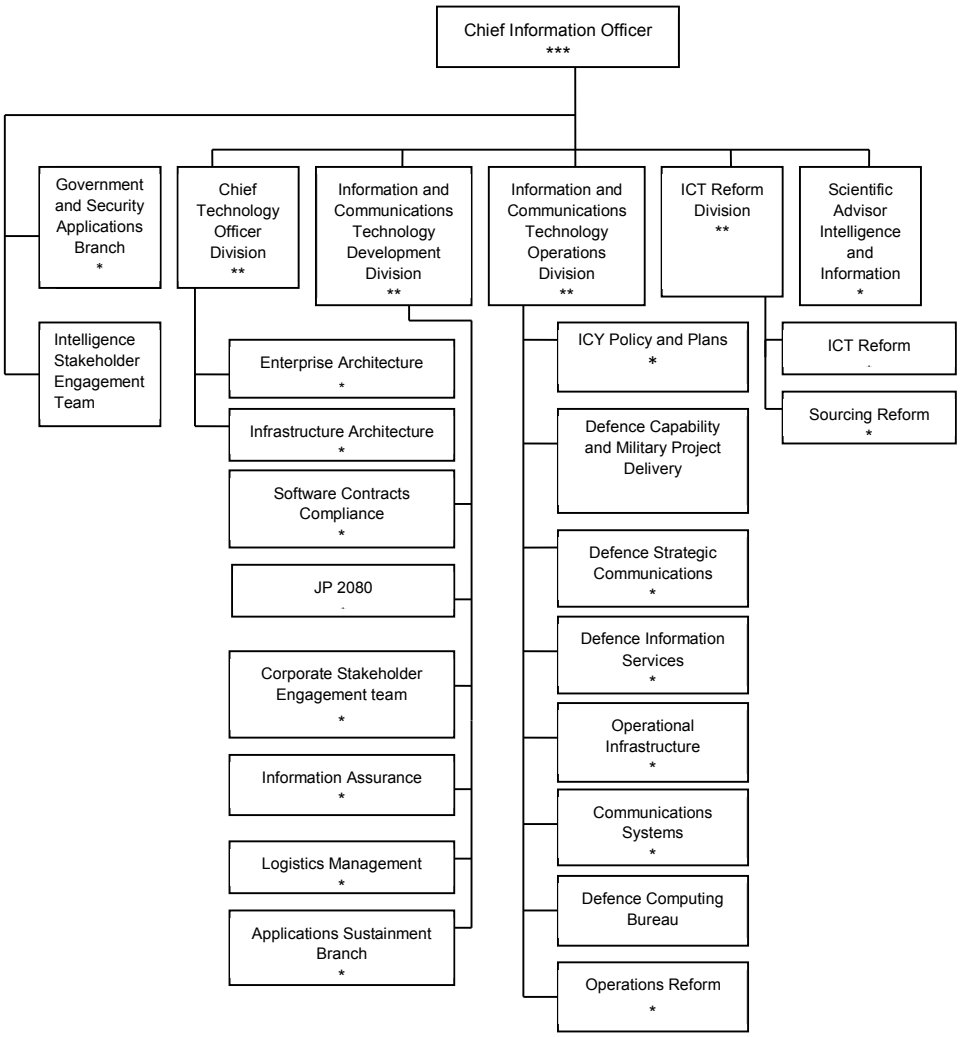
Chief Technology Officer Division develops and documents Defence's ICT architecture, identifies relevant systems and defines ICT standards for Defence.

ICT Delivery Division undertakes program and project delivery including capability acquisition proposals.

ICT Development Division designs and develops Software Systems for the Defence information environment.

Information and Communications Technology Operations Division delivers and supports the Defence Information and Communication infrastructure.

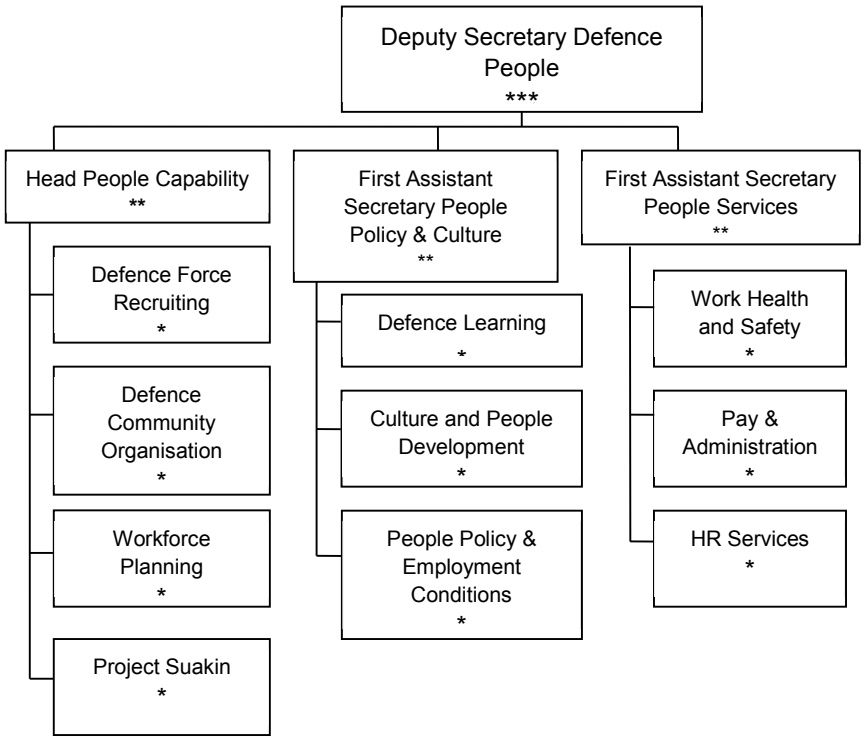
Information and Communications Technology Reform Division delivers ICT reform and associated savings across the Defence Portfolio.



Program 1.11– Defence People

Department outputs 2016-17: $511 million

The Defence People Group contributes to Australia's national security by providing people management, policy, and planning and human resource services to Defence. The Group is also responsible for driving and reinforcing cultural change and contributing to the implementation of the First Principles Review, as well as supporting the integration of enabling services across the Department.

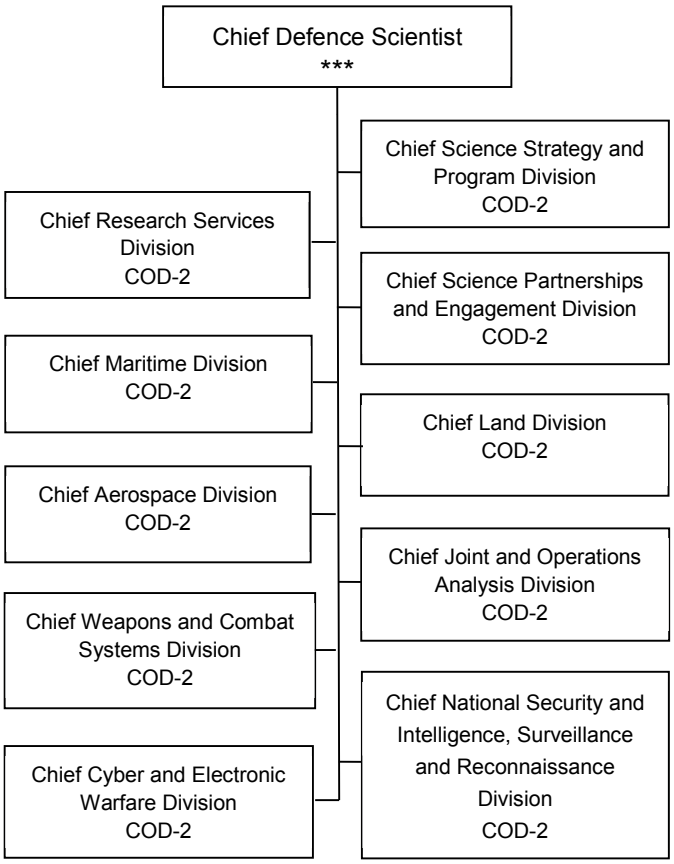


Program 1.12 – Defence Science & Technology

Department outputs 2016-17: $438 million

The Defence Science and Technology Group (DST Group) provides scientific advice and innovative technology solutions to the Government, Defence and Australia's national security agencies. This includes supporting operations, sustaining and enhancing current capability, supporting the development and acquisition of future capability and investigating client-focussed future proofing concepts, contexts and capabilities. DST Group also has whole-of-government responsibility for coordinating scientific and technical support to national security.

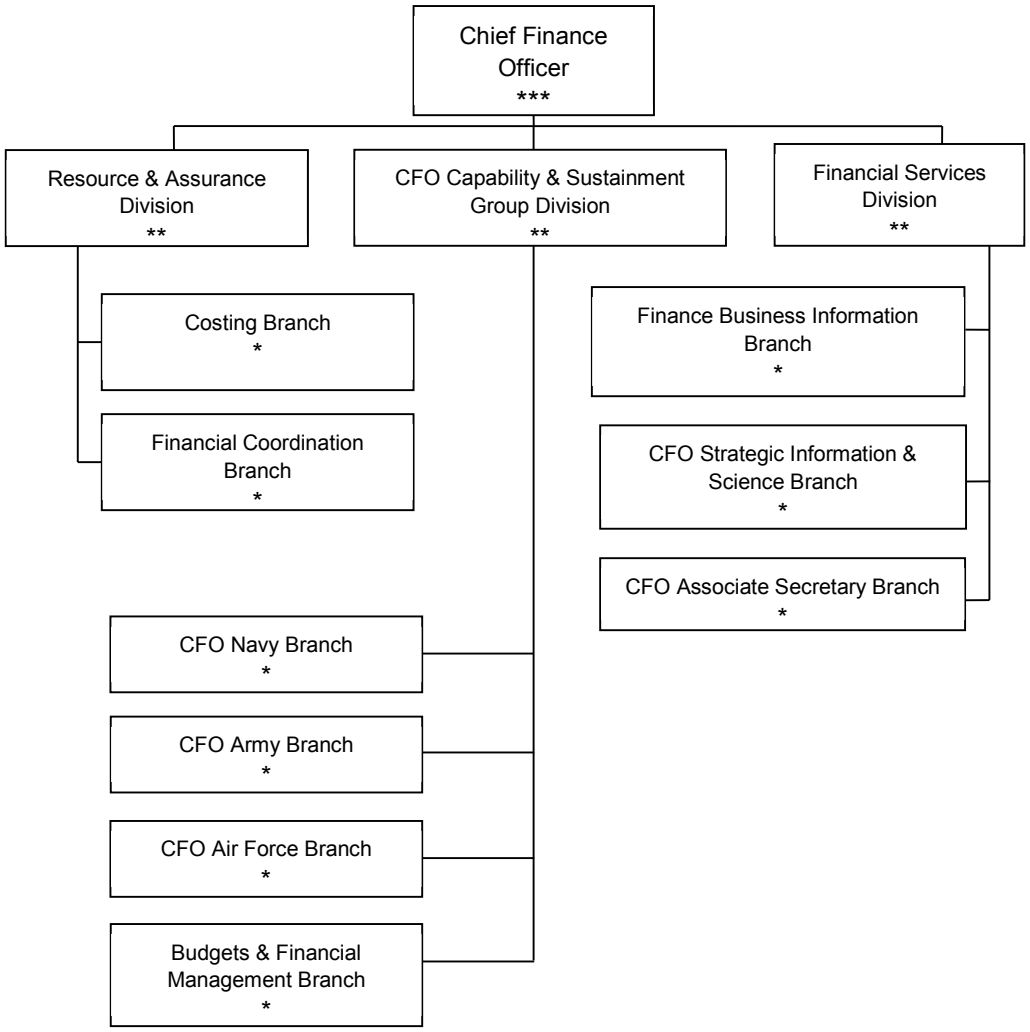
The Group is led by the Chief Defence Scientist, who answers to the Secretary. DST Group was restructured in the last two years in accordance with its Strategic Plan 2013-18 and the First Principles Review and is reshaping its science and technology capabilities to meet future challenges. The headquarters is located in Canberra, with most capabilities concentrated in Adelaide and Melbourne. Smaller presences are located in Brisbane, Sydney, HMAS Stirling (Western Australia) and Scottsdale (Tasmania). Thirty-nine Major Science and Technology Capabilities are spread across the following seven divisions and the sites listed above. Scientific Advisers provide embedded science and technology advice and support to the Aerospace, Maritime, Land, Joint and Intelligence programs.



Program 1.13 – Chief Finance Officer

Department outputs 2016-17: $185 million

The Chief Finance Officer Group is responsible for Defence's financial planning, budgeting and reporting.



Program 2.1 – Ops in the immediate neighbourhood

Department outputs 2016-17: $1 million

- Op *Gateway*: Indian Ocean and South China Sea maritime patrols (since 1981)
- Op *Solania*: Conduct South West Pacific maritime surveillance patrols (since 1988)
- Op *Render Safe*: Provide enduring explosive ordnance disposal support to the nations of the South West Pacific. (since 2011)
- Op *Saville*: Responses to foreign military activity in Australia's maritime approaches. (since 2014)

Program 2.2 – Ops supporting wider interests

Department outputs 2016-17: $737 million

- Op *Paladin*: Contribute to the UN Truce Supervisory Mission in the Middle East (since 1956)
- Op *Mazurka*: Contribute to Multinational Force and Observers in the Sinai (since 1982)
- Op *Palate II*: Liaison Officer to UN Mission in Afghanistan (since 2005)
- Op *Aslan*: Contribute to the United Nations mission to the South Sudan (since 2011)
- Op *Manitou*: Contribute to international maritime security operations in the Middle East Area of Operations (since 2014)
- Op *Accordion*: Provide support to Operations SLIPPER and MANITOU from within the Gulf States. (since 2014)
- Op *Okra*: Operations in support of coalition response to the Iraq crisis. (since 2014)
- Op *Highroad*: Ongoing contribution to the NATO-led mission in Afghanistan. (since 2015).

Program 3.1 – National support tasks

Department outputs 2016-17: $22 million

- Op *Resolute*: Contribute to whole-of-government maritime enforcement effort (since 2006)
- Op *Southern Indian Ocean*: Search for Malaysian Airlines Flight MH370 (since 2014)
- DACC – Contribute to Commonwealth and State/Territory Governments with emergency and non-emergency tasks as required. On a case-by-case basis, support events of national significance as requested by relevant authorities.

Defence's contribution to national support tasks 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.

2.7: Budgeted Financial Statements
[PBS Section 3: pp. 99 – 123]

The budgeted financial statements for Defence appear in Section 3 of the PBS.

2.8: Appendices
[PBS: pp. 124 – 187]

The PBS includes 8 eight appendices:

- Appendix A: Defence Cooperation Program
- Appendix B: The Unapproved Major Capital Investment Program (also known as the Defence Capability Plan)
- Appendix C: Top 30 Acquisition Projects by 2016-17 Forecast Expenditure
- Appendix D: Current Status of Previously Reported Top 30 Projects (Projects Reported in the Last Five Financial Years)
- Appendix E: Top 10 Minor Capital Investment Projects by 2016-17 Forecast Expenditure
- Appendix F: Top 30 Sustainment Products by 2016-17 Forecast Expenditure
- Appendix G: Capital Facilities Program
- Appendix H: Status of Major Projects Foreshadowed for Government and Parliamentary Standing Committee on Public Works Consideration (PWC) in 2016-17

Much of the material was previously included in the DMO section of the PBS. We explore the more interesting aspects of the appendices in the pages that follow.

Appendix A: Defence Cooperation Program
[PBS: pp. 125 – 127]

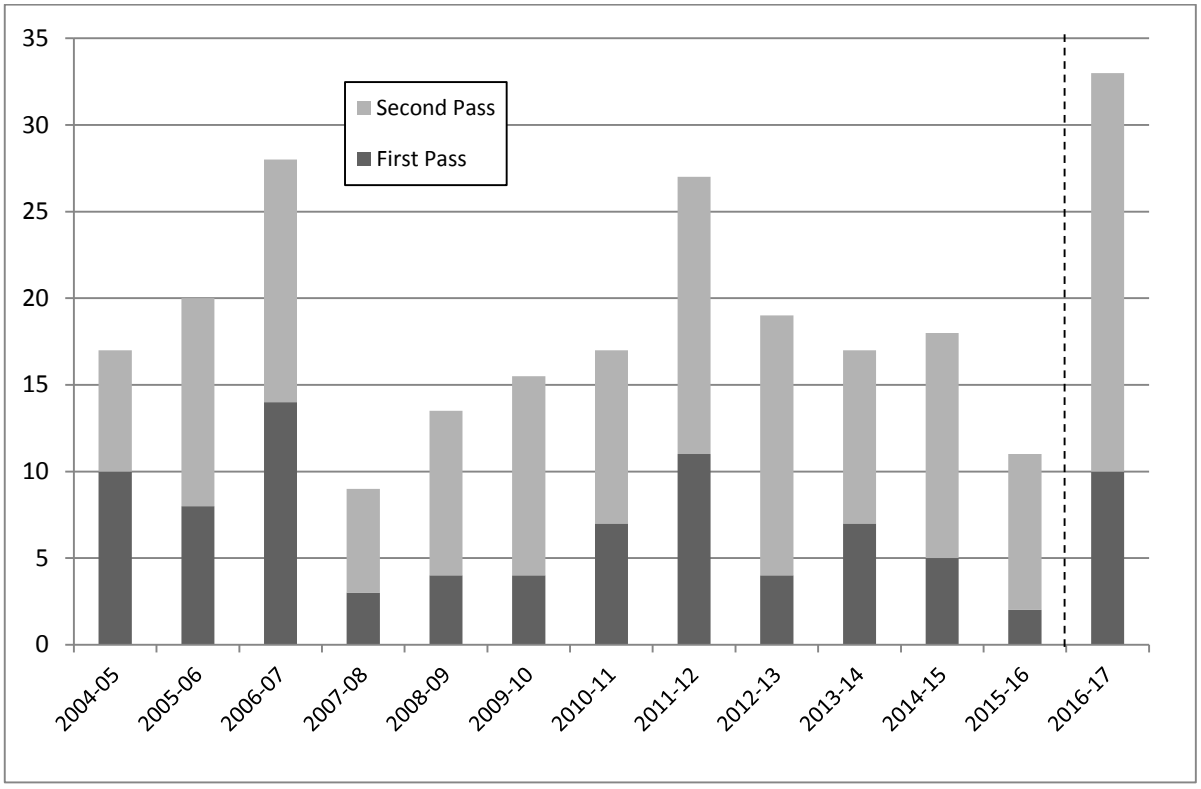
The Defence Cooperation Program (DCP) aims 'to maximise Australia's security through developing close and enduring links with partners that supports their capacity to protect their sovereignty, work effectively with the ADF and contribute to regional security. Activities include education courses, training, personnel exchanges, capacity building, military secondments, strategic dialogues, visits, subject matter expert exchanges, infrastructure support, and exercises and operations'. Further details and historical financial data on the DCP can be found in Chapter 8 of this Brief.

Appendix B: Unapproved Major Capital Investment Program [PBS: pp. 128 – 129]

The PBS provides three lists of Unapproved Major Capital Investment Program (UMCIP) projects [Tables 68–70]. The accompanying narrative says the 'table below highlights a sample of unapproved major capital investment projects to be considered by Government in the remainder of 2015-16 and in 2016-17 Financial Year'. Given the timing of the election—which was known at the time of the Budget—the projects will surely have to wait for 2016-17.

More interesting is the reference to *highlights a sample*. Why only disclose a sample of projects? There's no shortage of room on the page for a more extensive listing. As it happens, even the number of 'sample' projects planned for approval next year is ambitious compared with previous years, Figure 2.8.1. Presumably the actual target will be higher.

Figure 2.8.1: First- and Second-pass approvals, 2004-05 to 2016-17



Source: DAR and advice from Defence

It's interesting to compare the projects planned for approval in 2016-17 with the 2016 Integrated Investment Plan (IIP). As shown in Table 2.8.1, of the 33 projects planned for first- or second-pass approval in 2016-17, only 18 are mentioned in the 2016 IIP. This further reinforces the paucity of information in the IIP compared with the more comprehensive Defence Capability Plan of old.

Table 2.8.1: Planned approvals in 2016-17 compared with 2016 IIP

Scheduled for 1st pass in 2016-17 (2016-17 PBS)	10
Projects included in 2016 IIP	5
Projects not mentioned in IIP	**5**
Scheduled for 2nd pass in 2016-17 (2016-17 PBS)	23
Projects included in 2016 IIP	13
Projects not mentioned in IIP	**10**

Source: 2016-17 PBS and 2016 Integrated Investment Plan

Things get more interesting if we compare the projects listed in the 2016 IIP for approval in 2015-16 with those now approved and planned for approval in 2016-17. The comparison is made in Table 2.8.2. Because the 2016-17 PBS only 'highlights a sample' of projects for approval in 2016-17, we cannot be sure what's planned for the 11 unapproved IIP projects for 2015-16 that are absent from the 2016-17 PBS.

Table 2.8.2: Fate of projects planned for approval in 2015-16 in 2016 IIP

Projects planned for 2015-16 approval in 2016 IIP	18
Projects announced as approved	6
Scheduled for approval in 2016-17 (2016-17 PBS)	1
Unaccounted for	**11**

Source: 2016-17 PBS and 2016 Integrated Investment Plan

For each of the 11 orphaned projects, there are two alternatives; either they've been delayed until 2017-18 or beyond, or they're planned to be approved in 2016-17 but don't rate a mention in the PBS. The former would be disappointing because it'd imply that the implementation of the White Paper has been delayed even before it begins—though that would be consistent with this year's hand-back of money and next year's deferral of investment. The latter explanation would mean that the already very high number of planned approvals for 2016-17 is actually higher. Indeed, to get back on track, there would need to be 44 approvals next financial year.

Looking at the projects listed in last year's PBS for approval in 2015-16, albeit a partial list pending the '2015 Defence White Paper' (sic), the situation isn't much better. Of the two projects planned for first-pass approval, one has been delayed to 2016-17 and the other remains unapproved with an acquisition window commencing in 2017. Of the 8 projected scheduled for second-pass, five have been approved, one has been delayed to 2017 and two have suffered an unknown fate.

Looking at the 51 projects in the 2016 IIP with an acquisition window commencing in 2016 (which doesn't necessarily correspond with the date of project approval), there are 20 scheduled for some sort of approval in 2016-17. Looking forward, the number of projects with an acquisition window commencing in 2017 is 31, of which none are listed for approval in 2016-17.

It's difficult to escape the conclusion that the White Paper has stumbled on the starting blocks.

Appendix C: Top 30 Acquisition Projects by 2016-17 Expenditure [PBS: pp. 130 – 144]

Appendix D: Current Status of Previously Reported Top 30 Projects [PBS: pp. 145 – 157]

The PBS lists the top 30 major capital investment projects by 2016–17 expenditure [PBS Table 71, page 130] and provides a description of each. The PBS also includes a useful listing of previously approved top 30 projects [Table 72, p. 145]. We reproduce this year's top 30 projects below in Table 2.8.3.

Table 2.8.3: Top 30 Defence Major Capital Investment Projects (million $)

Project	Project Number	Approved Project Expenditure	Spend to 30 June 2015	2015-16 Budget Estimate
Aerospace Systems				
Maritime Patrol and Response Aircraft System	AIR 7000 Phase 2	5,501	1,446	1,047
New Air Combat Capability	AIR 6000 Phase 2A/B	16,631	930	726
Growler Airborne Electronic Attack Capability	AIR 5349 Phase 3	3,530	2,204	242
Future Naval Aviation Combat System (FNACS)	AIR 9000 Phase 8	3,520	1,900	230
Helicopter Aircrew Training System	AIR 9000 Phase 7	488	49	49
Multi-Role Helicopter (MRH)	AIR 9000 Phase 2	3,774	2,900	174
Additional Multi-Role Tanker Transport Aircraft	AIR 7403 Phase 3	906	314	170
AEW&C Interoperability Compliance Upgrade	AIR 5077 Phase 5A	652	138	164
Battlefield Airlift - Caribou Replacement	AIR 8000 Phase 2	1,435	724	148
Pilot Training System	AIR 5428 Phase 1	1,269	27	144
Bridging Air Combat Capability	AIR 5349 Phase 1	3,362	2,808	57
Lead-in Fighter Capability Assurance Program	AIR 5438 Phase 1A	272	177	55
Joint				
Battlefield Command Systems (Land)	JP 2072 Phase 2B	950	111	167
Woomera Test Range Remediation	JNT 3024 Phase 1	244	42	78

Maritime Communication Modernisation	SEA 1442 Phase 4	455	104	71
Civil Military Air Traffic System (CMATS)	AIR 5431 Phase 3	731	29	60
Enhanced Land Electronic Warfare Systems	DEF 500 Phase 1	188	16	56
Battlefield Command Systems	LAND 75 Phase 4	372	294	53
Improved Tactical Electronic Support Capability for ANZAC Class	SEA 1448 Phase 4A	284	129	52
Land Systems				
Overlander - Medium Heavy Capability, Field Vehicles, Modules and Trailers	LAND 121 Phase 3B	3,466	318	686
Enhanced F88 Rifle	LAND 125 Phase 3C	481	56	110
Overlander – Protected Mobility Vehicle-Light	LAND 121 Phase 4	2,005	248	95
Enhancements to Special Forces Capability	JP 2097 Phase 1B	345	204	89
Enhanced Gap Crossing Capability	LAND 155 Phase 2	230	63	69
Direct Fire Weapons	LAND 40 Phase 2	168	44	63
Additional Lightweight Towed Howitzers	LAND 17 Phase 1C1	227	79	58
Soldier Enhancement Version 2 - Survivability	LAND 125 Phase 3B	189	108	52
Maritime Systems				
Air Warfare Destroyer Program	SEA 4000 Phase 3	9,121	6,655	726
Collins Communications and EW Program	SEA 1439 Phase 5B2	256	58	67
Collins Sonar Capability Assurance Program	SEA 1439 Phase 6	128	12	63
TOTAL TOP 30 APPROVED PROJECTS		**61,180**	**22,187**	**5,963**
Other Approved Project Estimate		45,309	37,957	1,125
Total Program		106,489	60,144	7,088
Management Margin				-884
Net from existing projects				6,204
Projects Planned for Government Approval				921
Total Funds Available				**7,125**

Source: 2016-17 PBS

The 'management margin' represents the anticipated slippage of planned payments to suppliers. That is, the amount that the portfolio of projects is anticipated to collectively

underspend relative to the individual gross planning figures in the table. Past experience has shown that individual projects systematically spend less money than anticipated. Inevitably, delayed payments correspond to delayed delivery of capability. Recent slippage rates for the major capital investment program are given in Table 2.8.4.

Table 2.8.4: Major Capital Investment Slippage Rates

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Gross	5,083	4,793	4,577	7,064	6,573	5,761	3,938	4,118	6,311	7,330	8,009
Slippage	-426	-543	-338	-1,223	-893	-785	-616	-640	-432	-548	-884
Net	4,657	4,295	4,239	5,841	5,680	4,976	3,322	3,478	5,880	6,782	7,125
%	-8.4%	11.3%	-7.4%	17.3%	13.6%	13.6%	15.6%	15.5%	6.8%	7.5%	11.0%

Source: PBS 2006-07 to 2016-17

In practice, slippage comes about for a variety of reasons; suppliers can sometimes fail to deliver, Defence and suppliers can sometimes fail to negotiate contracts in a timely manner, and Defence can impose delays through its own processes. The substantial variation in slippage from one year to the next is difficult to explain, but may reflect the inclusion of low-risk FMS purchases in some years.

Comparing planned and actual expenditure in the Major Capital Investment Program is made difficult by substantial in-year forex shifts of undisclosed magnitude. Each year needs to be examined carefully. As an example, consider the evolution of the Major Capital Investment Program for 2015-16, as detailed in Table 2.8.5, in the context of the overall Capital Investment Program.

Table 2.8.5: Capital Investment Program changes 2015-16

	2015-16 Budget (a)	2015-16 Additional Estimates (b)	(a-b)
Unapproved Major Capital Investment Program	886	285	
Approved Major Capital Investment Program	6,158	6,281	
Major Capital Investment Program	7,043	6,565	478
Capital Facilities Program	1,279	1,082	196
ICT Investment Plan	415	490	-74
Minors Program	164	88	77
Other Investment	894	1,056	-162
Total	9,795	9,281	514

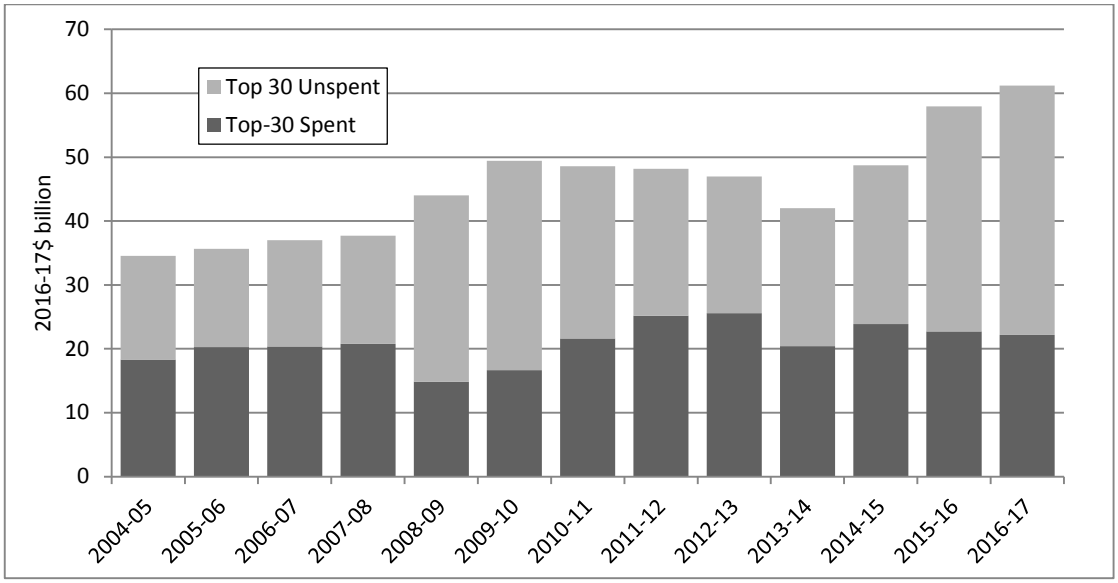
Source: PBS 2015-16 and PAES 2015-16

Between the May 2015 Budget and February this year, planned major capital investment fell by $478 million and facilities investment fell by $196 million. This was partially compensated by a $162 million increase in 'other capital'. However, the almost half billion dollar fall in the

major capital program was largely due to early (June 2015) FMS payments, for Growler aircraft ($470 million), C-17 aircraft ($102 million) and Seahawk aircraft ($203 million). The more than $770 million in twelfth-hour FMS payments in 2014-15 probably prevented a hand-back of money in that year. In terms of 2015-16, the overall Defence budget was still projected to grow by $380 million even after these early payments. However, as things stand, total investment is now planned to be $380 million less than envisaged in February.

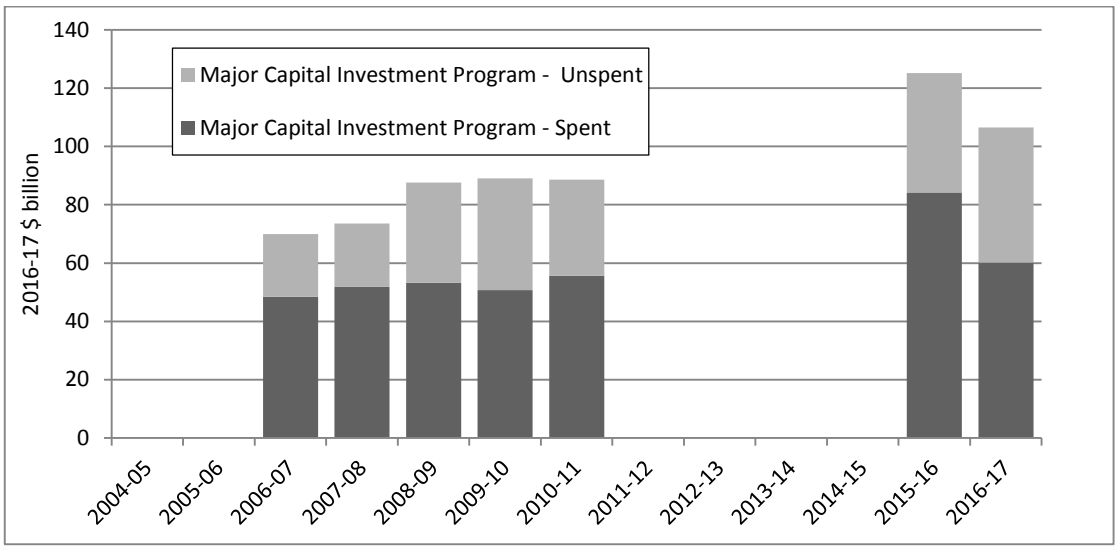
The growing scale of capital investment can be gauged by looking at the aggregate value of the Top-30 projects and the broader Major Capital Investment Program. Unfortunately, data on the latter is incomplete due to gaps in reporting.

Figure 2.8.2: Top-30 projects—spent and unspent funds



Source: PBS 2004-05 to 2016-17

Figure 2.8.3: Major Capital Investment Program—spent and unspent funds



Source: PBS 2004-05 to 2016-17

A potential risk to the Major Capital Investment Program is that the scale of future money owed will grow more quickly than Defence's annual capacity to pay. The ratio of annual

investment payments to the outstanding value of approved projects is given in Table 2.8.6, in terms of the Top-30 and, where available, the total Major Capital Investment Program. Compared with a decade ago, annual payments represent a smaller share of the outstanding value of projects.

Table 2.8.6: Ratio of annual payments to outstanding value of approved projects (%)

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Top-30 MCIP	22.6	24.2	35.5	31.2	17.3	20.7	23.8	23.9	16.7	16.9	24.4	19.6	18.3
Total MCIP			27.4	24.2	14.7	17.7	19.4					16.8	15.4

Source: PBS 2004-05 to 2016-17

Appendix E: Top 10 Minor Capital Investment Projects [PBS: pp. 158 – 160]

The PBS lists 9 Minor Capital Investment projects [Table 73] ranging in value from $6 million to $16 million—the tenth project in the Top-10 remains a mystery. The total value of all approved minor projects is $132 million, for which payments of $23 million will be made in 2016-17.

Appendix F: Top 30 Sustainment Products by 2016-17 [PBS: pp. 161 – 157]

The PBS lists the Top-30 sustainment products by forecast end-of-financial-year outcome for 2016-17 [Table 74]. The figures are reproduced in Tables 2.8.7, 2.8.8 and 2.8.9 along with budgeted figures for prior years. The annual report no longer includes the cost of sustainment, so we've used the latest available figures for 2014-15 (from the PAES).

Table 2.8.7: Top 30 sustainment products – maritime ($ million, nominal)

	Number	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Collins submarines	6	322	324	325	416	479	507	590	560	523	586
Anzac frigate	8	219	301	206	151	189	227	263	294	379	350
FFG frigate	4	103	115	113	111	127	126	110	134	148	117
LHD	2								69	90	107
Mine Hunter Coastal	6	61	61				60	75	67	61	68
Armidale PB	14							39			67
Auxiliary Oiler	1						68		45	83	50

Source: DAR, 2014-15 PAES, 2015-16PAES, 2016-17 PBS

Table 2.8.8: Top 30 sustainment products – aerospace ($ million, nominal)

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Super Hornet			16	75	93	99		152	184	192
AP-3C Orion	113	131	117	111	149	121		111	121	108
F/A-18 Hornet	112	114	121	129	157	153		194	248	192
F-111	145	117	79							
Hawk LIF 127	97	89	87	86	76	56		86	91	117
C-130J	81	113	111	69	79	80		100	129	104
C-130 H	-	75	-	54	58	-				-
C-17	17	39	43	-	40	-		61	82	93
MRH-90	27	51	64	80	87	88		153	197	207
Seahawk-R								46	94	53
Seahawk	72		79	66	78	64		57	51	-
Black Hawk	74	101	103	84	91	87		57		-
ARH Tiger			83	91	103	89		117	135	145
AEW&C				116	159	148		186	218	213
KC-30A								66	68	77
VIP aircraft								48	51	52

Source: DAR, 2014-15 PAES, 2015-16PAES, 2016-17 PBS

Table 2.8.9: Top 30 sustainment products – miscellaneous ($ million, nominal)

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
ADF Clothing and Equipment	117	89	84	70		37	51	51	59	89
ADO Commercial Fleet	73	75	59		54		55	69	82	84
B Vehicles	117	127	115	83	84	66	66	66	64	57
Explosive ordnance	357	360	324	251	291	296	241	313	306	290
Wide Area Surveillance	77	79	76	88	87	84	94	101	102	101
Battlespace Communications	32	51					26	20	45	54
Tactical Electronic Warfare								52	31	
Fuels and Lubricants	422	419	318	378	419	388	520	524		
Guided Munitions							125	101	115	208
Protected Mobility Fleet				22						
Command and Intelligence							76	66	57	65
Air Traffic Control							43			
Health Systems							44		54	
Naval Communications							39			

Source: DAR, 2014-15 PAES, 2015-16PAES, 2016-17 PBS

The sustainment cost per aircraft and sustainment cost per flying hour are calculated for various ADF platforms in Table 2.8.10.

Table 2.8.10: Flying hour costs 2016-17

	Number	Cost ($m)	Hours flown	Annual cost per platform ($ million)	Cost per flying hour ($ '000)
F/A-18 Hornet	71	192	12,000	2.7	16.00
AEW&C	6	213	3,600	35.5	59.17
Super Hornet	24	192	4,000	8.0	48.00
Multi Role Helicopter - MRH90	47	207	7,000	4.4	29.57
C-130J	12	104	7,350	8.7	14.15
AP-3C Orion	15	108	6,465	7.2	16.71
ARH Tiger	22	145	6,227	6.6	23.29
Seahawk MH-60R	13	53	4,800	4.1	11.04
Hawk LIF 127	33	117	7,000	3.5	16.71
C-17	6	93	6,200	15.5	15.00
KC-30A MRTT	5	77	3,100	15.4	24.84

Source 2016-17 PBS

All 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, including when platforms are first being brought into service.

Appendix G: Capital Facilities Program [PBS: pp. 175 – 183]

The PBS lists 77 approved Capital Facilities projects at various locations with a total value $7.8 billion. These are listed in Table 75 of the PBS. Expenditure on facilities projects in 2016-17 is planned at $1.6 million.

The largest projects are the facilities in support of the New Air combat Capability at Williamtown and Tindal ($1,465 million), Enhanced Land Force Phase 2 facilities at various locations ($1,458 million), Defence Logistics Transformation Program ($733 million), Maritime Patrol Aircraft facilities ($708 million) at Edinburgh, Air Traffic Control Complex at various locations ($410 million), Battlefield Airlifter facilities at Amberley ($370 million), HMAS Stirling Redevelopment ($369 million) and Growler Facilities at Amberley ($349 million).

Appendix H: Status of Major Projects Foreshadowed [PBS: pp. 184 – 187]

The PBS lists 32 major works projects scheduled for consideration and approval [Table 76].

Chapter 3 – Defence Funding and the White Paper

This chapter deals with defence funding in three parts; (1) a brief survey of Australian defence funding from the mid-1980s through to 2009, (2) an analysis of defence funding from 2009 until 2016, and (3) an examination of the 2016 Defence White Paper. For ease of reference, the successive Defence White Papers are referred to as *Defence 2000, Defence 2009* etc. An obituary for *Defence 2000* can be found in Chapter 3 of the 2009-10 ASPI Budget Brief.

Defence funding from the 1980s to 2009

The late 1980s and 1990s were lean years for Defence. Apart from fluctuations due to foreign exchange movements and operational supplementation, defence spending was kept more-or-less constant in real terms across the period. Because the cost of maintaining military capability exceeds inflation by 2–3%, the Defence budget came under growing pressure as the years went by. To try to close the gap between means and ends, successive governments pursued 'efficiency' programs of one sort or another through the 1990s (see Chapter 4 of the 2009-10 ASPI Budget Brief for further details).

By the end of the 1990s Defence was in a sad state: the permanent force had shrunk by more than 20,000 positions compared with the mid-1980s; a 'train wreck' of block obsolescence was looming with no money in sight for modernisation; the preparedness of the force was poor with many 'fitted-for-but-not-with' platforms and others badly in need of upgrade; and logistics was hollow and underfunded. It was against this background that the then government decided in 1999 to develop a White Paper with the aim of putting Defence planning and funding on a sustainable footing.

The tumultuous events in East Timor in 1999 delayed the White Paper until the end of 2000. In the process, serious shortcomings in equipment, logistics and preparedness were exposed. It's unlikely that the government would have been as generous in 2000 without the experience of the East Timor operation.

The 2000 White Paper

Defence 2000 sought to achieve a coherent package of strategy, capability and funding for Australia's defence for the decade 2001-02 to 2010-11. On the capability side, a *Defence Capability Plan* (DCP) was published that detailed 165 separate phases of 88 capability proposals planned for the forthcoming decade, valued in total at around $50 billion. The entire package, including new and pre-existing capability, was funded through a decade-long funding commitment that included roughly 3% average annual real growth. The largest share of new money went to capital equipment. The 3% funding commitment was subsequently extended out to 2017-18 in the 2006 and 2008 budgets.

It wasn't long before Defence was struggling to deliver the outcomes sought by *Defence 2000* within the funding provided. In 2003, an internal Defence Capability Review recommended cuts to the force structure to contain costs, including the decommissioning of two FFG frigates, the early retirement of the F-111 fleet and the laying up of two mine-hunting vessels. Notwithstanding these steps, from 2005 onwards additional funds (amounting ultimately to around $1 billion a year) were provided for personnel, estate and

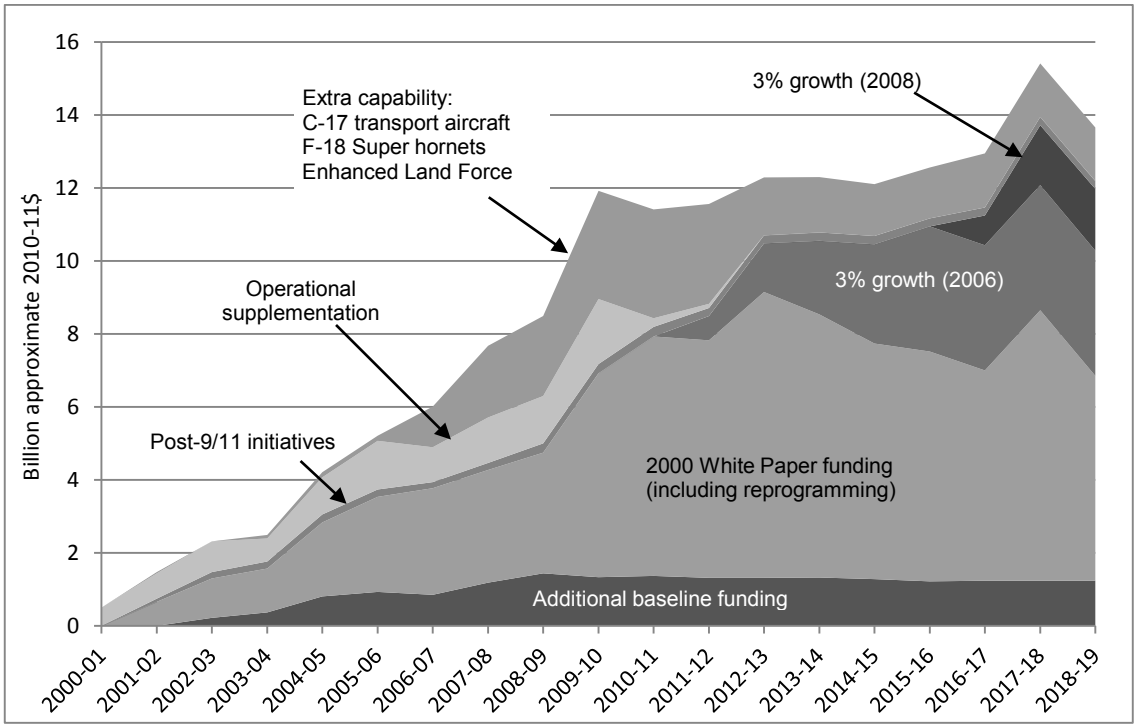
logistics. At the same time, savings measures of $200 million a year were imposed on Defence to redirect money towards combat capability.

Persistent and widespread delays in the approval and execution of defence acquisitions delayed the delivery of many capabilities, with delays of 4-5 years not uncommon. In part, this reflected a systematic underestimation of costs—which caused unapproved projects to be delayed. Further delays arose due to insufficient industry capacity, tardy approval of new acquisitions and all too frequent technical problems with equipment under development. The result was that Defence was unable to spend all the money it had been given to buy new equipment. Over the period covered by *Defence 2000*, around $7.9 billion of planned investment was pushed into the future.

Boom times: 2006-2008

From around 2006, the Howard government provided additional money for a range of new capability initiatives, including four C-17 transport aircraft ($3.2 billion), 24 F/A-18F Super Hornet strike fighters ($6 billion, which included 10 years of support), and the Enhanced Land Force initiative, which included adding two infantry battalions to the Army at a cost of $10 billion over a decade. This additional funding came on top of that provided for new and expanded capabilities in the aftermath of 9/11 and the deployments that followed. Because of out-turning, it's difficult to estimate the precise value of additional funds provided post-2000. The best we can do is to capture the scale of funding using the historical values that appeared in the budget papers at the time, converted to 2010-11 dollars. The result appears in Figure 3.1.

Figure 3.1: Additional funding 2000 to 2008



Source: ASPI analysis of budget papers and DAR, CPI inflation used

Despite all the new money, it remained unclear whether adequate funds were available pre-*Defence 2009* to deliver the capabilities sought at that time. On one hand, it looked like not

enough money had been set aside to crew and operate the raft of new capabilities under development—hence the $10 billion savings program announced in early 2008. On the other hand, Defence was unable to spend the money it had for both investment and recurrent spending. So much so, that it was directed to absorb $1.1 billion of measures in 2008-09 following an abnormally large windfall from price supplementation (and the embarrassing hand back of $830 million of unspent funds from 2007-08). This was the confusing state of Defence funding prior to the release of *Defence 2009.*

From 2009 to 2016

The 2009 Defence White Paper was released on 3 May 2009. Entitled *Defending Australia in the Asia Pacific Century: Force 2030,* the 138-page document included one and half pages—585 words to be precise—on how the government planned to fund Defence over the next 21 years. The plan had two parts:

- 3% real growth in the Defence budget to 2017-18 and then 2.2% from 2018-19 to 2030. The latter growth rate was based on questionable economic analysis undertaken by an external Defence Budget Audit in 2008.
- Retention of the proceeds from a decade-long $20 billion Strategic Reform Program.

Eight days later, in the 2009-10 Budget, the government abandoned its funding commitment and deferred $8.8 billion from across the forthcoming decade. In addition, Defence was required to 'absorb' additional new budget measures amounting to $1.7 billion over the decade. But that was only the start of what became a steady erosion of funding.

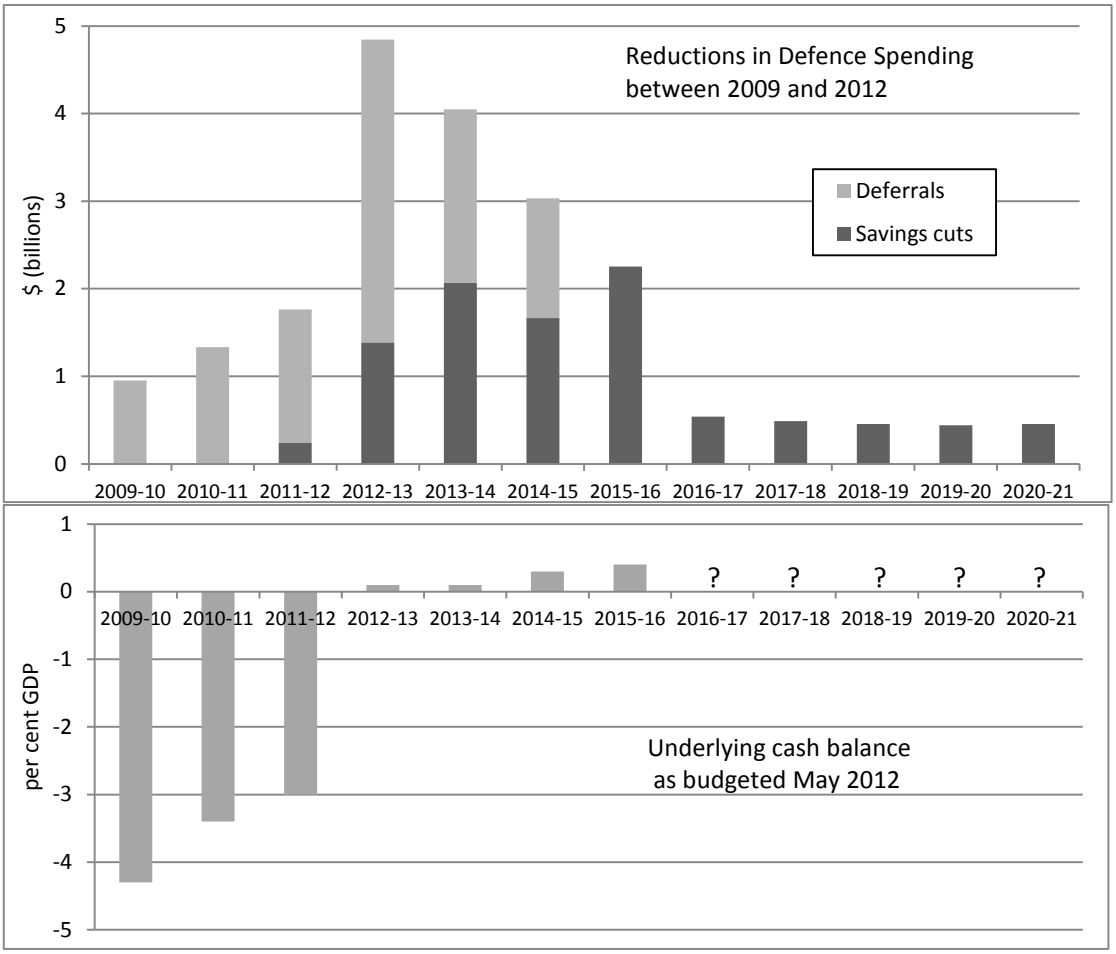
Over the life of the 2009 Defence White Paper (May 2009 to April 2013), $10.6 billion of planned investment was deferred and $10 billion of promised funding was returned to Treasury, including from areas that were supposed to be delivering efficiencies but which subsequently encountered cost pressures exacerbated by the need to absorb $2.5 billion worth of unfunded measures. Nonetheless, Defence still managed to hand back $1.5 billion at the end of the 2010-11.

The aggregate effect of those deferrals and cuts is plotted in Figure 3.2 atop the underlying cash balance for the Commonwealth as estimated at the time of the 2012-13 Budget. Note that if Defence spending had been held at the levels promised in *Defence 2009*, in May 2012 the Commonwealth would have been projected to remain in deficit for two additional years until 2014-15.

The clear correlation between reduced defence expenditure and the return to surplus wasn't a surprise. In 2007-08, we warned—based upon the experience of recessions in the early 1980s and 1990s—that the risk to defence funding occurred not at the outset of an economic downturn, but around the time when the government was striving to return to surplus (see 2007-08 ASPI Budget Brief, p. 135). Events between 2009 and 2012 confirmed our analysis.

It's a matter of opinion whether the potential economic and political gains of delivering a surplus in 2012-13 justified the cuts to defence funding. As it happened, the effort was for naught and the Commonwealth fell into deficit by $19.5 billion that year due to a collapse in revenues resulting from deterioration in the terms of trade.

Figure 3.2: Reduced Defence funding and the underlying cash balance, circa 2012



Source: DAR, PBS and the 2012-13 Budget Overview.

The 2013 Defence White Paper was released on 3 May 2013—four years to the day after its predecessor. Entitled simply *Defence White Paper 2013,* the 132-page document includes one and a half pages—675 words to be precise—on Defence funding. Although it devoted 90 more words to the topic than its predecessor, it actually managed to say less. Key points included a promise to provide a single aggregate figure for defence funding for the six years beyond the forward estimates and an in-principle commitment to spend 2% of GDP on defence 'in an economically responsible manner as and when fiscal circumstances allow'.

With the prospects of achieving a surplus long gone, the way was open for the government to alleviate Defence's budget dilemma by providing additional funding. And it did. As best we could estimate using the fragmentary information available in May 2013, around $3 billion was brought forward from the then fourth year of the Forward Estimates and the years beyond, and around $10.7 billion of funding was cut from those same years. So while short-term pressures were partially addressed, the longer term picture was made even less favourable. (The estimate of $10.7 billion being removed is based on the inadvertent disclosure of long-term funding in the *2010 Intergenerational Report*.)

The $10.7 billion taken away in 2013 was *in addition* to the roughly $10 billion taken away (as opposed to deferred) in 2011 and 2012. Moreover, it doesn't capture any funds deferred to beyond 2022 or the erosion of buying power due to absorbed costs. All up, this puts a lower limit of around $21 billion for the accumulated shortfall relative to 2009 promises.

Nonetheless, the capability goals of *Defence 2009* largely survived through into the 2013 document, with some substantial new acquisitions added as well. With capability targets static or growing, and funding at least $2 billion a year less, the result was a yawning gap between means and ends.

It was hardly surprising therefore, that budget pressures emerged early. In one of its last acts prior to the 2013 election, the outgoing Gillard government brought forward $750 million from 2016-17 into the period 2013-14 to 2015-16 to address near-term funding shortfalls. Near-term budget pressures continued to emerge during 2013-14 and the incoming Abbott government used the Supplementary Estimates process in early 2014 to bring forward an additional $1.5 billion into the period 2013-14 to 2015-16. The funds came from $2 billion removed from 2017-18, with the remaining $520 million pushed back into 2019-20 and 2020-21. In doing so, immediate funding pressures were alleviated—especially in the capital investment program—and an impractical hump in funding for 2017-18 was removed.

The 2016 Defence White Paper

On 25 February 2016, the government finally released its 2016 Defence White Paper. It promised an additional $29.9 billion in funding over ten years and provided explicit year-by-year guidance for that period, see Table 3. 1 (in which changes to the first four years from the 2016 Budget have been included). Unfortunately, we have no visibility of what happens in the final six years. Note that the figures used in *Defence 2016* correspond to 'Funding from government' and do not take account of the (albeit small) revenue from capital sales. The difference is not important when looking at the macro funding picture.

Table 3.1: 2016 Defence White Paper funding guidance ($ billions), out-turned dollars

	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26
Baseline	31,532	34,180	36,709	38,486	40,585	42,588	45,193	47,337	49,477	51,540
White Paper funding	700	0	60	600	1,800	3,200	4,500	5,540	6,256	7,202
Operations supplement	142	19	0	0	0	0	0	0	0	0
Total	**32,374**	**34,199**	**36,769**	**39,086**	**42,385**	**45,788**	**49,693**	**52,877**	**55,733**	**58,742**
2016 Budget	-37	352	7	140	**?**	**?**	**?**	**?**	**?**	**?**
Total	**32,338**	**34,551**	**36,776**	**39,226**	**42,385**	**45,788**	**49,693**	**52,877**	**55,733**	**58,742**

Source: 2016 Defence White Paper and 2016-17 PBS

Defence 2016 more than makes good on the promise to spend 2% of GDP on defence by 2023-24. On current projections of economic growth, defence spending will reach 2% of GDP four years earlier, in 2020-21. However, *Defence 2016* jettisoned GDP targeting and its ten-year funding guidance 'will not be subject to any further adjustments as a result of changes in GDP growth estimates'. Good riddance; as we argued last year, GDP targeting is bad policy. Funding will still be adjusted to take account of foreign exchange (forex) movements.

Nonetheless, the prominence given to the 2% target demands that we analyse the annual GDP share of the funding in *Defence 2016*. In the absence of long-term GDP growth estimates, it's difficult to model beyond the forward estimates. However, the White Paper tells us that the Defence budget will 'reach $42.4 billion, which is 2% of GDP in 2020-21'.

Using the GDP estimate for 2018-19 from the Mid-Year Economic and Fiscal Outlook (the last publically available economic baseline prior to the White Paper), the required nominal growth rate to make this true is 5.3% per annum. That growth rate is consistent with the gradual recovery in nominal GDP growth projected by the present budget, see Table 3.2.

Table 3.2: Nominal GDP growth expectations

Year	2016-17	2017-18	2018-19	2019-20	2020-21
Source	2016 Budget	2016 Budget	2016 Budget	2016 Budget	Estimate
Growth rate	4.47%	4.79%	4.97%	5.24%	5.3%

Source: 2016-17 Budget Papers and analysis of 2016 Defence White Paper

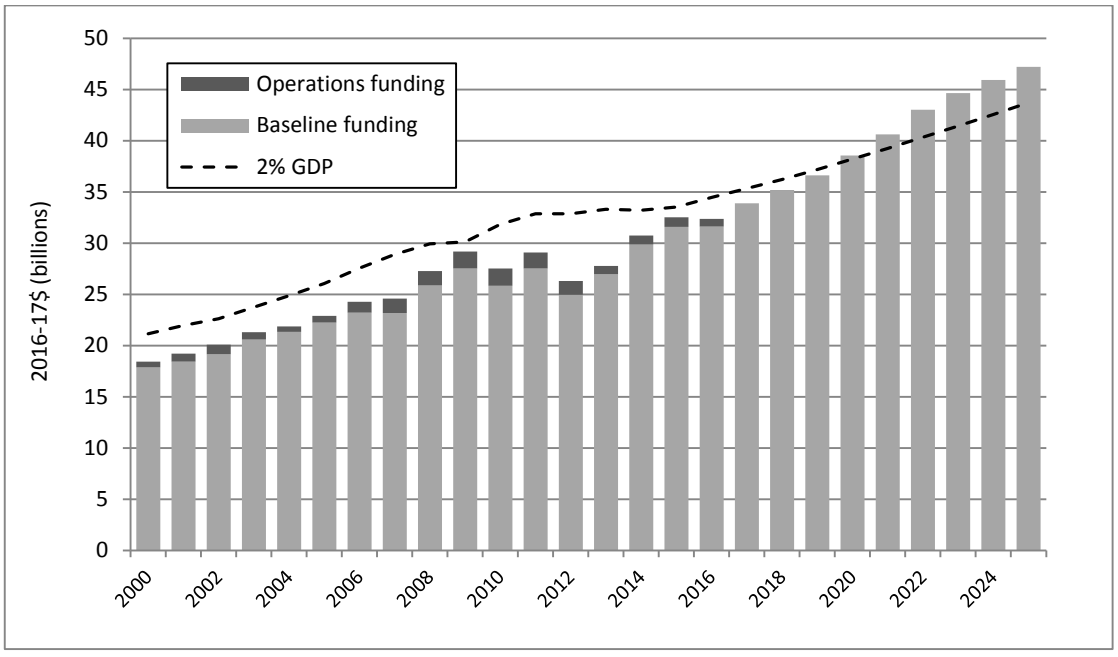
Using the GDP estimates in the Budget Papers out to 2019-20 and our 5.3% nominal growth figure for the subsequent years, we can calculate the GDP share out to 2025-26. The results appear in Table 3.3 and Figure 3.3.

Table 3.3: Defence funding and GDP share – 2016 White Paper

	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26
Nominal $	31,989	31,532	34,180	36,709	38,486	40,585	42,588	45,193	47,337	49,477	51,540
2016-17 $	32,533	32,382	33,877	35,192	36,621	38,562	40,642	43,033	44,673	45,938	47,237
% GDP	1.94%	1.88%	1.92%	1.94%	1.97%	2.02%	2.07%	2.13%	2.16%	2.16%	2.16%

Source: 2016-17 Budget Papers and analysis of 2016 Defence White Paper

Figure 3.3: Defence funding and 2% of GDP—historical and projected



Source: Various DAR, 2016-17 Budget Papers and analysis of 2016 Defence White Paper

It would be nice to think that that the early attainment of 2% of GDP represented a deepening commitment to a stronger ADF by the government. That's probably not the case. Instead, the early attainment of 2% of GDP almost certainly reflects that Defence was given a funding envelope in late 2013 or early 2014 when (1) GDP growth estimates were higher and (2) the Australian dollar was worth more. As estimates of growth moderated and the dollar fell in value, the GDP share automatically grew—without Defence gaining an iota of

additional buying power. Table 3.4 shows the supplementation provided due to forex movements since late 2013 up until the initial years of *Defence 2016* funding.

Noting that only 2015-16 and 2016-17 provide a full picture of recent forex adjustments, it's likely that still larger adjustments have boosted funding in the years beyond—larger because the funding is higher in those years. The impact would be significant. For example, $2 billion of forex adjustment represents a 5% boost to baseline funding of $40 billion. It follows that forex adjustments have almost certainly contributed materially to the early attainment of 2% of GDP.

Table 3.4: Funding added due to foreign exchange movements (nominal dollars)

	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
2013-14 PAES	428	481	528	-	-	-
2014-15 PBS	224	126	117	163	-	-
2014-15 PAES	6	74	24	-30	-	-
2015-16 PBS	320	732	681	689	697	-
2015-16 PAES	-	253	299	312	420	-
2016-17 PBS	-	-	162	153	307	459
Total	978	1,666	1,811	1,287	697	459

Source: PAES & PBS

Declining expectations of economic growth are at least of equal importance. The successive downward revisions of GDP growth have substantially affected measurements of defence spending as a share of GDP, as is clear from in Figure 3.4. Note that most of the differences between the various projections are the result of early foregone growth—the long-term growth rate has been taken to be the same in each case. The large variations between the projections reflect the tyranny of compounding growth coupled with the sensitivity of nominal GDP to our terms of trade.

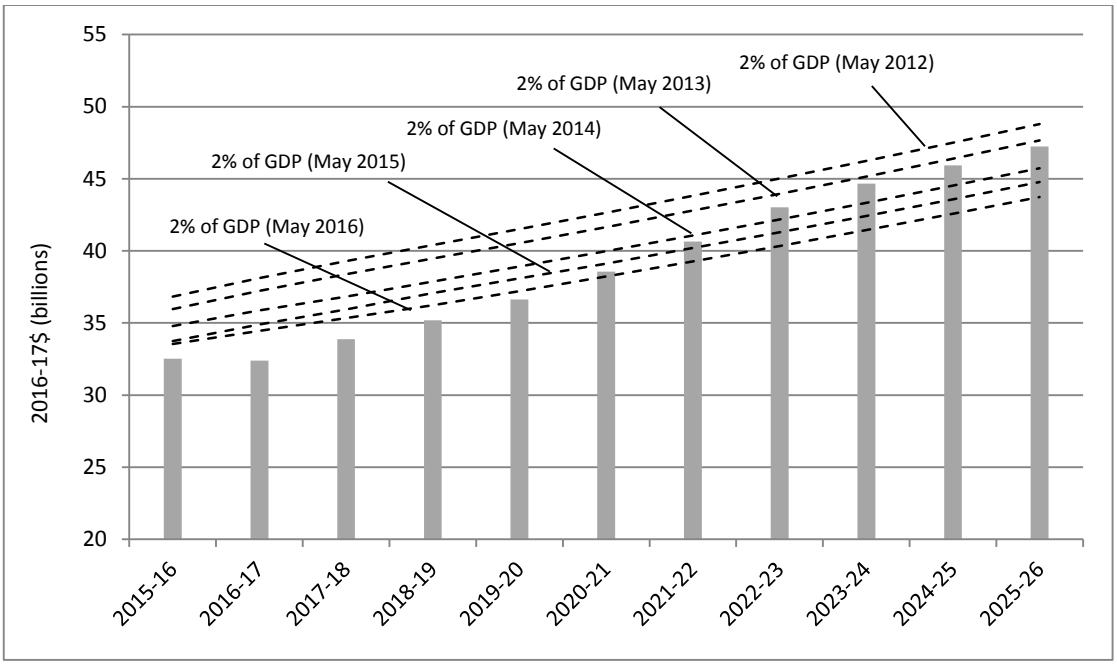
Assuming that the White Paper funding envelope was fixed in May 2014, falling expectations of GDP growth coupled with robust forex supplementation fully explain the attainment of the 2% target three years early. In the process, the arbitrariness and frailty of planning defence spending on the percentage of GDP becomes clear.

Where will the money go?

Defence 2016 provides a useful 'layer cake' chart (p. 182) of plans for spending the money over the next decade. Because the categories do not correspond to those used in Defence's public reporting (such as the Capital Investment Program and Capability Sustainment Program discussed in Chapter 2.1), we cannot include earlier years or reflect changes due to the 2016 Budget. It nonetheless warrants close examination to see what it tells us about where the money will go in the medium to longer term. Figure 3.5 shows the four categories of spending in real 2016-17 dollars.

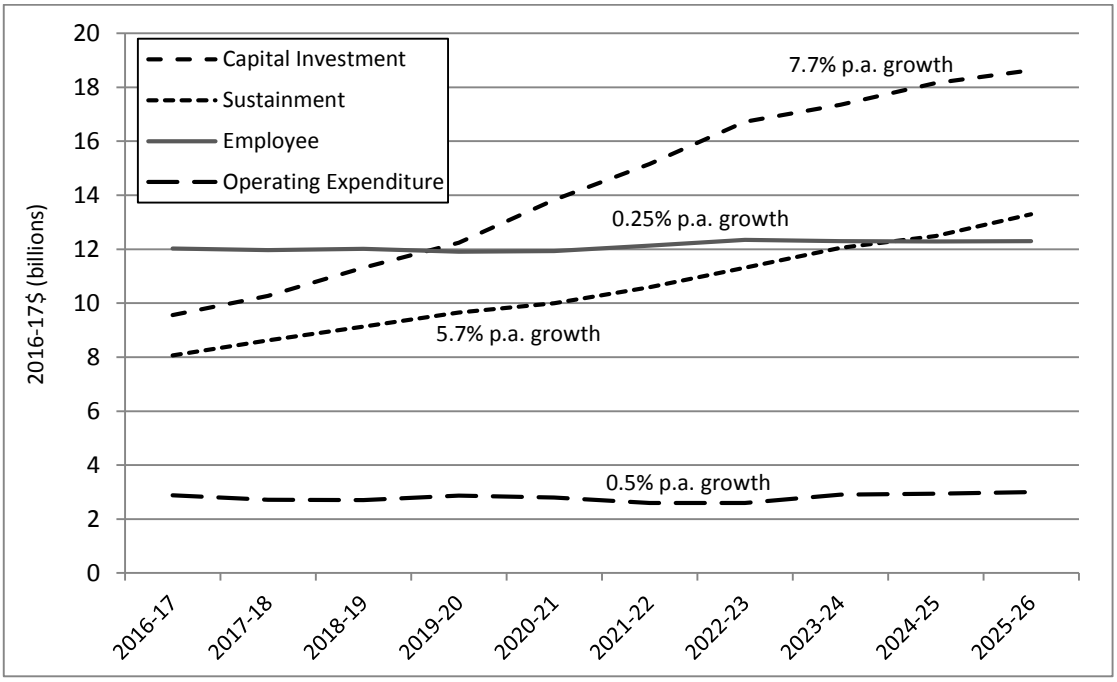
Although *Defence 2016* claims that the 'Integrated Investment Program allocates approximately $195 billion in the decade to 2025–26 for investment in new and enhanced capabilities', there only $162 billion in capital investment guidance in the White Paper's Figure 5.

Figure 3.4: GDP share is rising because the GDP is falling



Source: Various Budget Papers and analysis of 2016 Defence White Paper

Figure 3.5: Trends in 2016 White Paper financial guidance categories



Source: Analysis of Figure 5 from 2016 Defence White Paper

It's informative to look at analogous trends in the budget. Table 3.5 compares the trends in *Defence 2016* with those for the Capital Investment Program, Capability Sustainment Program and Cash Employee Expenditure for the period 2016-17 to 2019-20 (which is the extent of temporal overlap between the two data sets). No ready comparator for what the White Paper calls 'operating expenditure' is available. Growth rates are compounding and real, based on CPI.

Table 3.5: Trends in 2016 White Paper financial guidance categories 2016-17 to 2019-20

	2016-17 Portfolio Budget Statement (Capital Investment Program, Capability Sustainment Program & Employee Cash)	2016 Defence White Paper (Capital Investment Guidance, Sustainment Guidance & Employee Guidance)
Capital Investment	6.5%	8.6%
Sustainment	5.4%	6.1%
Employee	-0.2%	-0.3%

**Other corresponds to 'operating expenditure ' for the 2016 Defence White Paper and the residual spending for the PBS Source: Analysis of data from 2016-17 PBS and 2016 Defence White Paper*

Comparing the two sets of trends, the employee figures are fully consistent and the difference between the sustainment figures is small enough to be explained by varying definitions. The capital investment figures, however, are difficult to reconcile—especially given the $500 million reduction from 2016-17. Removing money from the first year of the period can only increase the rate of growth, yet the post-Budget figures show a slower rate of growth than the White Paper.

Further insight can be gained by looking at the changes to planned capital investment between May 2015 and today. Let's start with 2015-16. Despite receiving an additional $254 million in forex supplementation (of which probably at least half relates to foreign equipment purchases), the Capital Investment Program for that year declined from $9.8 billion to $9.2 billion between May 2015 and February 2016. The largest decline was in major equipment (-$480 million). We don't know what's happened to the Capital Investment Program in the remainder of 2015-16 because it is not updated in the 2016-17 PBS. But we can look at the total budget, and there hangs a tale.

Usually, the PBS includes a column in the Budget Measures table (PBS Table 3) for late in-year adjustments to the financial year about to close. For example, last year there was an additional $320 million provided for forex. This year, the column was omitted and no forex top up occurred. Had the column appeared, it would have reported that $358 million was handed back to government. Adding the $120 million reduction in capital receipts and, based on past patterns, an estimated $80 million in foregone forex, Defence has underspent by around $500 million this year (and the year is not over). The shifting of $500 million from 2016-17 to 2017-18 now makes perfect sense.

Looking further out, planned investment in 2017-18 has remained static despite a $465 million forex injection and the extra $500 million shifted in this budget. And in 2018-19, planned investment has fallen from $14.6 billion to $12.9 billion, notwithstanding a massive $727 million in forex supplementation. Thus, leavings aside 2016-17 (which we turn to next), it looks as if:

- Defence is already having trouble spending its investment budget, even before the additional White Paper funding arrives and despite more than two years of preparation.

- Planned investment toward the latter years of the forward estimates period was reduced substantially in this year's budget.

How about 2016-17? In a rare coincidence, akin to a once-in-a-century alignment of the planets, we have two adjacent Defence budgets (2015-16 and 2016-17) of almost the same size and almost the same level of operational supplementation. Comparison of the two is baffling; employee expenses fall by $330 million in real terms, despite rising personnel numbers; sustainment costs grow by $600 million in real terms, which is unsurprising, but capital investment grows by a massive $1.4 billion. With the budgets about the same size in real terms, where will the extra $1.4 billion come from? It makes no sense.

Is the White Paper 'fully costed'?

The White Paper says that the '10-year funding model is based on a fully costed future force structure, with external validation of these costs by experts in cost assurance from private sector companies which are globally recognised for their cost analysis and assessment services'. As we detailed last year, Defence spent more than $14.5 million on external cost estimates. The fruits of their labour appear in the 2016 Integrated Investment Plan (IIP) and Figure 5 of *Defence 2016*.

Only time will tell whether the equipment costs in the IIP are accurate or not, but anecdotal comments from industry point to a possible overestimation bias in some of the figures. While this might simply reflect the use of 'out-turning' numbers, which inflate financial figures relative to current values, at least some of the costs seem overly generous. For example, it's unclear how to spend $4–5 billion sensibly on the AWD combat system over the next decade given that the vessels only cost $9 billion and are yet to be delivered. Recent extensive upgrades of Japanese vessels with the same combat system only cost several hundred million per vessel, and the actual combat system itself only cost $400 million per vessel to acquire. Similarly, although the IIP gives the cost for the Navy's two new replenishment ships as $1–2 billion, a contract for $640 million was signed in May 2016.

If the White Paper authors and their globally recognised experts have erred on the side of caution with equipment costs, they have done the opposite with employee costs. Using the White Paper's workforce figures and employee financial guidance (Figure 5), per capita employee expenditure can be calculated. The result is that planned per capita costs fall by 0.25% per annum across the decade. Using employee costs from the PBS for the period 2015-16 to 2019-20, the result is even more perplexing; per capita costs will fall by 1.4% per annum or 5.6% over the four years.

Those reductions are difficult to credit. Although there are planned reductions in the number of executive and middle management positions, those have so far only amounted to only around 530 fewer people in civilian and military executive/middle management positions (out of 8,700 such positions in 2014-15), and we're almost halfway through the planned two-year reform period. Just as importantly, there are plans to strongly upskill the Defence workforce.

The expansion and rebalancing of the integrated workforce will create the new jobs needed to build a high-tech Defence organisation for the 21st century. In part, this represents the

need to crew the new advanced platforms being acquired, such as the Joint Strike Fighter. At the same time, *Defence 2016's* avowed 'emphasis on intelligence, space and cyber security capabilities to meet our future challenges' will see more people working in those areas. Other areas of growth include engineering, logistics, force design and analysis, and additional military and civilian overseas postings. *Defence 2016* is clear about the net impact of the changes: 'As Defence adopts new and more complex capabilities, the demands on the integrated workforce will increase.'

Consequently, it's difficult to reconcile the planned cuts to per capita employee costs with *Defence 2016's* promise to ensure that 'the employment offers to Defence staff remain competitive to attract and retain the right number of people with the skills Defence requires'. Whatever happens with acquisition and sustainment costs, it appears likely that employee expenses will emerge as a budget pressure in the years ahead.

Is the White Paper transparent?

First the good news; *Defence 2016* provided explicit year-by-year funding guidance for the forthcoming decade—a level of white paper transparency not seen since *Defence 2000*. Unfortunately, the 2016 Budget failed to follow the example and only disclosed the usual four-year forward estimates. It is possible to do better. From 2003-04 until 2012-13, the PBS disclosed budget measures and adjustment across the decade. See for example Table 15 in the 2012-13 PBS. The current bipartisan commitment to the funding promised in *Defence 2016* is practically unenforceable unless we have visibility of the changes wrought by forex movements, deferrals and budget measures across the full ten years.

The Integrated Investment Plan claims to bring together 'for the first time' the Unapproved Major Capital Investment Program, Approved Major Capital Investment Program, Major Capital Facilities Program, Information and communications technology services and Group and Service workforce plans. As good as this sounds*, Defence 2000* actually employed an even more comprehensive approach (see Chapter 8 of *Defence 2000*), which included sustainment. Surely a truly integrated approach would include the more than $8 billion spent annually sustaining the equipment, bases and people of the ADF. The IIP is also unimpressive in other respects.

The personnel coverage in the IIP simply regurgitates the scarce data already disclosed in *Defence 2016*. Even then, the data is of limited use because the personnel baseline remains undisclosed. For example, we're told that there will be an additional 500 ADF personnel added to the strike and air combat workforce. That's all very interesting, but, because we don't know what the size of the strike and air combat workforce is to start with, we can't say whether the workforce has increased by 5% or 50%. The result is a series of impressive sound-bites without the context needed to make sense of the changes.

What are we left with? All up, we get a list of 166 planned equipment and facilities projects and a partial list of (34 out of more than 150) pre-existing equipment projects. Only a couple of the current 55 major facilities projects make the cut. In a move of inexplicable unhelpfulness, the IIP omits the project numbers routinely used to identify projects. Groan.

The strength of the IIP is that it provides a narrative description of planned investment in each of four adjective-laden categories, including Enabled, Mobile and Sustainable Forces

and Potent and Agile Offensive Response. Read in tandem with *Defence 2016*, it provides at least as clear a sketch of overall plans for the ADF as the *Defence 2009* or *2013*. That said; there are more than a few gaps. For example, the need to extend the life of at least some of the Collins fleet only became known following media investigations several days after the document's release.

At the project/program level, only two pieces of information are provided. The first is the 'approximate investment value', expressed as a range such as $100–200 million. Unfortunately, the numbers are given in 'out-turned' dollars that include anticipated inflation over the life of the project. For example, the 'greater than $50 billion' price for the future submarine reduces to a much more modest (but still large) 'greater than $28 billion' in today's dollars under reasonable (by though no means certain) assumptions about the spending profile. Using out-turned dollars as the sole source of disclosed costs is misleading to the point of obfuscation.

The second piece of information is what's referred to as either 'Program Timeframe' or 'Indicative Acquisition Window', depending where you look. Defence confirms that the Indicative Acquisition Window is 'simply the indicative time period over which the acquisition is expected to occur'. For example, the future submarine is assigned the window 2018–2057. From the submarine example, we know that the end dates don't correspond to in-service dates. From the 69 project windows commencing in 2016, we know that the start dates probably don't correspond to project approval—though, as we'll see, the IIP is very front-end loaded. Thus, with neither year-of-decision nor in-service dates provided, the IIP provides precious little useful information about project timing. To make matters worse, the description of projects is often much terser than was previously provided under the Defence Capability Plan (DCP).

Despite its many colourful charts and the self-congratulatory 'for the first time' claim, the level of disclosure in the IIP is below that of DCPs published from 2001–2012, and even compares poorly with the public 'Pink Books' and 'Green Books' of the 1990s. As a result, the 2016 IIP represents the lowest point in defence capability planning transparency in a quarter of a century.

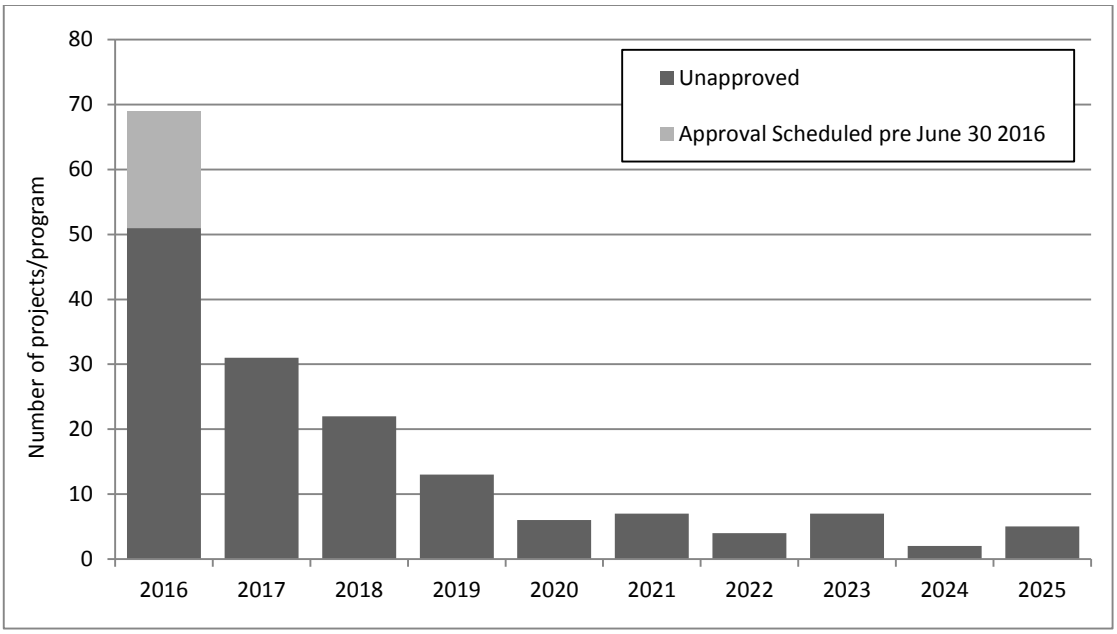
Transparency matters because it assists industry to plan and allows the government and Defence to be held to account. With major reforms underway in the areas of capability planning and acquisition, and with industry now identified as a 'fundamental input to capability', we need more transparency, not less.

A longer discussion of how to disclose planning information consistent with security and commercial considerations can be found in *How much is enough? The disclosure of defence capability planning information*, Leigh Purnell and Mark Thomson, 2010.

Can the White Paper be delivered?

Although the commencement dates of acquisition windows in the IIP are unlikely to coincide with project approvals, it is reasonable to conclude that there are a lot of approvals planned over the next few years, given the distribution of acquisition window commencement dates in Figure 3.6.

Figure 3.6: Commencement dates of 'Indicative Acquisition Windows' in the 2016 IIR



Source: 2016 Integrated Investment Plan

The expectation of a looming rush of approvals is reinforced by the 2015-16 PBS, which lists 10 first-pass, 23 second-pass and 3 other approvals for 2016-17. In comparison, last year's PBS only listed 2 first-pass and 8 second-pass approvals (albeit as a sample pending the White Paper). But that's not all; the IIP mentions 18 projects—including 16 equipment and 2 facilities projects—scheduled for approval prior to 30 June 2016.

As best we can ascertain, of the 18 projects in the IIP planned for approval in 2015-16, six have been approved and one has been delayed. With an election called, there is no time for the remaining 11. That means that 11 projects will roll into next year and be added to the 36 already scheduled, resulting in 47 approvals next year in order to keep to schedule, or 44 if we focus on just first- and second-pass approvals. In any case, see Table 3.6, recent approval numbers show that 33, let alone 44 or 47, approvals are very unlikely to materialise

There's nothing new in Defence setting overly ambitious targets for approving projects, check out the charts in Chapter 8 of the 2014-15 *Cost of Defence*. The recurrent pattern has been to set high standards and then fail to achieve them. But this is supposed to be a new era of 'affordable and achievable' strategy.

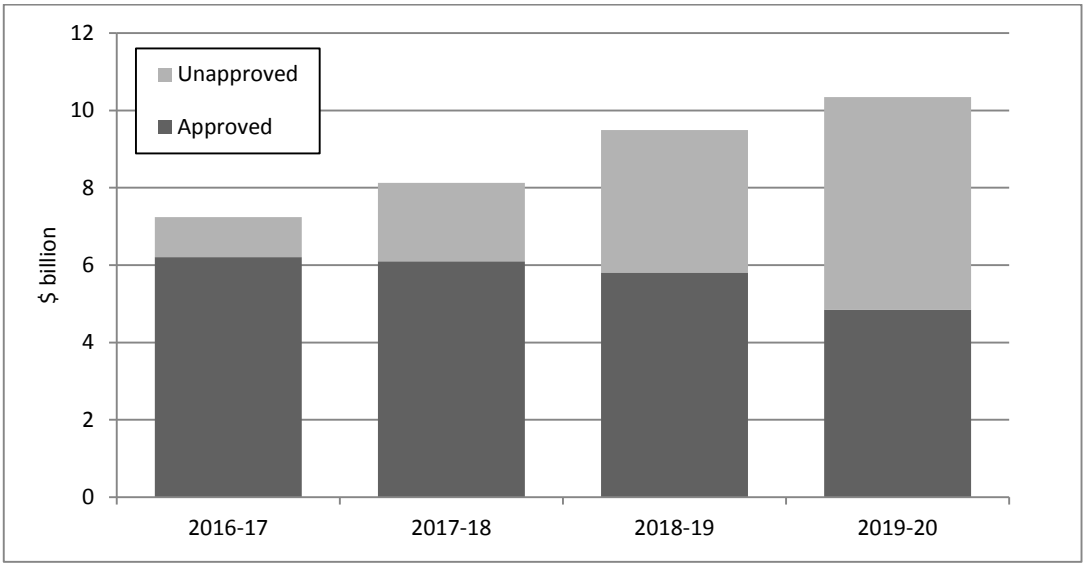
Table 3.6: Historical first- and second-pass approvals

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
First-pass	10	8	14	3	4	4	7	11	4	6	5	2	10
Second Pass	7	12	14	6	9.5	11.5	10	16	15	9	13	9	23

Source: DAR and data from Defence

Delays in the approval of projects will result in delays to commencement, execution and eventual delivery. Along the way, planned investment will falter. The high sensitivity of investment spending to project approvals is reflected in the high proportion of 'unapproved' project funding only a few years into the future, see Figure 3.7.

Figure 3.7: Approved and Unapproved Major Capital Investment



Source: 2016-17 PBS

Slow project approvals are but one of several sources of delay to the investment program. Past experience shows that extended contract negotiations and slow deliveries of equipment by industry also introduce delays.

The last time that there was a concerted effort to expand the investment program was following *Defence 2000*. During that period, defence spending managed to grow at 5.3% in real terms while investment grew at around 5.4%. This time around; although the overall budget will grow by only 4.3% (using 2016-17 as a start point) investment is slated to grow in real terms by 7.7% per year.

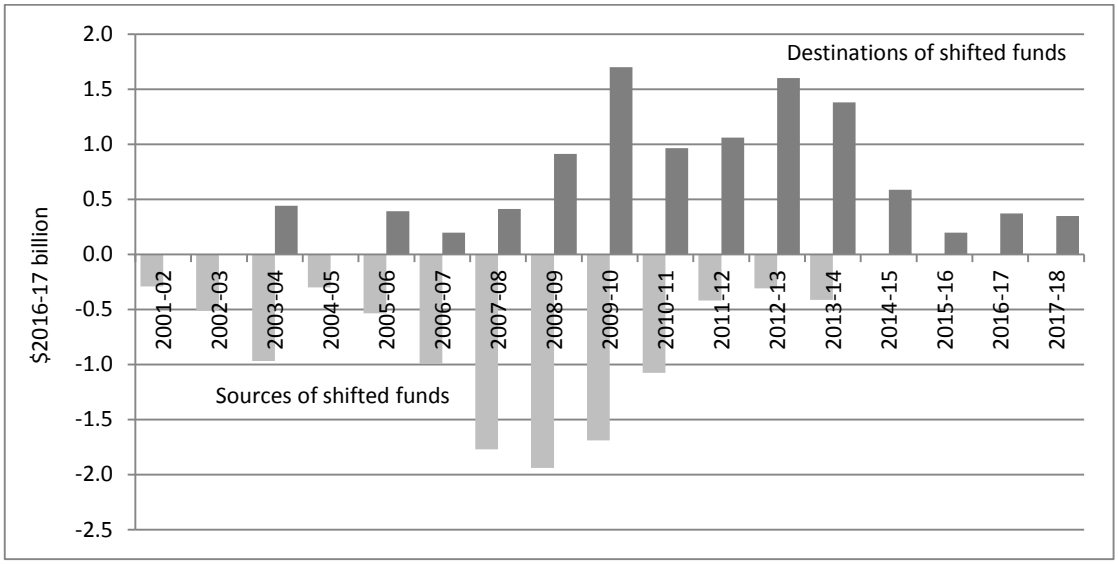
The results of the earlier, less-ambitious, program were disappointing to say the least. Figure 3.8 shows the shifts to planned investment that occurred between 2001-02 to 2008-09 (the year immediately prior to *Defence 2009*). In total, $9.5 billion was delayed by an average of 4.4 years and $1.6 billion was brought forward by an average of 4.1 years. The net result was 34.5 billion dollar-years of delay, where a dollar-year represents one dollar shifted by one year.

Over the same period, Defence underspent its budget on four occasions, including by $785 million in 2001-02, $500 million in 2003-04 and $680 million in 2007-08. A portion of these underspent funds flowed on into delayed investment spending, and some was handed back to government. Meanwhile, over at the quasi-independent DMO, $987 million of unspent funds (very quietly) accumulated in its intra-government account between 2005-06 and 2007-08—funds that were reported as spent by Defence. Did someone say hollow log?

If past precedent isn't sufficient to raise concerns about the feasibility of delivering the ambitious plans set out in *Defence 2016*, there's the added complication of a department mid-way through a 'once in a generation' reform program. As explained in Chapter 4, a

centre piece of the reforms is a new capability life cycle framework, with new arrangements for the planning, approval and delivery of equipment and facilities projects. The old DMO has been disestablished and reabsorbed into Defence proper. In the process, its upper layers of management have been downgraded by a rung on the executive ladder. The old Capability Development Group has been disbanded and its staff dispatched to the various service HQs and the VCDF group. Amid the disruption, a new (military-led) contestability branch is being created to provide scrutiny of capability proposals—but it will be years before the embryonic function finds its feet. Even if these changes lead to better outcomes in the long term, the bedding down of new organisational arrangements and processes while managing the wave of new projects is laden with risk.

Figure 3.8: Delays in capital investment 2001-02 to 2008-09



Source: 2002-03 PBS and 2008-09 PBS

Finally, emerging trends in industry policy are likely to increase the likelihood of delays to the investment program. Back in 2008 (see the 2008-09 ASPI Budget Brief, Chapter 7), we examined historical defence procurements and found that delays were strongly correlated with projects that were:

- developmental
- software dependent
- Australian unique
- locally produced.

There's no escaping software dependence in the modern world, but the other three factors are largely discretionary. Over the past decade, we've seen a growing number of off-the-shelf purchases of proven equipment from established production lines. Examples include the F/A-18F Super Hornets, C-17 transport aircraft and CH-47F Chinook helicopters. These low-risk projects were all delivered on time and within budget. But the tide appears to have turned. As explained in Chapter 7, the government has made it clear that they want more defence work done locally, and industry will surely oblige.

If that weren't enough, there also seems to be a renewed embrace of developmental solutions to the ADF's capability needs. Both the new submarine and frigates will be highly developmental. Moreover, the government's new Defence Industry Policy Statement (DIPS)

released alongside *Defence 2016* places a high emphasis on innovation, science and technology, including through a new $73 million a year Next General Technologies Fund. The fact the DIPS uses the word *innovation* 186 times, and mentions *off-the-shelf* but once, does not bode well for containing the level of risk in future defence projects.

Will the money be delivered?

On the surface, it looks like the best of times for Defence. The long-awaited *Defence 2016* has finally been delivered, and its centrepiece explicit ten-year funding commitment has received bipartisan support. But promises are easy when surpluses are an electoral cycle or more away; past experience shows that defence spending is most at risk when a surplus comes within reach. In what might turn out to be a fateful coincidence, defence spending is slated to hit 2% of GDP in 2020-21, the same year that a return to surplus is anticipated. With the federal election after next likely in mid-2019, the temptation will be to budget for a surplus a year early, in 2019-20—what better way to establish economic credentials prior to going to the polls. But there are as yet unresolved pressures in health and education built into the federal budget, which will make delivering a surplus in 2020-21, let alone 2019-20, politically difficult.

The priority to fund defence will depend on events. A clash in the South China Sea or a severe recession could tip the balance quickly in different directions. Quite apart from such external events, there's a risk endogenous to Defence's situation that could change things profoundly. Few things would encourage a government to abandon its commitment more than Defence being unable to spend the money it already has. As occurred following *Defence 2000,* we could see a situation where falling confidence in Defence's ability to spend results in large deferrals. In this way, the various headwinds pushing against the delivery of capability could eventually undermine the prospects of reliable funding.

Chapter 4 –Defence Reform

On the 1 April 2015, the government released the report of the independent First Principles Review of Defence. As a result, Defence has been undergoing its second major reform program in less than a decade. Its predecessor, the Strategic Reform Program (SRP), was only abandoned in 2013.

This chapter is divided into three sections. The first surveys defence reform over the past 35 years. The second summarises the SRP. The third reports progress on implementing the First Principles Review.

Key Points

The implementation of the recommendations of First Principle Review of Defence is on track.

One year into the two-year implementation period, 36 of 69 recommendations have now been completed.

Work continues to fully implement the new capability life cycle.

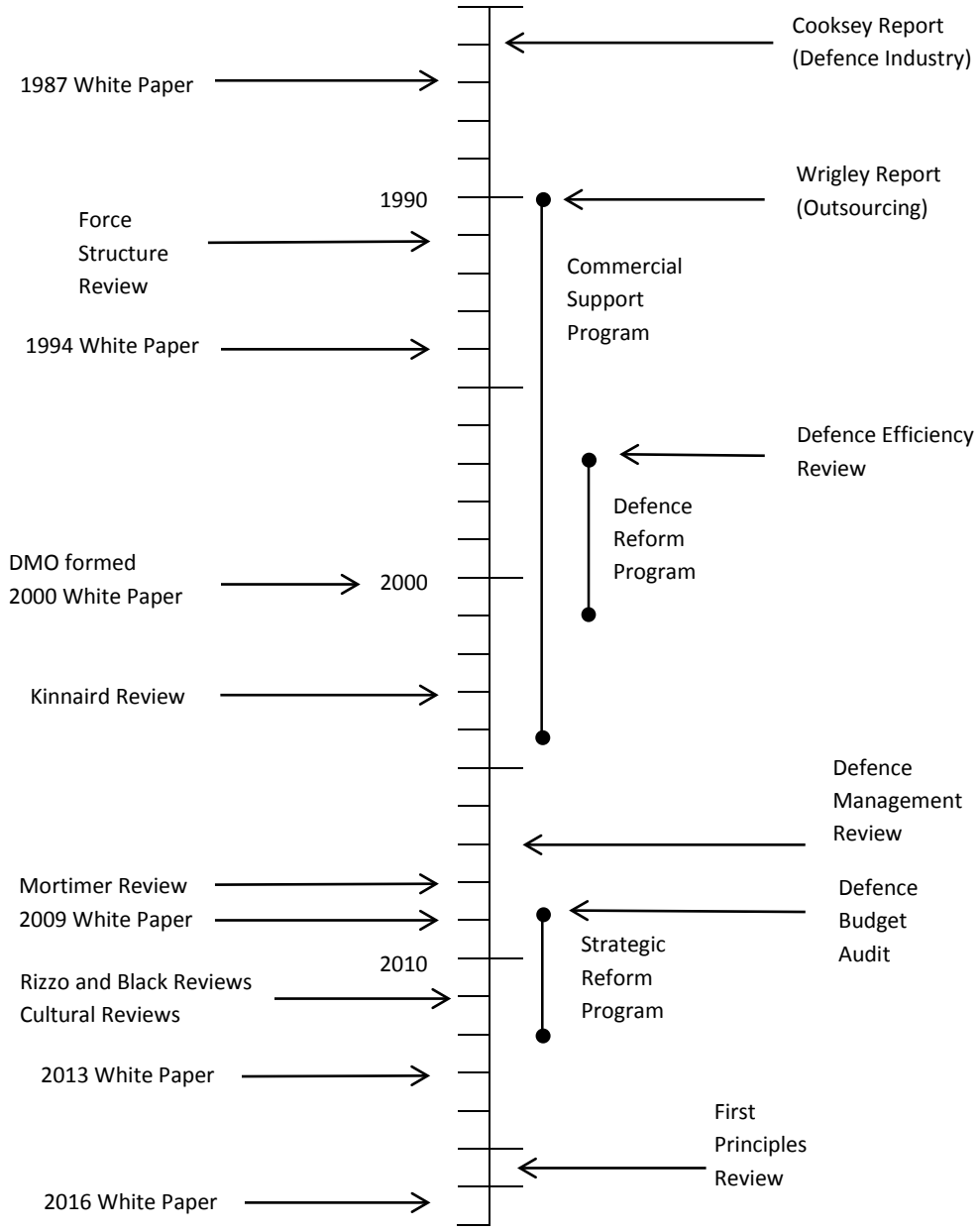
A detailed examination of the First Principles Review can be found in the 2015 ASPI Special Report *One Defence—one direction?* available from the ASPI website. While the emphasis here is largely explanatory, the aforementioned publication provides a critical analysis of the program. For further background on Defence reform, see previous editions of the Budget Brief and Ergas (*Agenda*, Volume 19, #1, 2012) and Ergas and Thomson (*Agenda*, Volume 18, #3, 2011). Consistent with the financial focus of the Budget Brief, Defence's cultural change program *Pathways to Change* is not examined.

Background

The Australian Department of Defence was created in 1976 by the amalgamation of the previously separate three services and civilian department. As with similar consolidations in the United States and United Kingdom, the goal was to achieve greater inter-service cooperation and, to an extent, impose closer civilian oversight. The resulting organisation was largely a federated structure with central execution of policy development, financial management, force structure planning, science and technology, and capital acquisition. Then, as now, a diarchy of the Secretary and Chief of the Defence Force (CDF) lead Defence with separate and overlapping responsibilities.

In the late 1980s, Defence commenced a long-term program of systematically market testing non-core functions. Under the auspices of the Commercial Support Program, see Figure 4.1, civilian and military activities were compared with private sector alternatives. By the end of turn of the century around 16,000 positions had been market-tested with around 66% of activities examined transferred to the private sector. Activities included printing, repair and maintenance of equipment and facilities, medical services, technical training, corporate services, catering and information technology. Around the same time, the government divested itself of its shipyards, munitions plants and aircraft factories. By 2000 the civilian workforce had fallen from 40,000 to 16,300 positions and the military 70,000 to 50,300. These reductions were largely the result of outsourcing and privatisation, notwithstanding that several thousand military positions were also lost as a result of the 1991 Force Structure Review.

Figure 4.1 Defence reform: 1985 to 2015



In 1996, the newly elected Liberal–National government undertook a comprehensive Defence Efficiency Review involving a high-level private/public sector advisory team. The Review led to the Defence Reform Program (DRP), which ran between 1997 and 2001. The DRP:

- adopted a shared services model for a wide range of activities including personnel administration, materiel sustainment, training and education, base/facilities support and information technology
- geographically consolidated some activities and disposed of the resulting surplus property

• accelerated the outsourcing of activities, including many that had been recently consolidated.

The promised savings from the DRP were around $1 billion from a then budget of $10 billion. Although the DRP fundamentally restructured the organisation by embracing a shared services model, the long-term financial impact of the changes is difficult to discern. Most of the savings were used to 'buy-back' 7,000 military positions. But because there were no additional ships, planes or battalions raised as a consequence, the 'buy-back' was as much a 'roll-back' of reform.

In 1999, the Australian-led mission to East Timor heralded a decade of high operational tempo and rising defence funding. With money flowing and attention focused on operational matters, efficiency reforms were put on the back burner and the shared services model eroded by the migration (and in some cases the duplication) of many activities back into the individual services.

In one area, however, reform continued during the 2000s. Beginning in 2000, materiel sustainment and acquisitions were consolidated by the creation of the Defence Materiel Organisation. There followed a series of reforms to capability planning and acquisition precipitated by several embarrassing multi-billion dollar acquisition debacles. Key developments included:

• re-establishment of DMO as a quasi-independent 'prescribed agency' with separate financial accounts from Defence

• the introduction of a two-pass process of project approval that saw the National Security Committee of Cabinet directly involved in the approval of large defence acquisitions

• revamped project governance and professionalisation of the DMO workforce.

The merits of the reformed DMO are difficult to judge given the extended duration of major defence projects, but preliminary data shows some improvement in the delivery of projects on schedule and within budget. As for the two-pass process, it now takes much longer to conceive and approve projects than in the past, and alignment between strategic policy and capability development remains elusive.

Towards the end of the last decade, there emerged two (almost contradictory) propositions about Defence funding. First, that there was not enough money in projected Defence funding to afford all that was planned in terms of new equipment and attendant personnel and operating costs. Second, that Defence was not as efficient as it could be, having grown fat and complacent after close to a decade of escalating funding. Faced with this situation, in early 2008 the then government directed Defence to find $10 billion of savings over the next decade.

Then in May 2008, the government appointed George Pappas to audit the Defence budget. His report was delivered to the Minister in April 2009. The Budget Audit identified prospective savings of $1.3 billion to $1.8 billion a year based on 2007-08 spending, plus one-off savings of between $218 million and $398 million. On an out-turned basis (taking

anticipated inflation into account), the prospective recurrent savings over the decade commencing 2009-10 were between $15 billion and $20.7 billion.

To the work of the Budget Audit were added (1) the initial work done by Defence to save $10 billion, (2) the results of the 2008 Defence Procurement and Sustainment Review and (3) the results of a series of internal 'companion reviews' conducted in parallel to the development of the 2009 Defence White Paper. The result was the Strategic Reform Program; a package of reforms and efficiency initiatives to improve Defence's performance and deliver $20.6 billion of savings over the following decade for reinvestment in capability.

The Strategic Reform Program

There were three key elements to the Strategic Reform Program (SRP); improved accountability, improved planning, and enhanced productivity. Planned reforms to accountability and planning were examined in detail in the 2009-10 Budget Brief.

Reporting against the $20 billion savings program central to the SRP was abandoned only three years into its planned ten-year life. Although it was not said directly, it is likely that the savings program became unviable because of deep cuts to Defence funding in the 2012-13 budget coupled with mounting budget pressures in areas that had supposedly been delivering savings.

This is no great loss. As previous editions of the Budget Brief showed in detail, the much lauded $20 billion savings program was implausible and exaggerated, with savings reported against inflated hypothetical business-as-usual baselines. In reality, there was no transferring of savings from one part of Defence to another. The notional savings were built into group budgets back in 2009. In fairness, however, some savings were achieved and some worthwhile reform occurred, but not on the dollar scale claimed.

In 2011 and 2012, further savings efficiencies were announced in addition to the original SRP program. Unlike their predecessors, the new efficiencies represented cuts to defence funding rather than the freeing up of funds for redirection within Defence. As such, there is no question of whether the savings were delivered or not; the money was removed from the Defence budget and returned to the Treasury. With defence funding being cut repeatedly and deep, the notion of pursuing efficiency savings under the SRP became fanciful. So it was that the government abandoned the reporting of SRP savings in 2012. Further cuts occurred in 2013 and 2014.

As explained in the 2014 Budget Brief, worthwhile reform continued in Defence after the end of formal SRP reporting. In particular, good progress was made in rolling out 'smart sustainment' in DMO and the Services and progressive reform continued towards the consolidation of the shared services model.

The First Principles Review

Consistent with its election promise, the Abbott government initiated the First Principles Review (FPR) on 5 August 2014. The five-person review panel was chaired by David Peever (former Rio Tinto managing director) and included Peter Leahy (former Chief of Army), Jim McDowell (former BAE Systems executive), Robert Hill (Defence Minister in the Howard

government) and Lindsay Tanner (Finance Minister in the Rudd government). Panel members were engaged under seven-month contracts valued at $322,575 each.

The panel was assisted by the Boston Consulting Group and an in-house secretariat from Defence. The Boston Consulting Group was engaged under a six-month contract valued at $4,950,000 dollars.

In announcing the review, the Defence Minister said that it would 'make recommendations designed to ensure Defence's business structures support the Australian Defence Force's principal tasks out to 2030'. ASPI's 2015 report *One Defence—one direction?* reproduces the review's lengthy terms of reference . They're a peculiar mix of the general and the specific. On the one hand, the review was given a wide remit to look at Defence's structure and business processes. On the other, it was tasked to report on a range of very specific issues, from the organisational arrangements for geospatial intelligence to improving cash-flow estimation for capital investment.

Background

According to the review, there have been over 35 significant reviews of Defence since the absorption of the three single services into the Department of Defence in 1973—and no fewer than 20 were undertaken between 2008 and 2011. In many cases, the reviews were direct responses to specific events. For example, the 2011 Rizzo review of naval sustainment followed the unexpected collapse of the RAN's amphibious lift capability just before a cyclone struck the coast of Queensland. Other reviews, such as the 2003 Kinnaird review of defence procurement, reflected long-term dissatisfaction with performance in a core function. The FPR falls into a third category: a comprehensive review of the entire enterprise, in the manner of the 1996 Defence Efficiency Review, the 2006 Defence Management Review and the 2008 Defence Budget Audit.

Going back to first principles

The review team 'conducted an end-to-end holistic review based on the outcomes required of Defence and founded on the first principles agreed by the review team'. The outcome required of Defence was taken to be its Strategic Direction Statement from government:

Protect and advance Australia's strategic interests through the provision of appropriately prepared and equipped armed forces. To achieve this, Defence prepares for and conducts military operations and other tasks as directed by the Government.

The seven 'first principles' agreed by the team were:

- **Clear authorities and accountabilities that align with resources:** decision-makers are empowered and held responsible for delivering on strategies and plans within agreed resourcing.

- **Outcome orientation:** delivering what is required with processes, systems and tools being the 'means not the end'.

- **Simplicity:** eliminating complicated and unnecessary structures, processes, systems and tools.

- **Focus on core business:** Defence doing only for itself what no-one else can do more effectively and efficiently.

- **Professionalism:** committed people with the right skills in appropriate jobs.

- **Timely, contestable advice:** using internal and external expertise to provide the best advice so that the outcome is delivered in the most cost-effective and efficient manner.

- **Transparency:** honest and open behaviour which enables others to know exactly what Defence is doing and why.

Although it's doubtful that the seven principles apply in every circumstance, and even less clear that they include everything to be desired of Defence, they're a reasonable and non-contentious starting point. Certainly, a defence organisation that fully reflected the seven principles would be a good thing.

Notwithstanding the 'first principles' methodology, the review has also clearly been influenced by reforms to the UK Ministry of Defence following the 2011 Levene review.

The report

The review panel's report, *Creating One Defence* (henceforth *One Defence*), was released by the Defence Minister on 1 April 2015. 'One Defence' refers to the proposed end-state for Defence—'a more unified and integrated organisation that is more consistently linked to its strategy and clearly led by its centre'. Presumably, **One Defence** (which appears in bold text throughout the report) is intended as a catch-cry for implementation.

In releasing the report, the Defence Minister said that the government had agreed, or agreed in principle, to 75 of its 76 recommendations—the exception concerned the future of the Defence Science and Technology Organisation (DSTO). Of the 76 recommendations, six are actually overarching imperatives within which 70 specific recommendation are grouped, leaving 69 specific recommendations that have been agreed government.

Implementation

Implementation commenced immediately, and most of the changes are planned to be completed by April 2017. The review panel, along with Ms Erica Smyth, have formed an Oversight Board to monitor implementation, provide regular reports to the government, and assist Defence in making annual progress reports to the government.

The implementation process is being run centrally, with the Secretary and CDF leading a weekly implementation meeting. Reforms have been divided into five separate work streams; strategic centre, capability life cycle, enablers, workforce and behaviours. A senior Defence leader has been made accountable for each of the work streams. In addition, accountability has been assigned for each of the 69 recommendations.

During 2015, the priority was to design the new processes and structures demanded by the FPR and to plan their implementation. The focus for 2016 is on concrete implementation.

Progress to date

As of April 2015, 36 of the 69 recommendations had been completed. The status of specific recommendations is given at the end of this chapter. A summary of accomplishments by category is in Table 4.1. Although less than half of the recommendations have been implemented almost one year into the planned two-year implementation period, work is underway across the board.

Table 4.1: Status of FPR recommendations by category

#	Category	Count	%
1	Establish a strong, strategic centre to strengthen accountability and top level decision making	13/19	68%
2	Establish a single end-to-end capability development function within the Department to maximise the efficient, effective and professional delivery of military capability	11/20*	55%
3	Fully implement an enterprise approach to the delivery of corporate and military enabling services to maximise their effectiveness and efficiency	6/13	46%
4	Ensure committed people with the right skills are in appropriate jobs to create the One Defence workforce	0/7	0%
5	Manage staff resources to deliver optimal use of funds and maximise efficiencies	2/5	40%
6	Commence implementation immediately with the changes required to deliver One Defence in place within two years	4/5	80%
	TOTAL	36/69	52%

**There are 21 recommendations but one was not accepted.*

Table 4.2 reports the status of recommendations grouped under the senior leaders who are accountable for them. In some instances, for example recommendation 6.4, completion of the recommendation is contingent on ministerial action. In the one case where legislative change was required (recommendation 1.8) the change has been completed, in another (recommendation 3.3) action is pending. Recommendation 2.10 will require a decision by the National Security Committee of Cabinet.

Table 4.2: Status of FPR recommendations by the person accountable

Accountable person(s)	Count	%
Secretary	10/14	71%
Chief of Defence Force (CDF)	1/1	100%
Secretary / Chief of Defence Force	2/2	100%
Associate Secretary	10/23	43%
Vice Chief of the Defence Force (VCDF)	6/9	66%
Deputy Secretary Strategy, Policy and Intelligence (DEP SEC SP&I)	2/6	33%
VCDF / Deputy Secretary Strategy, Policy and Intelligence	0/1	0%
Deputy Secretary Capability Acquisition and Sustainment (DEP SEC CAS)	1/3	33%
Chief Defence Scientist (CDS)	4/5	80%
Chief Information Officer (CIO)	0/2	0%
Deputy Secretary Estate and Infrastructure (DEP SEC E&I)	0/2	0%
Chief Finance Officer	0/1	0%
TOTAL	36/69	52%

With changes underway across many areas of Defence, it's impossible to report what's going on in each and every area. Instead, we turn now to looks at developments in two overarching areas; accountability, governance and structure, and the capability life cycle.

Accountability, governance and structure

Consistent with the FPR's focus on a strong strategic centre and clear accountability, steps have been taken to strengthen the accountability of the Defence Senior Leadership Group, including by developing role charters for all its members. The role charters 'set out individual and shared accountabilities, decision rights and the agreed leadership behaviours'. In addition, a regime of 360^{o} feedback has been established for all Senior Executive Service personnel and a new approach to Senior Executive Service performance agreements has also been adopted to 'reinforce the agreed leadership behaviours' rather than only focus on results.

Most of the key structural changes to Defence have now been concluded. The old Defence Materiel Organisation has been reabsorbed into Defence proper in the form of the new Capability Acquisition and Sustainment Group. The old central Capability Development Group has been disbanded and its functions and people redistributed, mostly to the three services and the VCDF group. A new Deputy Secretary Policy and Intelligence now oversees intelligence, strategy, industry policy and the reconstituted 'contestability' function.

At the higher governance level, the Defence Committee is operating with a streamlined membership and the new Enterprise Business Committee is up and running managing the in-year performance of the organisation. And the VCDF now chairs the new Investment Committee, which manages major capital investments—a critical role given the raft of new capability and estate projects foreshadowed by the 2016 Defence White Paper.

Capability Life Cycle

Good progress has been made designing and making initial steps towards a new Capability Life Cycle model. Apart from the organisational changes already mentioned involving the old Capability Development Group and Defence Materiel Organisation, the process for approving and delivering major capability initiatives is being recast. Key developments include:

- Adding a 'gate zero' step in the capability life cycle to both confirm the priority of new proposal and allow the development of tailored acquisition paths consistent with the risks and maturity of the capability sought.
- Introducing arm's-length contestability of capability proposals to ensure that the Investment Committee has access to the full range of information and perspectives about the proposals it considers.
- Revamping processes within the Capability Acquisition and Sustainment Group to ensure that Defence becomes a Smart Buyer of goods and services. To this end, Centres of Expertise are being established to provide consistent approaches to the Group's core functions.

In the context of the Smart Buyer approach, the new approach to defence industry announced in the recent Defence Industry Policy Statement—wherein industry has been designated one of the 'fundamental inputs to capability'—will provide opportunities for

greater partnering between Defence and its suppliers of equipment and sustainment services.

Risks and opportunities

Although the changes underway following the FPR are less dramatic than those of the Defence Reform Program in the late 1990s, they represent substantial changes to how Defence will operate in the future. The changes to the Capability Life Cycle place new and weighty responsibilities on the Capability Managers. More challenging still, the new processes will be rolled out concurrent with the accelerated pace of work resulting from the 2016 Defence White Paper, not to mention the formative stages of several mega projects such as the future submarines and frigates.

Despite the challenges, there is room for optimism. More so than any previous major Defence reform program, the changes are being managed actively from the top. And in stark contrast to both the Defence Reform Program and Strategic Reform Program, the primary goal is improved performance rather than financial savings. While some longer term savings are anticipated, the organisation is not overwhelmed with poorly conceived and implausible savings targets as in the past. Indeed, prior attempts at Defence reform have faltered, at least to some extent, because they coincided with times of financial duress. With a strongly rising budget and a limited emphasis on savings, the organisation can wholeheartedly focus on remaking itself to deliver the expanded ADF set out in the White Paper.

Status of specific recommendations

The status of specific recommendations as at April 2016 is given in the six tables below.

1. Establish a strong, strategic centre to strengthen accountability and top level decision-making			
#	**Recommendation**	**Accountable**	**Status**
1.1	This review be adopted as the road map for Defence reform for the next five years	Secretary	Done
1.2	A new One Defence business model	Secretary	Done
1.3	The diarchy is retained.	Secretary	Done
1.4	The individual and shared accountabilities of the Secretary and the Chief of the Defence Force be clarified, formally documented and promulgated through the organisation	Secretary	Done
1.5	A streamlined top level management structure for the Department that is aligned with the One Defence business model	Secretary	Done
1.6	The strategic centre include the Associate Secretary and Vice Chief of the Defence Force as the integrators for the Defence enterprise and the future force and joint capabilities respectively.	Secretary/ CDF	Done
1.7	The Vice Chief of the Defence Force's decision rights be greatly strengthened, including the right to stop projects proceeding through the approval process until joint force integration is proven.	Secretary	Done
1.8	Legislative changes to formally recognise the authority of the Chief of the Defence and the Vice Chief of the Defence Force, including removing the statutory authority of the Service Chiefs	CDF	Done
1.9	Policy advice be strengthened by bringing all policy functions into one organisational unit in order to improve the quality of advice provided to Government	DEP SEC SP&I	-
1.10	A strong and credible internal contestability function be built and led by the Deputy Secretary Policy and Intelligence with responsibility for strategic contestability, scope, technical and cost contestability	DEP SEC SP&I	-
1.11	The policy and intelligence functions be combined under a Deputy Secretary Policy and Intelligence, who will have responsibility for providing policy advice and intelligence assessments to the Secretary and the Chief of the Defence Force	Secretary	Done
1.12	The Defence Security Authority be repositioned under the Associate Secretary	Secretary	Done
1.13	The Defence Committee be re-positioned as the primary decision making committee of Defence and the heart of the strategic centre with two supporting committees – Enterprise Business Committee and Investment Committee	Secretary	Done
1.14	All other enterprise-wide committees be reviewed for their relevance and alignment with the One Defence business model with the aim of a substantial reduction in the number of committees	Secretary	-
1.15	The organisational structure reporting to the Vice Chief of the Defence Force be simplified through the incorporation of a two-star Head of Joint Enablers role.	CDF	Done
1.16	A strengthened centre-led, enterprise-wide planning and performance monitoring process be adopted.	ASSOC SEC	-
1.17	The Associate Secretary be the central authority to deliver enterprise planning and performance monitoring processes, in line with the requirements of the Public Governance, Performance and Accountability Act 2013.	Secretary	Done
1.18	The Minister for Defence meet with the Defence Committee twice yearly to consider a formal strategic assessment of the alignment between Defence's strategy, funding and capability.	Secretary	-
1.19	Defence conduct regular reviews of the capital program in consultation with the Minister and central agencies.	Secretary	-

2. Establish a single end-to-end capability development function within the Department to maximise the efficient, effective and professional delivery of military capability			
#	**Recommendation**	**Accountable**	**Status**
2.1	Disbanding the Capability Development Group and dispersing its functions to more appropriate areas	VCDF	Done
2.2	Disbanding the Defence Materiel Organisation and transferring its core responsibilities in relation to capability delivery to a new Capability Acquisition and Sustainment Group	VCDF	Done
2.3	Developing a new organisational design and structure as part of the implementation process for the Capability Acquisition and Sustainment Group with reduced management layers	VCDF	-
2.4	Examining each System Program Office to determine where each fits within the smart buyer function, the most appropriate procurement model and achieving value for money	DEP SEC CAS	-
2.5	The Capability Managers specify the Fundamental Inputs to Capability requirements with the Capability Acquisition and Sustainment Group having responsibility for developing and delivering an integrated project plan	VCDF	-
2.6	The accountability for requirements setting and management be transferred to the Vice Chief of the Defence Force and the Service Chiefs with strategic, financial and technical contestability being located with Deputy Secretary Policy and Intelligence	DEP SEC SP&I	Done
2.7	The Independent Project Performance Office and the Capability Investment and Resources Division be relocated to Deputy Secretary Policy and Intelligence, significantly enhanced and strengthened to provide such contest	DEP SEC SP&I	-
2.8	Revising the Defence investment approval process for all large or complex capability projects	VCDF	Done
2.9	Introducing a new formal gate into the process at entry point - Gate Zero: Investment Portfolio entry	VCDF	-
2.10	Government increase approval thresholds for capability development projects, with ministerial approval required only for projects above $20 million, two ministers above $100 million and Cabinet above $250 million	VCDF / DEP SEC SP&I	-
2.11	Significant investment to develop an operational framework which comprehensively explains how the organisation operates and the roles and responsibilities within it; detailing the life cycle management processes which provide project and engineering discipline to manage complex materiel procurement from initiation to disposal; and reviewing architecture to reinforce accountability at all levels and bringing together information upon which good management decisions can be made	DEP SEC CAS	-
2.12	The Deputy Secretary Capability Acquisition and Sustainment must sign off and assure the Secretary of the operational output of each of his/her divisions every quarter and on major contracts on a monthly basis	DEP SEC CAS	Done
2.13	The use of net personnel operating costs process cease immediately	CFO	-
2.14	Developing a Defence Investment Plan which would include all capital and related investments (such as materiel, estate and facilities, workforce and information and communications technology)	VCDF	Done
2.15	On Government approval, the entire project acquisition budget is allocated to the Capability Acquisition and Sustainment Group to ensure expenditure is in accordance with the project delivery plan	VCDF	Done
2.16	The Defence Science and Technology Organisation be required to clearly articulate its value proposition. This would include examples and actual amounts of value created	CDS	Done
2.17	~~The Defence Science and Technology Organisation become part of the~~	n/a	n/a

	~~Capability Acquisition and Sustainment Group~~		
2.18	The Defence Science and Technology Organisation senior leadership be rationalised	CDS	Done
2.19	The Defence Science and Technology Organisation strengthen partnerships with academic and research institutions to leverage knowledge and create pathways with academia and industry	CDS	Done
2.20	Disbanding the Defence Science and Technology Organisation advisory board	CDS	Done
2.21	Defence, in partnership with academia and industry, review its research priorities, their alignment with future force requirements and capacity to leverage allied partners to promote innovation	CDS	-

4. Ensure committed people with the right skills are in appropriate jobs to create the One Defence workforce			
#	**Recommendation**	**Accountable**	**Status**
4.1	As part of the budget and planning process, Defence build a strategic workforce plan for the enabling functions, and incorporate workforce plans for each job family in order to drive recruitment, learning and development, performance and talent management.	ASSOC SEC	-
3.2	Defence employ Australian Defence Force personnel in non-Service roles only when it is critical to achieving capability and for a minimum of three years to achieve best value-for-money from the premium paid.	ASSOC SEC	-
4.3	As many functions as possible be performed by public servants or outsourced if they are transactional in nature.	ASSOC SEC	-
4.4	Defence review the entirety of its enabling and military corporate workforce to ensure that it supports the Australian Defence Force with the minimum of overlap and redundancy, and with the greatest overall economy, efficiency and effectiveness.	ASSOC SEC	-
4.5	Defence reduce organisational layers; increase the spans of control of managers; align workforce standards in accord with the requirements of the Australian Public Service Commission; and engage external assistance to facilitate this work as required.	ASSOC SEC	-
4.6	Defence implement a transparent performance management system that is consistently applied, recognises and rewards high performance and introduces consequences for underperformance and failure to deal with it.	ASSOC SEC	-
4.7	As part of the performance management system, Defence take steps to create a culture where leadership, professionalism and corporate behaviour are valued and rewarded	ASSOC SEC	-

3. Fully implement an enterprise approach to the delivery of corporate and military enabling services to maximise their effectiveness and efficiency			
#	**Recommendation**	**Accountable**	**Status**
3.1	Defence define the estate need as determined by future force requirements and Government agree to dispose of all unnecessary estate holdings starting with the 17 bases identified in the 2012 Future Defence Estate Report	SDEP SEC E&I	-
3.2	Defence strengthen its capability to present options to Government for estate disposal including obtaining expert external advice as required	SDEP SEC E&I	-
3.3	The Government amend the *Public Works Act 1969* to set a $75 million threshold for referring proposed works to the Public Works Committee, and re-consider recent adjustments to the 2015-16 Budget operational rules that run counter to more efficiently managing investment spending	ASSOC SEC	-
3.4	The Associate Secretary be directed and resourced to implement enterprise information management that provides Defence with trusted information to inform decision-making and military interoperability, with the Vice Chief of the Defence Force as the design authority for the next generation of Command, Control, Communications, Intelligence, Surveillance and Reconnaissance	ASSOC SEC	Done
3.5	The information management agenda be governed at the Band 3/3 Star level by the Enterprise Business Committee to set overall direction and priorities, including the management of trade-offs and conflicts	ASSOC SEC	Done
3.6	Supporting the Chief Information Officer to meet these responsibilities by formally recognising the Chief Technology Officer as the technical authority with appropriate 'red card' decision rights	ASSOC SEC	Done
3.7	Defence establish enterprise-wide frameworks for architecture standards and master data management	CIO	-
3.8	Defence embark on a pragmatic implementation road map to standardise business and information processes and their supporting applications	CIO	-
3.9	Defence ensure adequate resourcing and funding for information management reform is prioritised as part of the fully costed 2015 Defence White Paper	ASSOC SEC	Done
3.10	Geospatial information functions be consolidated into the Australian Geospatial-Intelligence Organisation following improved resourcing and connectivity	DEP SEC SP&I	-
3.11	The service delivery reform program, including full integration of the current Defence Materiel Organisation corporate functions, be completed	ASSOC SEC	-
3.12	All corporate services (with the exception of finance but including the Defence Security Authority) be consolidated under the Associate Secretary	ASSOC SEC	Done
3.13	All military enabling services (Joint Logistics Command Policy, Joint Health Command, Australian Defence College, Australian Civil-Military Centre) be consolidated under a Two-Star officer who reports to the Vice Chief of the Defence Force	VCDF	Done

5. Manage staff resources to deliver optimal use of funds and maximise efficiencies			
#	**Recommendation**	**Accountable**	**Status**
4.1	The use of the measures such as the teeth-to-tail ratio and the one third budget split should cease.	ASSOC SEC	Done
3.2	Appropriate efficiency measures are developed which link to the delivery of agreed outcomes.	ASSOC SEC	-
4.3	The focus on public service reductions as the primary efficiency mechanism for Defence cease.	ASSOC SEC	Done
4.4	Defence manage its workforce numbers in line with good resource management practice where Defence is held to account for delivering on required outcomes within available resourcing.	ASSOC SEC	-
4.5	As part of the implementation process, Defence examine the headquarters functions for opportunities to achieve more effective and efficient arrangements.	ASSOC SEC	-

6. Commence implementation immediately with the changes required to deliver One Defence in place within two years			
#	**Recommendation**	**Accountable**	**Status**
6.1	No additional reviews on the organisational issues covered by this Review are imposed on Defence, particularly within the early years of implementation	ASSOC SEC	Done
6.2	Past reviews and current reform initiatives should be assessed for currency and alignment to the One Defence model	SEC	Done
6.3	Establishing an Oversight Board to provide close external scrutiny, advice on implementation progress and regular reports to the Minister	ASSOC SEC	Done
6.4	The Minister, with input from the Department and the Oversight Board, report progress on implementation to the Government in March 2016 and March 2017	SEC	-
6.5	Stability in the key leadership positions, particularly over the next two years to provide consistency of direction and ownership of the change	ASSOC SEC	Done

Chapter 5 – International Defence Economics

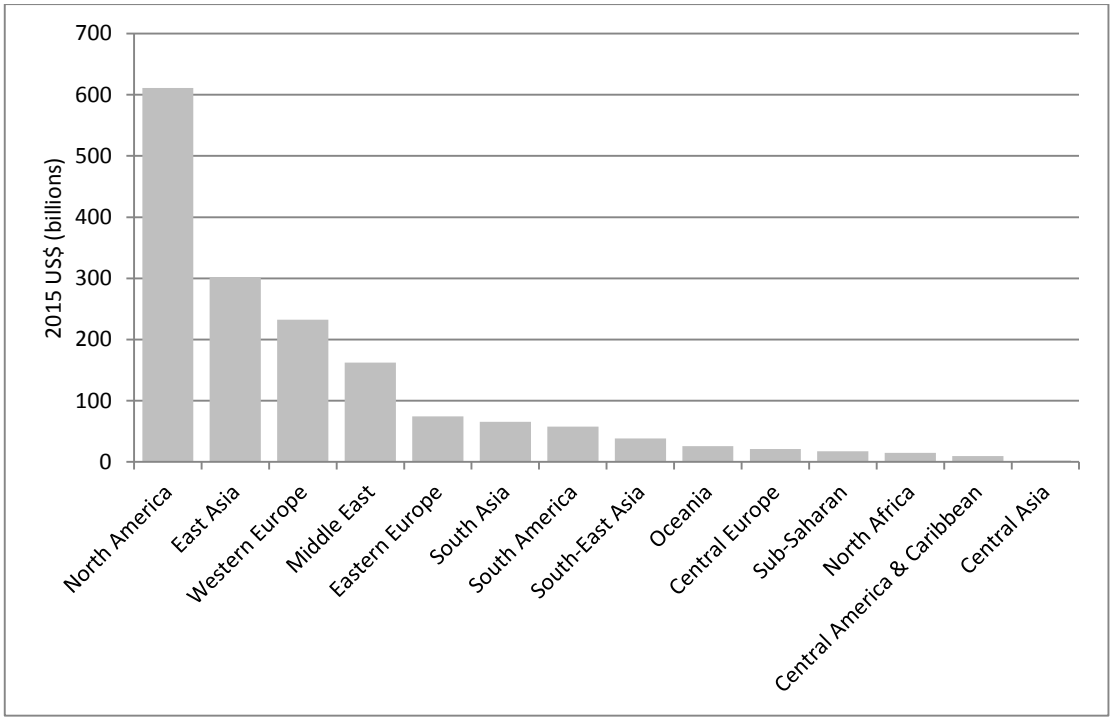
This chapter is divided into three parts. The first examines key international defence spending trends. The second explores Australian defence spending in an international and historical context, and the third explores the continuing impact of the Global Financial Crisis (GFC) on countries' abilities to spend on defence.

Throughout this chapter, defence spending statistics from a variety of source are used. Given the unresolvable questions of definition and reliability, one source is usually as good as another. For that reason, the most convenient source of data has been chosen to allow for a consistent comparison in each case.

International defence spending

According to the Stockholm International Peace Research Institute (SIPRI), the world expended a total of US$1,733 billion on defence in 2015, equivalent to around 2.3% of global GDP. With the exception of China, the bulk of the spending occurred in the developed economies of North America and Western Europe, with East Asia also figuring highly in the data, see Figure 5.1.

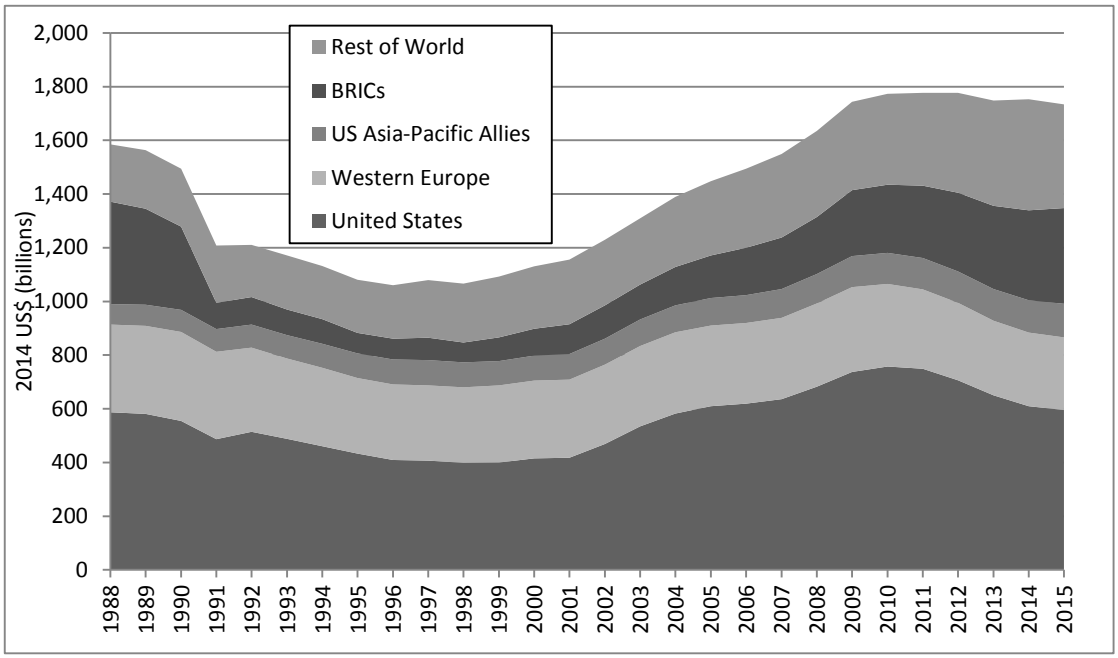
Figure 5.1: Geographic distribution of defence expenditure 2015



Source: Stockholm International Peace Research Institute (SIPRI) Military Expenditure Database 2016 edition, www.sipri.org.

Global defence spending from 1988 to 2015 is graphed in Figure 5.2, where 'BRIC' refers to the emerging powers of Brazil, Russia, India and China, and the US allies outside of Europe are Australia, Canada, Japan, Korea, New Zealand and Taiwan. As can be seen, the peace dividend following the end of the Cold War resulted in a contraction in global defence expenditure of around 30% over a decade. From 2001 to 2010, the trend reversed as the United States mobilised following the attacks 9/11.

Figure 5.2: Global defence spending 1988 to 2015



Source: Stockholm International Peace Research Institute (SIPRI) Military Expenditure Database 2016 edition, www.sipri.org. Russian spending interpolated for 1991. Chinese spending extrapolated for 1988. Soviet spending used for Russia pre 1992.

The United States dominates global defence spending, and the US-led invasions of Afghanistan and Iraq gave rise to a decade-long increase in the global figure. In 2014 the United States accounted for 34.3% of global defence spending, and once its friends and allies are taken into account the 'West' as a whole accounts for just over 57.2%. However, around 2010, global defence spending peaked as expenditure in the United States and other developed nations began to fall.

It is now clear that the world (or at least the developed world) is experiencing another downward swing in defence spending. The United States and most of the countries of Western Europe are projecting either insipid growth or declining defence expenditures into the second half of the decade. In part, this reflects a mini peace dividend from the drawdown of Western forces in Iraq and Afghanistan. At least as important, however, are the mounting fiscal pressures across developed economies.

A combination of rising social spending and the legacy of crippling debts due to the 2008 GFC are forcing many countries to reconsider the priority for defence spending. Western Europe in particular is facing a long-term fiscal crunch due its ageing population; with tax revenues falling and pension costs rising, something has to give. In the absence of a serious deterioration in the strategic situation in Europe—beyond the current ructions caused by Russia—it's likely that cuts to defence spending will be the most politically expedient course of action for many European countries in the years ahead.

But not all trends are downwards. Falling year-on-year defence spending by the United States (-4.7%) and Western Europe (-2.5%) was counterbalanced by growth in other US allies (+1.5%), the BRICs (+7.0%) and the rest of the world (+2.6%).

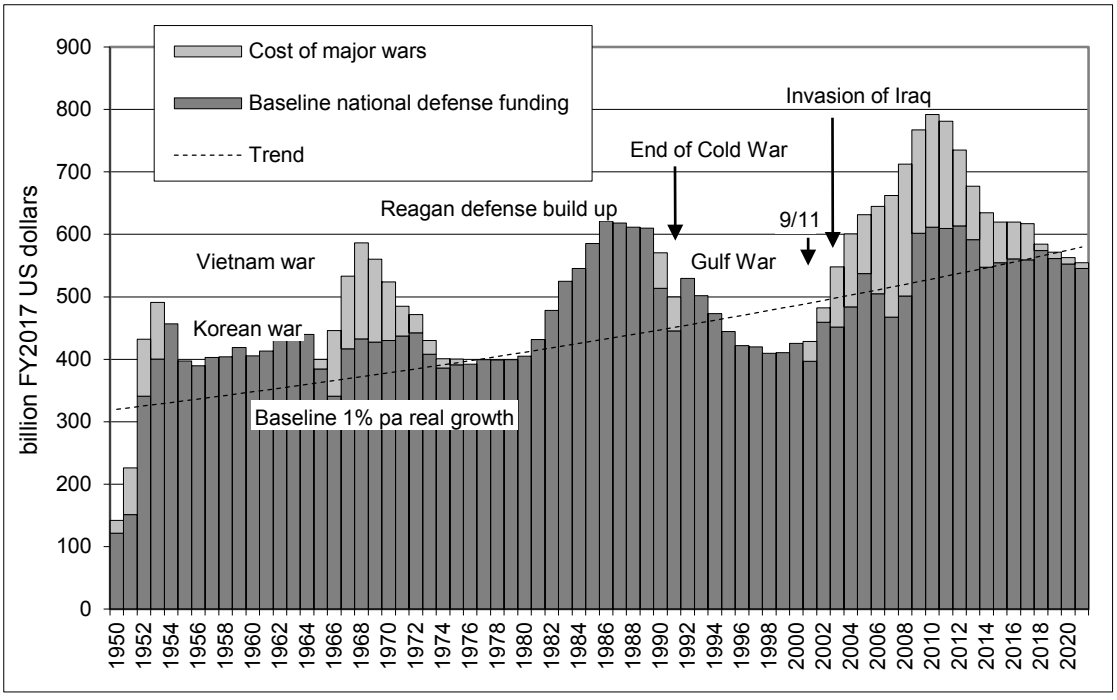
The United States

After a decade of strong growth, the US defence budget has moderated over the past seven years and is falling. The trend is likely to continue; until 2021 US defence spending is theoretically capped under the Budget Control Acts of 2011 and 2013 (sequestration) in response to mounting fiscal pressures—though some remission has occurred.

Over the past several years, the cuts have been accommodated through reduced personnel numbers (and remuneration), base closures, acquisition deferrals, and the early retirement of some assets. Since 2011, the US military has lost 140,000 active duty and reserve personnel. Sequestration has also put pressure on the readiness of the US military by reducing the money available for operations and maintenance.

Further cuts may be necessary. Figure 5.3 shows historical US defence spending and the National Defence Budget Estimates for FY2016 out to 2021. The actual level of defence spending post-2017 is uncertain, higher and lower levels of defence spending than depicted are possible.

Figure 5.3: US defence spending 1950 to 2021



Source: FY 2017 US budget papers (Tables 7.1 and 7.2) and various sources for the cost of major wars.

Even if US baseline defence spending returns to its long-term historical trend of 1% annual real growth (relative to the US CPI), the size of US armed forces will continue to decline. Over the past six decades, the annual cost of maintaining a US Navy vessel in service has risen by around 3% above inflation. Over the same period, the costs of aircraft and soldiers have risen in real terms by similar amounts. As a result, the strength of the army has more than halved and the numbers of aircraft and ships have been reduced four-fold since the 1950s (see ASPI Policy Analysis #56, *Trends in US defence spending: implications for Australia,* 2010). Consequently, although the United States remains the most powerful military force on earth, its ability to mount large-scale operations has been slowly eroding, along with its capacity for concurrent operations.

The People's Republic of China

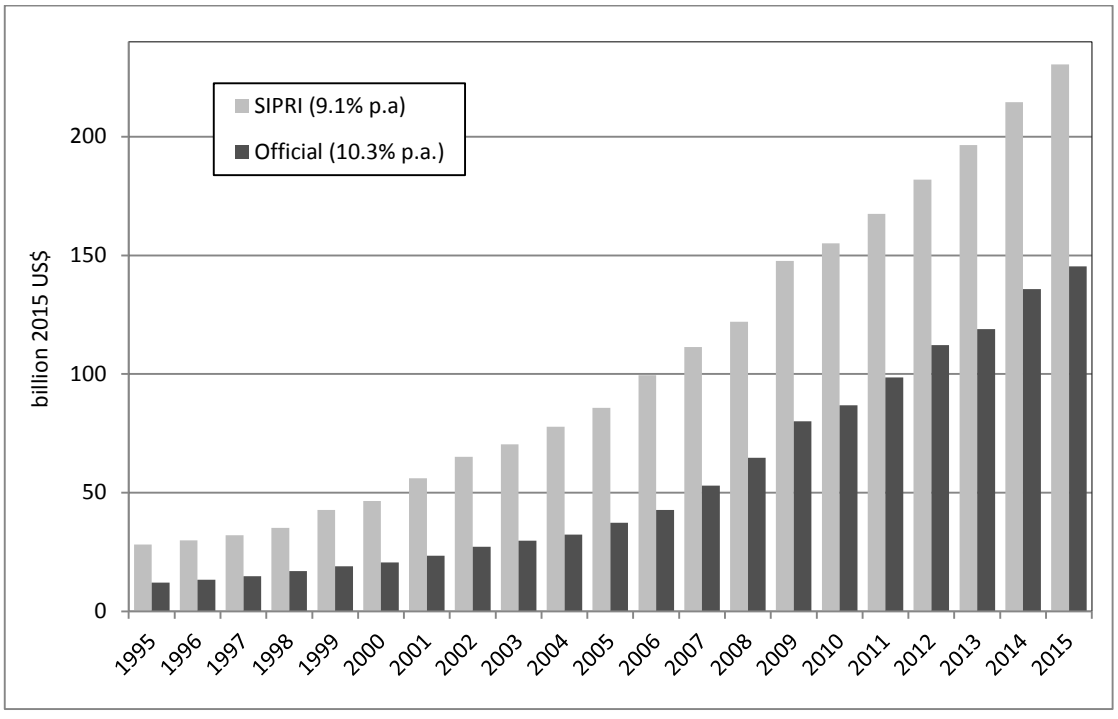
China has enjoyed rapid economic growth since the early 1990s. Over the same period, defence spending has grown apace. Controversy surrounds the scale of Chinese defence spending. US estimates of Chinese spending are substantially higher than the official figure. Independent estimates fall somewhere in between, see Figure 5.4.

By any estimate, Chinese defence spending is rising rapidly; by around 9% to 10% per year above inflation over the past decade, as measured in US$. In terms of Chinese currency, the growth rate averaged 12.7% between 2002 and 2011 (the ongoing appreciation of the RMB and differential inflation means that the growth rate differs from that calculated using US$). Because defence spending growth has been matched by strong growth in the Chinese economy, the defence share of GDP has remained below 2%—at least according to official figures. The announced increase 7.6% for 2016 is smaller than recent increases of around 10% per year.

Although China is often criticised (including by Australia) for not being transparent enough about its military build-up, its periodic defence white papers are reasonably clear and largely consistent with what can be observed; China is developing the military capability to exclude the United States and its allies from its maritime approaches with a particular focus on operations against Taiwan. This is reflected in a focus on developing and modernising what the US term 'anti-access/area denial capabilities'.

To a lesser extent, China is investing in power-projection assets—including an aircraft carrier—to protect its sea lines of communication and assert its interests further afield. By the end of the decade, China will have the ability to deploy and sustain a modest joint force, including several battalions on low-intensity operations far from China.

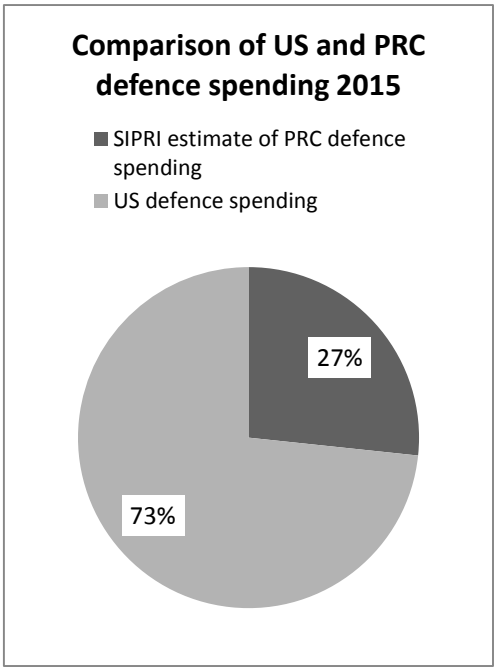
Figure 5.4: Chinese defence spending 1990 to 2015



Sources: Analysis of data from SIPRI Military Expenditure Database 2016, www.sipri.org, globalsecurity.org, and media sources.

Comparing the United States and China

Much speculation surrounds the changing economic and strategic balance between the United States and China. Here's some numbers to put things in perspective.



According to the IMF, the United States economy (US$17.9 trillion) was 1.8 times larger than China's (US$11.0 trillion) at market exchange rates in 2015. If China's economy grows at 7% per annum and the US at 2.5% per annum, it will only take 12 years for economic parity to be reached in 2027.

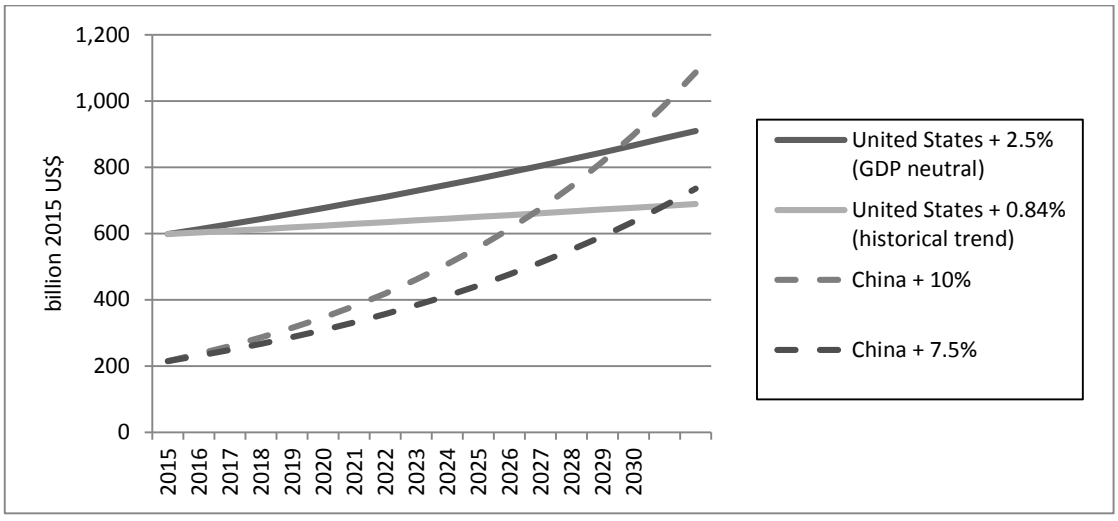
The raw statistics for recent military expenditure by the United States and the People's Republic of China are shown in Table 5.1. Note that China's smaller GDP share gives it a relatively greater capacity to increase defence spending.

Table 5.1: United States and Chinese defence spending circa 2015

	Baseline defence expenditure 2015 US$	Defence expenditure percentage of GDP	Rate of growth
United States (official 2015)	598 billion	3.3%	1%
China (official 2015)	145 billion	-	10.3%
China (SIPRI estimate 2015)	215 billion	1.9%	9.1%

Plausible defence spending trajectories for the United States and China are plotted in Figure 5.5 based on the latest SIPRI estimate of Chinese spending (2015), and using growth rates commensurate with historical trends. It shows that it is fully possible for Chinese defence spending to exceed that of the United States within the next two decades.

Figure 5.5: Plausible US and Chinese defence spending trajectories



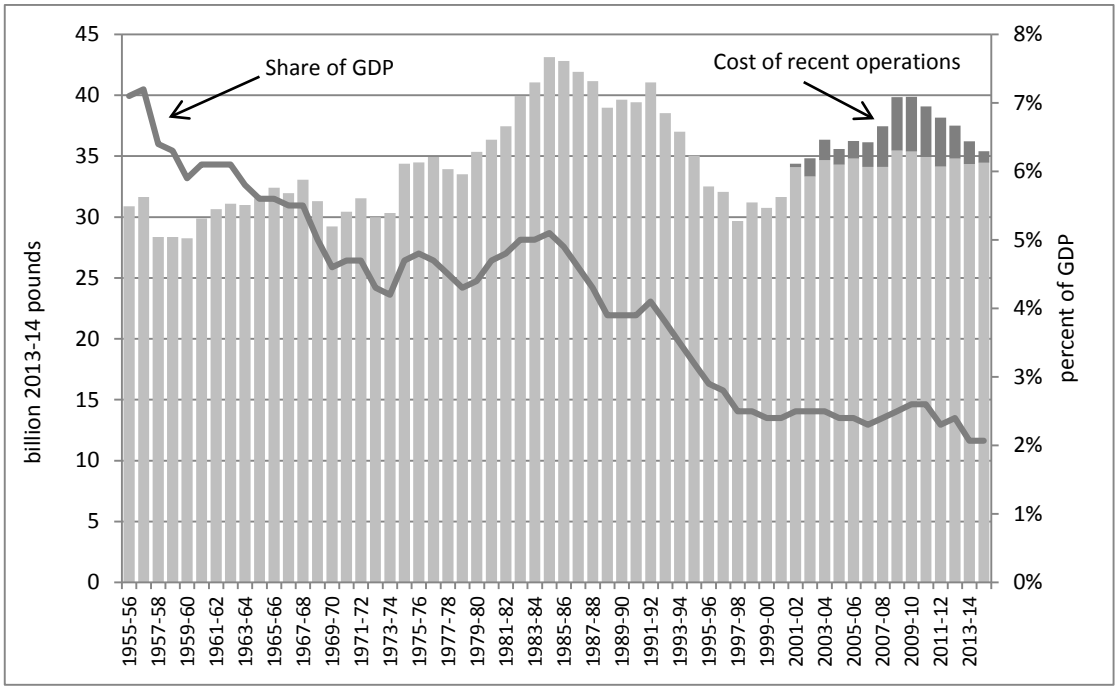
United Kingdom

Like the United States, the United Kingdom ramped up defence spending in the 2000s (though not to the same extent). This trend is now being reversed as part of fiscal consolidation. The 2011 UK defence budget set out real reductions in defence spending out to 2014-15. Subsequent decisions increased the reductions to 8.8% over four years. Initiatives to accommodate the budget cuts included:

- Military personnel reductions of 25,000 (from a base of 158,500) and civilian personnel cuts of 29,000 by 2015, plus the withdrawal of land forces from Germany by 2020. Reduction in tank and heavy artillery numbers by 40% and 35% respectively.
- Immediate decommissioning of an existing Aircraft Carrier, one Landing Platform Helicopter and one Landing Ship Dock. Continuing with plans to build two new aircraft carriers but keeping one at 'extended readiness' (mothballing). Putting one existing Landing Platform Dock ship at 'extended readiness'.
- Scrapping of the *Nimrod* maritime patrol aircraft and *Harrier* jump-jet fleets and a reduction in the number of *Chinook* helicopters to be purchased from 22 to 12.
- Five-year delay in the replacement of ballistic missile submarine fleet and reduction in the number of warheads from 160 to 120.

Many UK commentators are pessimistic about the prospects for spending growth, and the US has expressed concern about the UK's future capacity to contribute to coalition operations. Although the UK maintains defence spending above 2% of GDP, it has only managed to do so by counting new items (such as pensions), which were previously not counted. In June 2015, the UK announced a 1.5% cut to defence funding.

Figure 5.6: United Kingdom defence spending 1955 to 2014

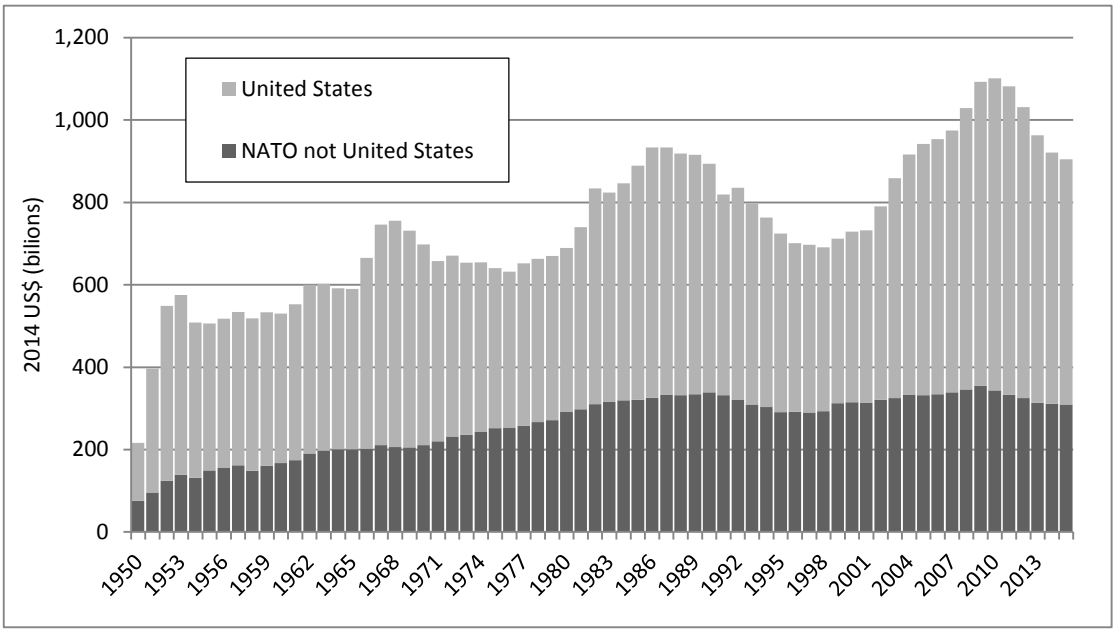


Source: UK House of Commons Library Report SN/SG/113, 2009 & SN/SG/3139, 2012, UK MoD, UK Defence Statistics 2015.

North Atlantic Treaty Organisation (NATO)

Until recently, NATO defence spending (exclusive of the United States) had been remarkably static in real terms since the end of the Cold War, with the subsequent expansion of NATO doing little to change the situation. However, in recent years spending has fallen.

Figure 5.7: NATO defence spending 1988 to 2014



Source: Analysis of data from SIPRI Military Expenditure Database 2016, www.sipri.org

The larger members of NATO and the scale of their present defence spending are given in Table 5.2. In addition to the United States and United Kingdom, many other NATO members are under pressure to reduce defence spending due to fiscal pressures—notwithstanding Russian adventurism. The resulting cuts are being accommodated in various ways. For example, in 2012 Italy announced plans to reduce its troop strength from 183,000 to 150,000 and reduce civilians from 30,000 to 20,000. Germany ended conscription in 2011, and since 2009 France has shed 54,000 military and civilian positions. Because these countries are subject to the same cost pressures as the United States, the scale of NATO forces will continue to decline in the years ahead making it even more difficult to undertake operations such as in Afghanistan in the future.

Table 5.2: Key NATO members' defence spending 2015

	United States	United Kingdom	France	Germany	Italy	Canada	Spain	Netherlands
Defence spending as a share of GDP	3.33%	2.05%	1.93%	1.09%	1.18%	0.89%	0.88%	1.19%
Defence spending in 2015 US$ billions	598	56.2	46.7	38.7	21.6	14.0	10.7	8.9

Source: IISS, The Military Balance 2016.

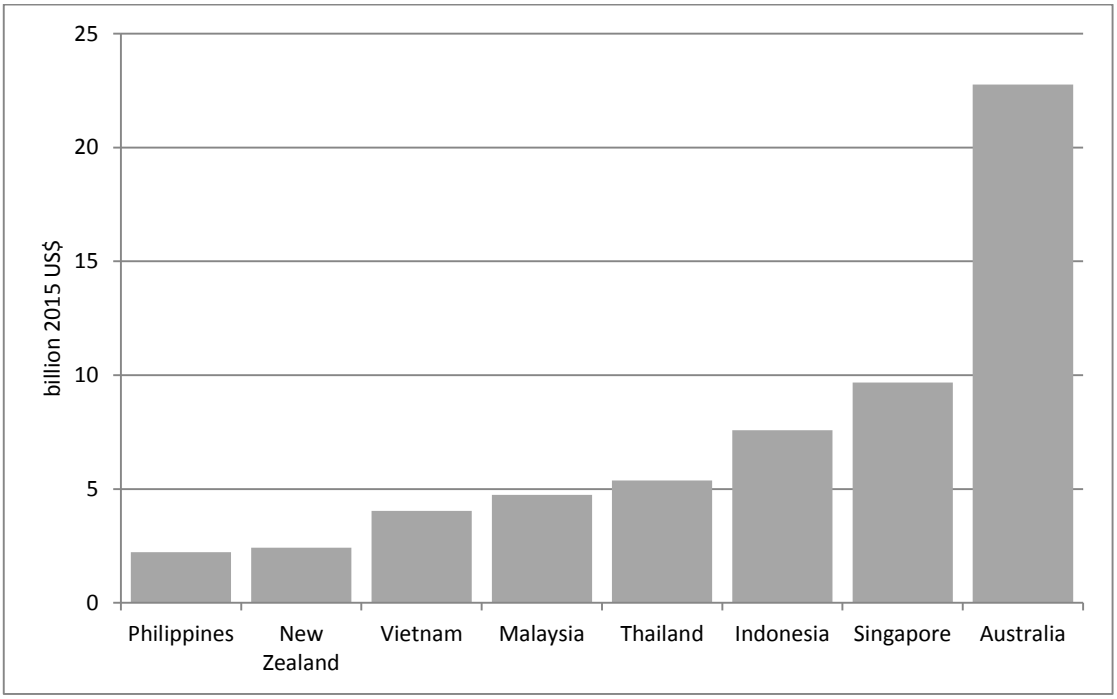
Regional trends

Defence spending trends in Maritime Southeast Asia and Greater Asia are summarised on the following two pages.

Maritime Southeast Asia

Defence spending for 2015 in the seven largest Southeast Asian states plus Australia is plotted in Figure 5.8 and further detailed in Table 5.3. Two points are worth making. (1) Australia outspends any of its neighbours by a comfortable margin. (2) Only Singapore shows any real sign of strategic angst, with a GDP share of 3.29%. Note that changes to reporting make New Zealand defence spending data difficult to track.

Figure 5.8: Defence spending 2015 in Maritime Southeast Asia



Source: IISS, The Military Balance 2016 (Vietnam is 2013 figure).

Table 5.3: Defence spending 1995 to 2015; Maritime Southeast Asia

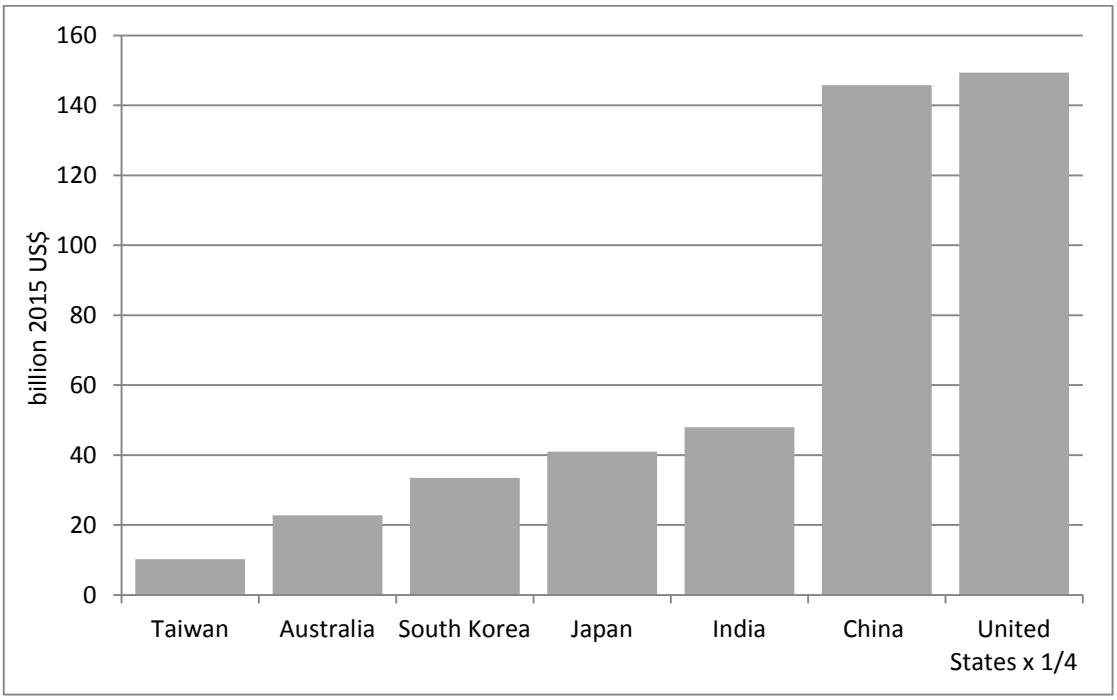
	New Zealand	Vietnam	Philippines	Malaysia	Indonesia	Thailand	Singapore	Australia
2015 defence spending as a share of GDP	1.42%	-	0.74%	1.51%	0.69%	1.44%	3.29%	1.83%
Average annual real defence spending growth 1995 to 2005	-0.7%		0.2%	4.3%	0.5%	-4.9%	4.9%	2.8%
Average annual real defence spending growth 2005 to 2015	1.9%	9.5%	4.5%	1.5%	9.8%	-9.8%	1.0%	3.4%

Sources: GDP share taken from IISS, The Military Balance 2016, Growth rates in US$ from Stockholm International Peace Research Institute (SIPRI) Military Expenditure Database 2016 edition, www.sipri.org. Australian data from ASPI.

Greater Asia

Defence spending for 2015 in the six largest Greater Asian states plus Australia is plotted in Figure 5.9 and further detailed in Table 5.4. Several points are worth making. (1) Australia is a minnow in the tank of North Asian security. (2) Only India and South Korea shows any real sign of strategic concern with GDP shares of around 2.2% and 2.4% respectively. (3) Taiwan and Japan are allowing their defence capabilities to atrophy, notwithstanding that Taiwan's GDP share remains close to 2%. (4) Although China nominally devotes only 1.3 % of GDP to Defence, it has been increasing its defence spending at an impressive rate over the past two decades. Note that estimates of Chinese defence spending vary, and that 1.3% is at the lower end of the spectrum.

Figure 5.9: Defence spending 2015 in Greater Asia



Source: IISS The Military Balance 2016

Table 5.4: Defence spending 1995 to 2014; Greater Asia

	Taiwan	Australia	South Korea	India	Japan	China	United States
2014 defence spending as a share of GDP	1.98%	1.83%	2.40%	2.20%	1.00%	1.30%	3.33%
Average annual real defence spending growth 1995 to 2005	-2.7%	2.8%	2.5%	6.3%	0.5%	11.8%	3.5%
Average annual real defence spending growth 2005 to 2015	0.8%	3.4%	3.5%	3.7%	-0.2%	10.4%	-0.2%

Sources: GDP share taken from IISS, The Military Balance 2016, Growth rates in US$ from Stockholm International Peace Research Institute (SIPRI) Military Expenditure Database 2016 edition, www.sipri.org. Australian data from ASPI

Historical Defence Spending

Historical Australian defence spending

Real and nominal Australian defence spending from 1870 to the present appears in Figure 5.10. Although inflation dominates the nominal data and obscures much of the historical detail, the impact of the wars of the twentieth century is clearly visible in the 'real' data corrected for inflation.

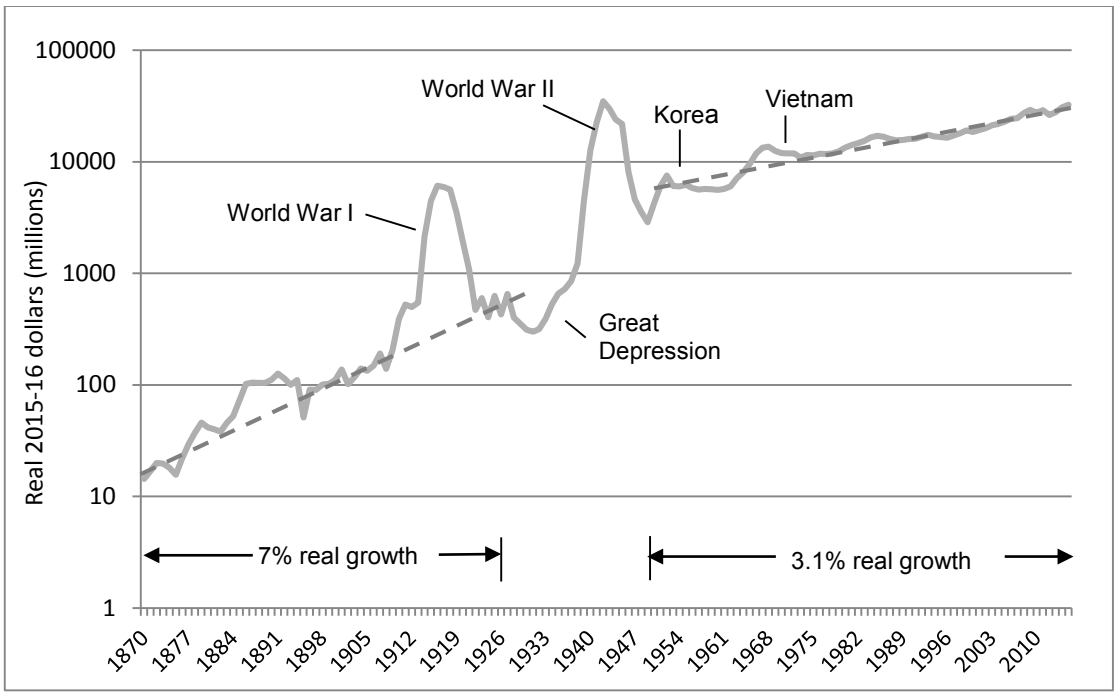
Figure 5.10: Australian defence spending, 1870–2015

Source: ASPI collation of data from various sources, real dollars calculated using retail/consumer price index.

An even more useful graph of historical spending appears in Figure 5.11 where real spending has been plotted on a logarithmic scale, on which exponential growth (which is close to compounding growth for small rates of increase) appears as a straight line. It shows there have been two epochs of underlying steady growth in defence spending; from 1870 to 1929 spending grew by around 7% per annum, and from 1945 to the present underlying spending grew by around 3.1% per annum.

None of this should be taken to imply that the defence force has expanded significantly during the post-war period—it has not. Rather, the observed growth in defence spending largely reflects the rising intrinsic cost of delivering modern military capability. The 2003 ASPI publication, *A Trillion Dollars and Counting,* estimated that real growth of around 2.65% per annum was necessary just to maintain the present scale and range of capabilities in the ADF. Comparable analysis of US defence spending and force structure trends leads to a similar conclusion. Thus, the medium rise of 3% per annum is more about maintaining than significantly expanding the defence force. As a consequence of the 2016 Defence White Paper, however, Australian defence spending is planned to grow at an average of 4.2% over the next decade thereby allowing for both the modernisation and moderate expansion of the force.

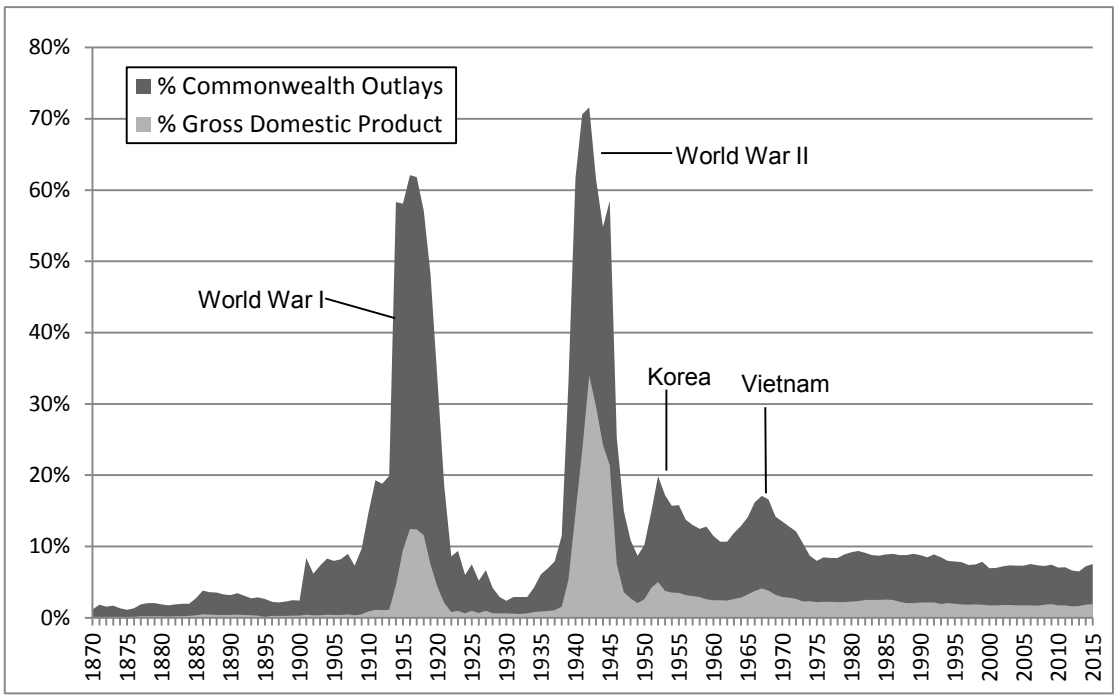
Figure 5.11: Australian defence spending, 1870–2015



Source: ASPI collation of data from various sources, real dollars calculated using retail/consumer price index.

The steady increase in real defence spending since the end of the World War II has been possible because of ongoing growth in the Australian economy over the same period. In fact, as a share of Gross Domestic Product (GDP) the longer term trend has been for defence spending to account for a progressively smaller share of domestic output. Figure 5.12 plots defence spending as both a share of GDP and as a proportion of total Commonwealth outlays.

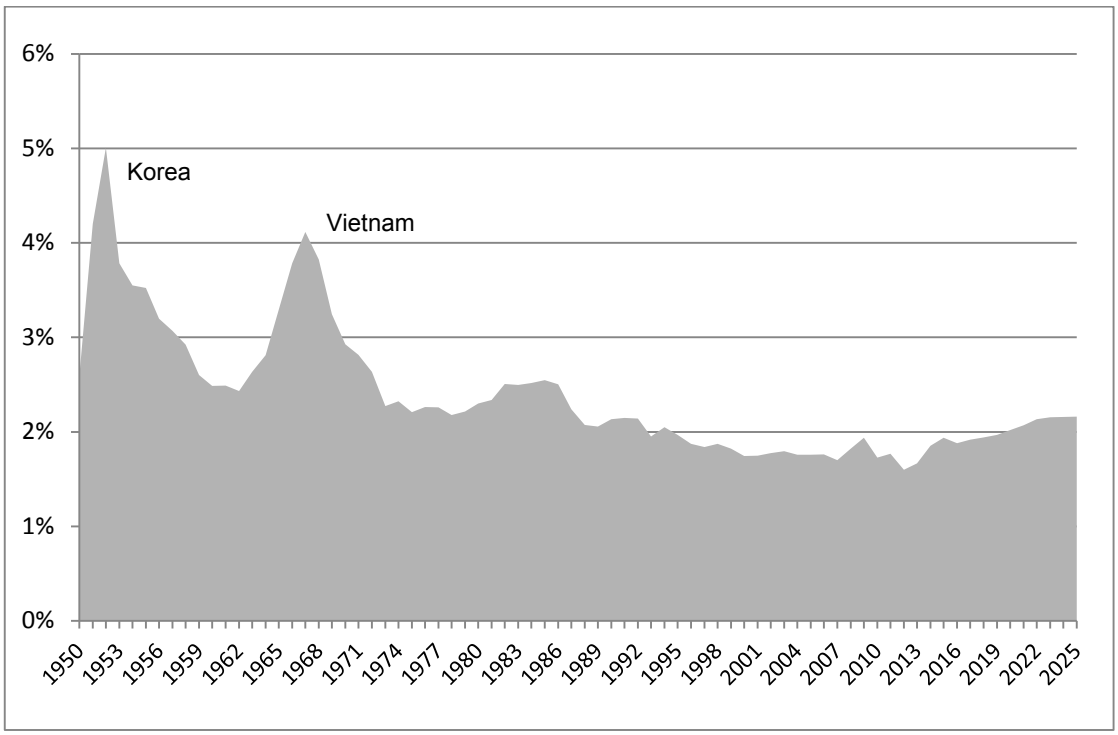
Figure 5.12: Australian defence spending as a share of GDP and Outlays.



Source: ASPI collation of data from various sources.

Given the importance of defence spending as a share of GDP, a magnification of the post-war period has been prepared in Figure 5.13, including the projected impact of the 2016 Defence White Paper.

Figure 5.13: Defence burden (per cent of Gross Domestic Product) 1946–2025



Source: ASPI collation of data from various sources.

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, it measures the proportion of national wealth that a nation devotes to defence.

The planned growth in Australian defence spending will see share of GDP devoted to national defence grow to 2% by 2020-21. While this is high by recent standards, the United States has recently been expending more than 4.7% of GDP and the United Kingdom 2.5%.

Even taking account of the growing fiscal burden due to the ageing of the Australian population, there is no reason to conclude that a defence burden in the range of 2% to 3% is unsustainable. While it is true that health and ageing will steadily demand a growing share of GDP in the decades ahead, the concurrent rise in individual prosperity (as measured by GDP per capita) will allow living standards to grow appreciably even if a larger share of national product is diverted for public goods like health, aged care and defence.

A more detailed examination of the affordability of Australian defence spending can be found in the 2008 ASPI publication *Strategic choices: Defending Australia in the 21st century*.

Australia's defence effort in an international context

According to the World Bank, in 2014 Australia had the twelfth largest economy on earth measured at market exchange rates, and nineteenth using Purchasing Power Parity (PPP) according to the IMF in 2015. From this annual bounty of around 1.7 trillion dollars, Australia finds the money to fund its defence. Table 5.5 displays Australia's 2015 defence spending (the latest year for which comprehensive data is available) along with that of a selection of countries including allies, regional neighbours and other developed industrial economies around the globe. All figures are given in US dollars calculated at prevailing market exchange rates.

Table 5.5: Defence spending and burden 2015

2015 GDP		2015 Defence expenditure		2015 % GDP	
Country	**$US(b)**	**Country**	**$US(b)**	**Country**	**%**
USA	19,090	USA	597.5	Israel	6.22
China	11,393	China	145.8	Russia	4.18
Japan	4,101	United Kingdom	56.2	Singapore	3.29
Germany	3,366	Russia	51.6	USA	3.13
United Kingdom	2,744	India	48.0	Pakistan	2.75
France	2,422	France	46.8	South Korea	2.40
India	2,180	Japan	41.0	India	2.20
Italy	1,826	Germany	36.7	United Kingdom	2.05
Canada	1,574	South Korea	33.5	Taiwan	1.98
South Korea	1,394	Australia	23.6	France	1.93
Australia	1,257	Italy	21.6	Australia	1.88
Russia	1,235	Israel	18.6	Malaysia	1.51
Spain	1,222	Canada	14.0	Thailand	1.44
Indonesia	872	Spain	10.8	New Zealand	1.42
Netherlands	748	Taiwan	10.3	China	1.28
Turkey	720	Singapore	9.7	Netherlands	1.19
Taiwan	518	Netherlands	8.9	Italy	1.18
Sweden	483	Turkey	8.3	Turkey	1.16
Thailand	373	Indonesia	7.6	Germany	1.09
Malaysia	314	Pakistan	7.5	Sweden	1.09
Philippines	300	Thailand	5.4	Japan	1.00
Israel	299	Sweden	5.3	Canada	0.89
Singapore	294	Malaysia	4.7	Spain	0.88
Pakistan	271	New Zealand	2.4	Indonesia	0.87
New Zealand	170	Philippines	2.2	Philippines	0.74
PNG	18	PNG	0.1	PNG	0.56

Source: IISS: The Military Balance 2016. Australian results from ASPI for 2015-16.

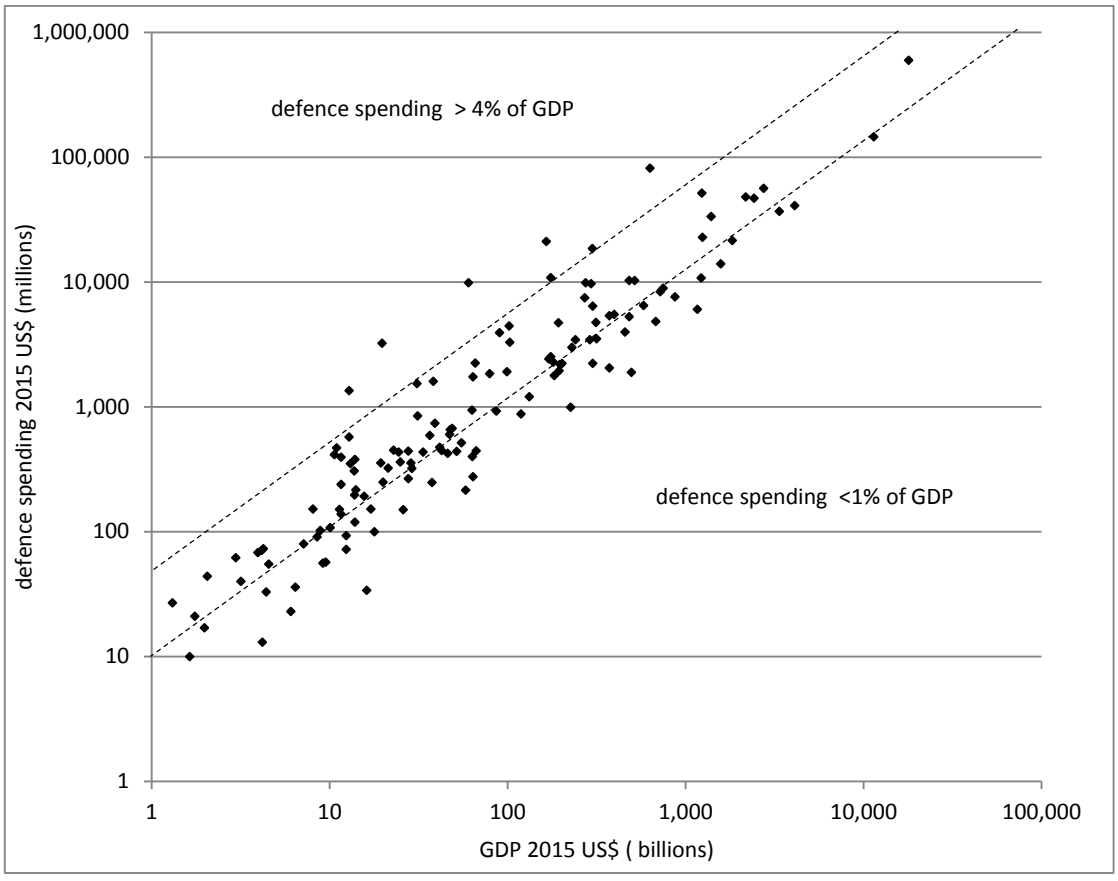
With the caveat that fluctuation in exchange rates can make a significant difference in relative ranking, there are three observations worth making. First, our level of defence spending gives us a budget broadly comparable with Italy and Israel, but far below heavy hitters such as Germany, UK, Japan, France and China. Second, we outspend all our Southeast Asian neighbours by a considerable margin. Third, the United States remains in a class of its own.

In terms of defence spending as a percentage of GDP, at 1.88%, we devote significantly more than the Netherlands (1.2%), Germany (1.1%), Spain (0.9%), Canada (0.9%) and Japan (1.0%). According to the data, the only fully developed Western countries to allocate a larger share of GDP than us are the (nuclear-armed) United States (3.1%), France (1.9%) and the United Kingdom (2.1%). Closer to home, we devote a smaller share of GDP than India (2.2%), South Korea (2.4%), and Singapore (3.3%), but more than Indonesia (0.9%), Thailand (1.4%) and the Philippines (0.7%). New Zealand (1.4%) appears to have lost ground—though NZ spending data is hard to interpret.

To summarise, we spend a greater share than most developed Western nations but a lesser share than many of our significant regional neighbours. This probably reflects two things: (1) the synergy derived from collective defence in Western Europe, and (2) that some of our less prosperous neighbours have to spend a larger share of GDP to meet the demands of a more challenging strategic environment than that of Western Europe.

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 5.14 for 143 countries based on data collected by the International Institute of Strategic Studies (IISS). To properly capture the wide spread of GDP and defence spending values, the data has been plotted on a dual logarithmic scale.

Figure 5.14: GDP and defence spending for 143 countries 2014



Source: Compiled from data in The Military Balance 2016 (IISS).

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 1 and 4% 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 5.6 lists population numbers, permanent defence force numbers and population percentage in the armed services for our selection of allies, neighbours and Western powers.

Table 5.6: Human resources circa 2015

Country	Population	Country	Armed Forces	Country	% of POP
China	1,385,566,537	China	2,333	North Korea	4.78%
India	1,252,139,596	United States	1,381	Israel	2.29%
United States	320,050,716	India	1,346	Singapore	1.35%
Indonesia	249,865,631	North Korea	1,190	South Korea	1.27%
Pakistan	182,142,594	Russia	798	Taiwan	0.92%
Russia	142,833,689	Pakistan	644	Turkey	0.68%
Japan	127,143,577	South Korea	628	Russia	0.56%
Philippines	98,393,574	Turkey	511	Thailand	0.54%
Vietnam	91,679,733	Vietnam	482	Vietnam	0.53%
Germany	82,726,626	Indonesia	396	United States	0.43%
Turkey	74,932,641	Thailand	361	Malaysia	0.37%
Thailand	67,010,502	Japan	247	Pakistan	0.35%
France	64,291,280	Taiwan	215	France	0.33%
United Kingdom	63,136,265	France	209	Sweden	0.31%
Italy	60,990,277	Germany	179	Italy	0.29%
South Korea	49,262,698	Israel	177	Spain	0.26%
Spain	46,926,963	Italy	175	Australia	0.25%
Canada	35,181,704	United Kingdom	155	United Kingdom	0.25%
Malaysia	29,716,965	Philippines	125	Germany	0.22%
North Korea	24,895,480	Spain	122	Netherlands	0.21%
Australia	23,342,553	Malaysia	109	New Zealand	0.20%
Taiwan	23,329,772	Singapore	73	Japan	0.19%
Netherlands	16,759,229	Canada	66	Canada	0.19%
Sweden	9,571,105	Australia	58	China	0.17%
Israel	7,733,144	Netherlands	36	Indonesia	0.16%
PNG	7,321,262	Sweden	30	Philippines	0.13%
Singapore	5,411,737	New Zealand	9	India	0.11%
New Zealand	4,505,761	PNG	2	PNG	0.03%

Source: International Institute for Strategic Studies: The Military Balance, 2015. UN Population database, 2013.

Here Australia is less well endowed. According to the *UN Population Database*, Australia ranked 51th in population in 2013; ahead of Taiwan and below Yemen. 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 per cent of the world's people.

Our permanent armed forces in 2015 amounted to around 58,000, which puts us near the bottom of the table in our selection of countries. Overall, there are around 59 countries with armed forces numerically superior to ours. As a proportion of population, we have around one-quarter of one per cent of our population engaged as full-time military personnel. This is less than European nations Spain (0.26%), Italy (0.29%) and France (0.33%), and behind the United States (0.43%). 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) and Sweden, which makes extensive use of reserve personnel. That said; we do come ahead of Germany (0.22%) and the Netherlands (0.21%). In regional terms, we fall well behind Singapore (1.35%), Malaysia (0.37%) and Thailand (0.54%). Ranking in terms of proportion of population needs to be seen in the context of our avowed 'maritime strategy'. 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. 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.

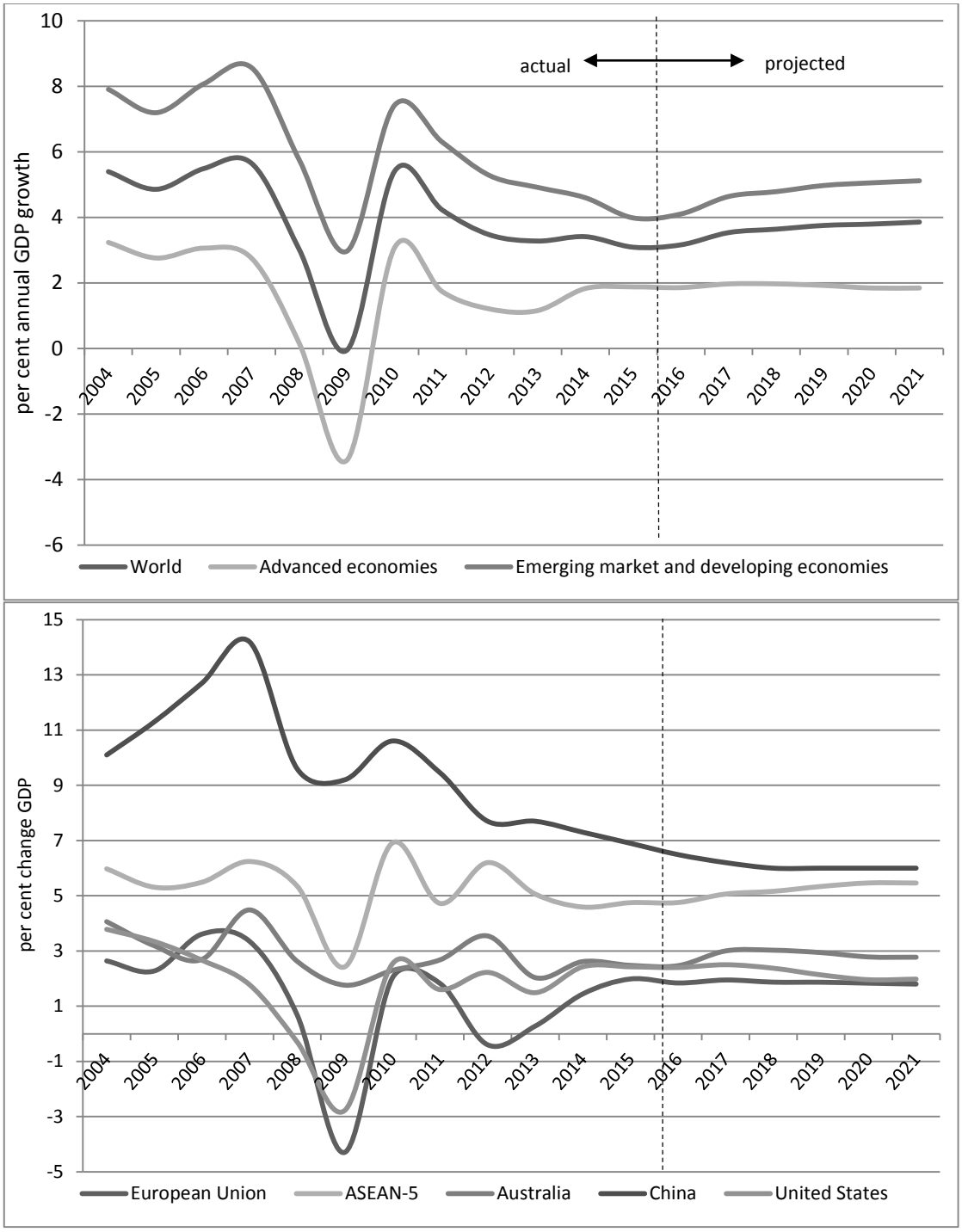
Impact of the Global Financial Crisis

In 2009, the ASPI Budget Brief devoted an entire chapter to the potential impact of the GFC. The key aspects of that analysis are updated below. Figure 5.15 shows the recorded and prospective economic contraction globally and for advanced and developing economies separately. As can be seen, the impact was more severe in the former. In fact, compared with the initial estimates from early 2009, developing countries have gotten off even more lightly than expected—typically 2-3% less contraction—thereby widening the gap between the impact on developed and developing counties.

The results for specific countries and sub-regions are shown in the lower graph. Note that China and Australia managed to avoid the worst of the recession compared with our respective cohorts—at least initially.

Over the past twelve months, the world economic outlook has been more uncertain than encouraging. The ongoing sovereign debt crisis in Europe has cast a shadow over the global economy, growth in China has slowed, and the United Kingdom is undergoing yet another economic slowdown. Overall, growth projections have continued to moderate as the global economy fails to fully recover. On the bright side, the US economy appears to finally be gaining momentum after the slowest and most hesitant recovery from recession in the post-war era. In Australia, where the impact of the GFC was not severe, the recovery has been slow and interest rates have been cut to an historical low of 1.75% in an attempt to kick-start growth.

Figure 5.15: The Great Recession

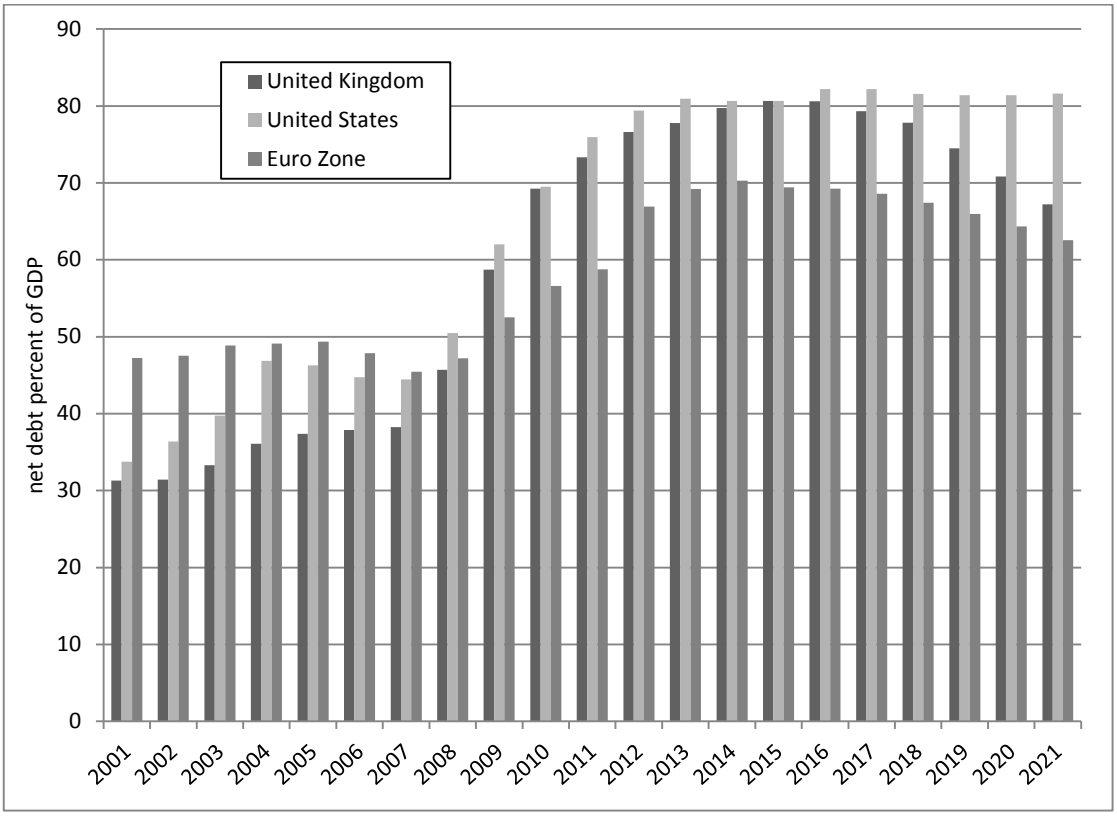


Source: International Monetary Fund, World Economic Outlook, April 2016.

At the time, the GFC only had a limited impact on international defence spending—probably because insufficient time was available to make substantial adjustments. Seven years later, and the longer term consequences are beginning to emerge. As shown earlier, from around 2010 onwards, substantial cuts to defence spending have been made in a number of countries.

From the perspective of defence spending (and government spending more generally), the GFC did two things. First, it rapidly exacerbated long-standing problems with government debt in many advanced economies, see Figure 5.16.

Figure 5.16: The GFC and government debt



Source: IMF World Economic Outlook, April 2016.

Second, the GFC removed the complacency surrounding the sustainability of the financial system in general and government finances in particular. No longer is it possible to pretend that advanced economies can live beyond their means forever. Moreover, the GFC forced many countries to face up to the fiscal dilemma caused by ageing populations.

The extent to which a country decides to reduce its defence spending as a result of mounting debt will depend on many factors—economic, strategic and cultural. A proper analysis of how these factors might come together for even one country is beyond the scope of this brief. But as we've already seen, a number of advanced economies are already working towards fiscal consolidation, including through cuts to defence spending.

As a guide to the extent of fiscal pressures, key economic and fiscal data for countries of interest has been collected in Table 5.7. France, Germany, Italy, the United Kingdom and the United States all face sizable growing debts.

As the data makes clear, there will be much more pressure on advanced economies to rein in defence spending than on developing ones. Among the advanced countries, Australia is in a relatively strong position given its low debt and relatively shallow downturn.

It is worth noting that the debt held by advanced economies will be more difficult to pay off than that in developing countries. Not just because advanced economies tend to owe a

greater share of GDP, but also because developing economies grow two or three times faster than their advanced counterparts. Japan, in particular, faces an increasingly serious situation where its ageing population will impede growth at the same time as aged care and health costs rise in the years ahead. China, on the other hand, could erase its public debt within several years if it chose to do so.

References and sources

Economic data including GDP, deflators and CPI indices comes taken from the International Monetary Fund's *World Economic Outlook Database 2015* (April 2015) available at www.imf.org. Most of the defence spending data is taken from successive editions of the International Institute of Strategic Studies' *The Military Balance* from 1980 to 2016. Additional national defence spending data has been taken from: *Analysis of the FY 2012 Defense Budget Request*, 2012, from the Center for Strategic and Budgetary Analysis available at www.csbaonline.org**;** *China's National Defense in 2010*, the Defense White Paper for the People's Republic of China, available at http://china.org.cn/e-white/index.htm**;** *Historical Statistics of Japan;* The Statistical Bureau of the Ministry of Internal Affairs and Communications, Japan, http://www.stat.go.jp/english/data/chouki/index.htm.

Table 5.7: Pressures on government spending that might curtail defence spending

	Net borrowing 2015 (% GDP)	Percentage annual GDP growth			Net general government debt (IMF) as a share of annual GDP		
		2007	2009	2015	2005	2015	2020
Advanced economies							
Australia	-1.7%	4.5%	1.6%	2.8%	-3.8%	17.9%	17.2%
Canada	-0.7%	2.0%	-2.7%	1.1%	31.6%	26.7%	18.6%
France	-1.7%	2.4%	-2.9%	0.4%	58.8%	89.0%	87.7%
Germany	1.9%	3.4%	-5.6%	1.5%	52.0%	48.7%	39.1%
Italy	1.4%	1.5%	-5.5%	0.8%	86.0%	111.4%	104.4%
Japan	-4.9%	2.2%	-5.5%	0.5%	82.1%	128.1%	132.2%
Korea	-0.6%	5.5%	0.7%	2.6%	25.5%	33.9%	33.7%
Netherlands	-0.8%	4.2%	-3.3%	1.9%	21.9%	34.7%	35.2%
New Zealand	0.7%	3.4%	-1.4%	3.4%	11.2%	7.5%	3.8%
Singapore	-0.3%	9.1%	-0.6%	2.0%	-	-	-
Spain	-1.8%	3.8%	-3.6%	3.2%	34.1%	65.0%	65.5%
Taiwan	-	6.5%	-1.6%	0.7%	-	36.4%	30.6%
United Kingdom	-2.8%	2.6%	-4.3%	2.5%	37.5%	80.7%	70.8%
United States	-1.8%	1.8%	-2.8%	2.4%	46.3%	80.6%	81.4%
Regional economies							
Indonesia	-1.2%	6.3%	4.7%	4.8%	-	-	-
Malaysia	-1.3%	6.3%	-1.5%	4.9%	-	-	-
Philippines	0.5%	6.6%	1.1%	5.8%	-	-	-
Thailand	2.0%	5.0%	-2.30%	2.8%	-	-	-
Vietnam	-4.5%	7.1%	5.4%	6.7%	-	-	-
Emerging powers							
China	-2.2%	14.2%	9.2%	6.9%	-	-	-
India	-2.6%	9.8%	8.5%	7.3%	-	-	-
Russia	-3.1%	8.5%	-7.8%	-3.7%	-	-	-

Source: International Monetary Fund, World Economic Outlook, April 2016.

Chapter 6 – The Cost of War

Introduction

This chapter includes an explanation of how Defence is funded for deployments, updated information on historical deployment costs and a summary of the cost of recent operations including Syria/Iraq and Afghanistan. In addition, the accumulating number of disability pensioners arising from recent deployments is surveyed.

Key Points

Since 1998, Australia has committed more than $15 billion on military operations /overseas deployments.

ADF deployments to Timor-Leste and Solomon Islands have now concluded.

The total commitment to operations in Afghanistan has been $8.2 billion.

Note: all figures nominal.

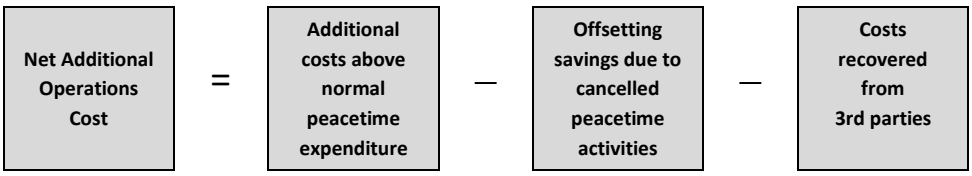
What do we mean by the cost of a war?

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. This practice was suspended in 2008-09 because of a surplus of funding. It was then reinstated in 2009-10 but was only applied partially in the case of force protection measures in Afghanistan for which Defence absorbed much of the cost.

Figure 6.1 shows how the net additional cost of an operation is calculated. In the past, Defence only disclosed the aggregate net additional operations 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 operations.

Figure 6.1 Calculating the 'Net Additional Cost of War'

Where:



The net additional operations cost includes the additional cost of personnel allowances, shipping and travel, repair and maintenance, health and inoculations, ammunition, contracted support, fuel, inventory, consumables etc. Offsetting savings includes the money saved from foregone activities like the cancelled Exercise Crocodile 99 and 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.

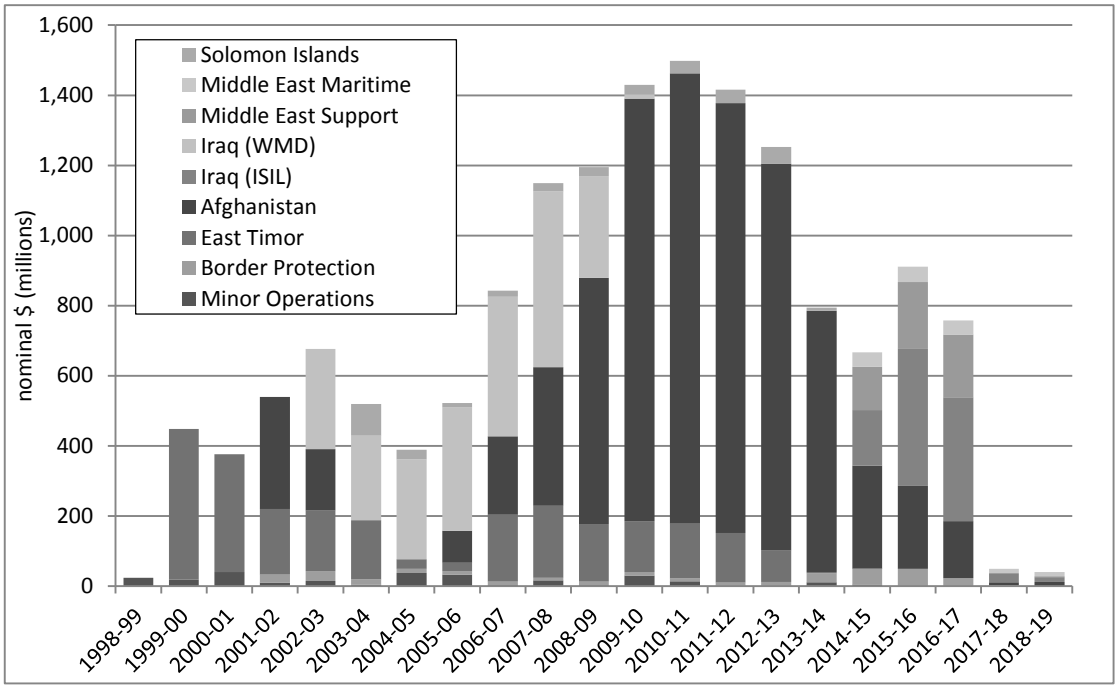
The net additional capital investment usually represents the accelerated filling of capability gaps specific to the operation. Recent examples include the purchase of additional electronic warfare self-protection (EWSP) equipment for the AP-3C maritime patrol aircraft for Iraq, and the rapid acquisition of the *Javelin* anti-armour missile for Afghanistan. Capital costs sometimes also include modifications to platforms and additional inventory purchases.

It's also 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, or the cost of operating platforms within the planned peacetime rate of effort. Nor does it cover the costs incurred outside of Defence by the Australian Federal Police, 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 cost of Defence deployments from 1998-99 to 2018-19. Note that Defence was directed to absorb costs of $22 million in 2007-08, $1,082 million in 2008-09, $43.1 million in 2009-10, $271 million in 2010-11, $368 million in 2011-12, $176 million in 2012-13, $32.3 million in 2013-14 and $24.3 million in 2014-15.

Figure 6.2: The net additional cost of ADF operations



Source: Defence Annual Reports and Budget Papers

Minor operations include: Bougainville (Op Bel Isi), which cost $109 million between 1998 and 2003 (of which $43.3 million was absorbed by Defence); the 2006 Commonwealth Games (Op Acolyte) ($10.5 million); and support to the G20 Summit in 2014 ($8.1 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 $450 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, for a time, part of the Iraq operation in March 2003.

As shown in Figure 6.2, the cost of operations fell for the first time in eight years in 2011-12, but then increased in 2015-16 prior to this year's decline. The total cumulative real cost of recent operations is given in Table 6.1.

Table 6.1: Total real cost of recent and ongoing operations

	Dates (funding)	Length	Nominal cost $ (million)
Minor Operations	1998-99 to 2014-15	17	263
Border Protection	2001-02 to 2017-18	17	294
East Timor	1998-99 to 2014-15	17	2,444
Afghanistan	2001-02 to 2017-18	17	8,185
Iraq (WMD)	2002-03 to 2009-10	8	2,365
Iraq (ISIL)	2014-15 to 2018-19	5	941
Middle East	2014-15 to 2018-19	5	647
Solomon Islands	2003-04 to 2014-15	12	355
Total	**1998-99 to 2018-19**	**20**	**15,493**

Source: DAR and 2016-17 PBS. East Timor, 'Force Generation' funding to temporarily expand the Army and Air Force (which did not occur) is not included.

Major operations in the 2016-17 Budget

Afghanistan (Operation Slipper and Highroad)

The government has funded Operation Highroad until June 2017 at a cost of $59 million. Operation Highroad is Australia's contribution to 'the NATO-led train, advise and assist mission which has replaced the previous NATO-led ISAF mission'. 400 ADF personnel are involved. A further $104 million will be spent in 2016-17 to reconstitute forces following the conclusion of Operation Slipper in March 2015.

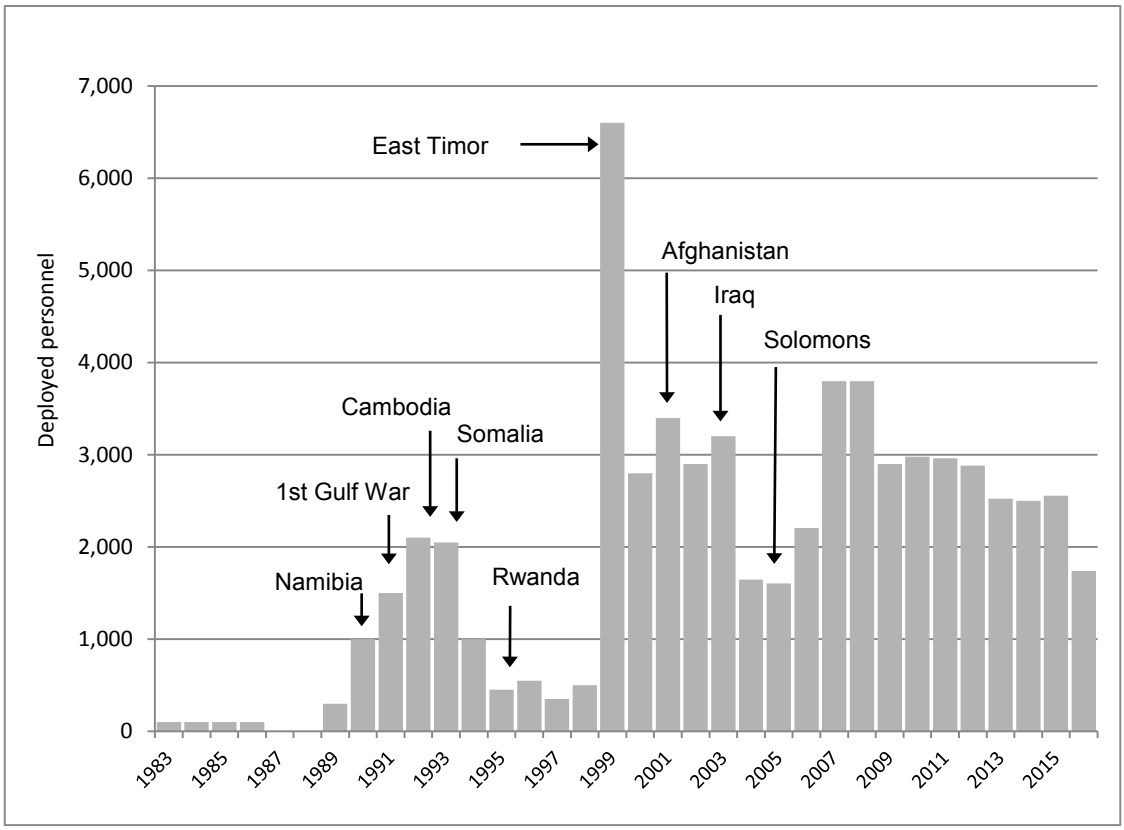
Iraq (Operation Okra)

The government has provided $354 million to cover the cost of Australia's contribution to the international coalition against ISIL, or Daesh, in Iraq in 2016-17. The Australian contingent includes a 400-strong Air Task Group (6 x F/A-18 Super Hornets, 1 x E-7A Wedgetail AEW&C and 1 x KC-30A Multirole Tanker aircraft), and a 200-strong Special Operations Task Group and a 300 strong Task Group to help build the capacity of the Iraqi Army.

Middle East Area Region (Operation Accordion and Manitou)

The government has funded the ADF deployment to the Middle East Region until June 2017, including $179 million for Operation Accordion and $40 million for Operation Manitou. Operation Accordion 'supports the sustainment of ADF operations, enables contingency planning and enhances regional relationships in the Middle East Region'. Around 400 people and various assets are deployed on Operation Accordion. Operation Manitou is Australia's 'contribution to the international effort to promote maritime security, stability and prosperity in the Middle East Region'. One RAN frigate is presently deployed.

Figure 6.3: Indicative deployed personnel numbers, circa May each year.



Note: numbers do not include 500 personnel on border protection duty.

Table 6.2: Deployed ADF personnel as at 10 September 2015

Operation	Location	Personnel	Status
Accordion	Middle East Region	400	Ongoing
Aslan	Sudan	20	Reviewed Annually
Manitou	Middle East Region	241	Ongoing
Mazurka	Egypt	25	Ongoing
Okra	Iraq	780	Ongoing
Paladin	Israel/Lebanon	11	Reviewed Annually
Palate II	Afghanistan	2	Reviewed Annually
Resolute	Australian Maritime Interests	500	Ongoing
Highroad	Afghanistan	250	Ongoing
Southern Indian Ocean	Indian Ocean	2	Ongoing
	Total	**2,241**	

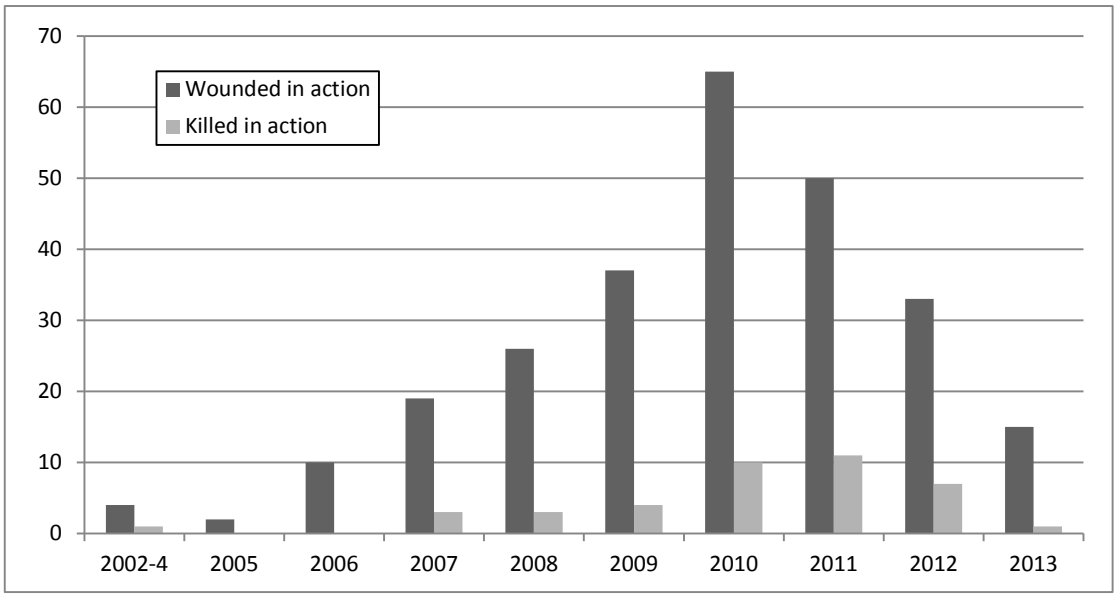
Source: www.defence.gov.au

The human cost of war

The financial costs of Australia's military deployments do not account for the human cost incurred by deployed personnel and their families. A partial picture of this complex area is reflected in battle casualty statistics and disability pensions awarded to ADF members in recent conflicts. These are presented below in Figures 6.4 and 6.5. In Figure 6.5, the Special rate refers to totally and permanently (or temporarily) incapacitated.

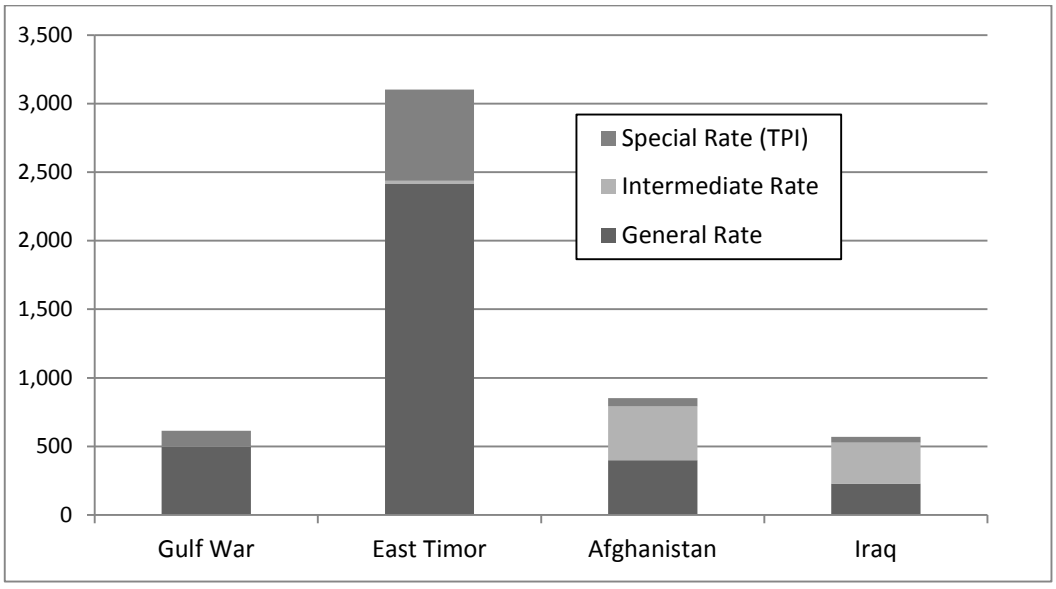
According to a Question on Notice from a Senate Estimates hearing in November 2013, battle casualties and wounded in Afghanistan included: 4 amputations, 56 fractures, 56 gunshot wounds, 12 hearing losses, 22 lacerations/contusions, 33 concussions/traumatic brain injuries, 10 multiple severe injuries, 25 penetrating fragments and 43 'other' injuries.

Figure 6.4: Battle casualties in Afghanistan 2002 to 2013



Source: Department of Defence website, data as at 1 February 2014.

Figure 6.5: Pensions arising from recent conflicts



Source: Department of Veteran's Affairs, DVA Pensioner Summary, December 2015

Chapter 7 – Defence Industry

Key Points

Local defence industry grew two-fold between 1995 and 2006 in terms of revenue, but remained stagnant until 2014 when modest growth commenced.

Local defence industry is dominated by a handful of local subsidiaries of foreign-owned companies.

The future of naval shipbuilding is slowly becoming clearer.

Since the 1970s or earlier, Australia has aspired to be self-reliant when it comes to its own defence. The caveats and qualifications to what's meant by self-reliance are many and changing, and needn't concern us here. What's important is that everyone agrees that an essential component of self-reliance is a local defence industry that can (at the least) repair, maintain and adapt the equipment used by our defence force.

To this end, successive governments have adopted policies to ensure that Australia's defence industrial base is adequate for the task. This outcome is deemed to be important enough for governments to publish formal defence industry policy statements from time to time, the most recent of which was released in tandem with the 2016 Defence White paper in February this year.

Despite the effort and priority accorded to maintaining a healthy local defence industry, there's surprisingly little hard data in the public domain about the size and shape of the sector. This chapter tries to redress that shortfall by collating and analysing what information is available. Our aim is to analyse macro trends, such as the rate of growth and pace of commercial consolidation or diversification. Readers seeking a detailed company-by-company description of the sector should consult the latest *Australian Defence Magazine* (*ADM*) *Top-40 Defence Contractors* (see *ADM* magazine Dec 2015/Jan 2016)—a reliable and informative source from which much of our data has been sourced.

Having described the Australian defence industry landscape, we then examine the government's new Defence Industry Policy Statement, along with emerging trends in government defence purchasing.

Because of its unique status as a 100% government-owned entity, a detailed analysis of the shipbuilder *ASC Pty Ltd* has also been included, along with a discussion of naval shipbuilding more generally, which is particularly interesting given recent announcements about the future submarine and surface vessel programs.

The chapter concludes with a brief overview of the new Defence Industry Policy Statement (DIPS) and the opportunities and risks it heralds. In addition to designating industry a 'fundamental input to capability', the new Policy reorganised a number of pre-existing industry support programs in areas such as skills development, research and development and export facilitation. Perhaps more importantly, the Turnbull government has signalled an overt 'buy Australia' stance that was not apparent in the DIPS.

Australian Defence Industry

According to government's 2016 DIPS, the Australian defence industry employs around 25,000 people. Structurally, the sector is dominated by a small number of large prime

contractors that account for around 50% of employment. Last year, DMO estimated that there were over 3,000 small and medium-sized enterprises (SMEs) operating in local defence industry, mostly as subcontractors to the larger prime contractors. An SME is typically defined as a firm employing fewer than 200 employees. In most cases, SMEs operating in the defence sector are diversified enterprises that also supply customers in the civil economy.

The 2010 DIPS said that around one-third of Defence's acquisition and sustainment spending went to local SMEs. However, the Capability Acquisition and Sustainment Group (CASG) were unable to confirm this breakdown and analysis of defence contracts (see Chapter 9) implies that a much smaller proportion of CASG spending goes directly to locally owned SME.

CASG advise that, as at early 2016; an estimated $6.4 billion (or 53%) will be spent locally from the planned $12.4 billion expenditure on sustainment and acquisition in 2015-16. The $6.4 billion includes around 37% of the $6.3 billion planned acquisition and 71% of the $5.7 billion planned for sustainment.

Applying a little arithmetic to these estimates reveals that the average revenue per employee in Australian defence industry is $236,000 (excluding fuels, oils and lubricants). In absolute terms, even revenue of $236,000 per employee is low compared with the average of $438,725 for Australian manufacturing firms (ABS series 8155 for 2013-14). But this latter figure is inflated by the high output per employee in the large-scale capital-intensive petroleum and primary metal production industries. Arguably better comparators are 'transport equipment manufacture' ($395,478 per employee) and 'machinery and equipment manufacturing' ($321,620 per employee).

The remaining difference in revenue per employee probably reflects a combination of three factors: poor economies of scale leading to relatively high fixed labour-intensive administrative overheads, an absence of mechanisation (due to poor economies of scale), and intrinsically labour-intensive software and computer work. The other possibility is that the actual number of people employed in local defence industry is smaller than estimated. The size of the Australian defence industry sector is compared with manufacturing and Australian industry overall in Table 7.1.

Table 7.1: The scale of Australian defence industry (circa 2013-2015)

	Australian Industry	Australian Manufacturing Sector	Australian Defence Industry
employees	10,726,000	879,073	25,000
revenue ($m)	2,889,705	385,671	6,400
value add ($m)	1,037,189	97,547	*2,176
revenue per employee	$269,411	$438,725	$294,933

*Source: ABS series 8155 2013-14, ASPI analysis. *estimated as explained below*

It follows that defence industry accounts for 0.23% of jobs in Australia, equivalent to 2.84% of jobs in the manufacturing sector. In terms of annual revenue, defence industry accounts for 0.22% of Australian industry and 1.7% of the manufacturing sector. Moreover, if we assume that defence industry results in the same ratio of value added to revenue (34%) as the (relatively high value add) machinery and equipment manufacturing sector, the defence sector gives rise to an annual value add of $2.2 billion, representing less than 0.2% of

Australia's GDP. So although Australian defence industry is undoubtedly important for our defence force, it represents only a trifling fraction of the overall Australian economy.

A closer look

Getting below the aggregate data for local defence industry is difficult because there aren't any official statistics on the detailed size and shape of the sector. Fortunately, however, the *ADM* has been surveying local defence contractors since 1995 and has generously made its 19 years of data available to us. Two points need to be made before proceeding. First, the nature of the survey results in both limitations and uncertainties on the data set—these will be pointed out as we go. Second, ASPI takes full responsibility for the analysis and conclusions that follow. Whatever violence is done to the data is our fault alone.

The best way to understand the data set is to look in detail at the latest results presented in the Dec 2015/Jan 2016 *ADM* edition. The *Top-40 Defence Contractors* list, as it's known, details the top 40 firms contracted to deliver goods and services to Defence either directly or via subcontracting work to prime contractors. This includes not only defence materiel production and maintenance, but also functions such as catering, cleaning and facilities construction. Because these latter activities draw services from the highly competitive broader economy, they're of less interest to us and are therefore excluded as far as possible in what follows.

This isn't to imply that such suppliers are irrelevant to the operation of the ADF—far from it, they're absolutely essential. But our concern is with companies with specialist defence materiel knowledge that are often highly dependent upon defence contracts for survival. Irrespective of what Defence might do, there will always be companies ready to build facilities, cook meals, clean buildings, mow lawns and transport goods. The same isn't true of firms capable of supplying and sustaining military equipment, hence our focus.

Table 7.2 lists the *ADM Top-40* for 2015, with defence materiel and non-defence materiel companies separated. Some companies straddle the boundary between providing civil and defence specific items, particularly in the information and telecommunications sector. We've done our best to assign such companies on the balance of their activities.

It should also be kept in mind that the *ADM Top-40* survey is voluntary and from time to time companies have chosen not to participate—sometimes reflecting a policy of non-disclosure. Significant companies that did not participate include Forgacs and John Holland (because of ownership changes) as well as Jacobs Australia and Elbit Systems. Also, Transfield Services changed its name to Broadspectrum.

Table 7.2: *ADM Top-40* Defence Contractors 2015

		Revenue ($m)	Personnel	Revenue per employee ('000s)
	Predominately defence materiel contractors			
1	BAE Systems Australia	1,200	3,500	343
2	ASC Pty Ltd	1,024	2,600	394
3	Thales Australia	839	3,200	262
4	Raytheon Australia Pty Ltd	822	1,203	683
5	Airbus Group	620	1,500	413
6	Lockheed Martin Australia Pty Limited	466	1,067	437
7	Boeing Defence Australia	453	1,600	283
9	Broadspectrum Limited (BRS)	400	2,300	174
12	Austal	212	650	326
13	Babcock Australia & New Zealand	208	700	297
14	Northrop Grumman Australia Pty Ltd	196	440	445
16	Saab Australia Pty Ltd	164	330	497
18	Safran Pacific	116	210	550
21	CSC Australia	88		
22	Sikorsky Helitech	82	225	364
23	CEA Technologies Pty Ltd	77	300	256
24	Cubic Defence New Zealand Ltd	75	138	546
25	Nova Systems	67	300	224
26	CAE Australia Pty Ltd	60	160	375
27	Chemring Australia	55	89	618
28	QinetiQ Pty Ltd (QinetiQ Australia)	52	250	208
30	ABB Australia Pty Ltd - Australia	49	1,500	33
31	Australian Defence Apparel Pty Ltd (ADA)	45	213	210
32	AECOM Australia Pty Ltd	44		
34	General Dynamics Land Systems - Australia	39	100	390
35	KBR (Kellogg Brown & Root Pty Ltd)	39		
38	Hawker Pacific Pty Ltd	34	699	48
39	Quickstep Holdings Ltd	34	161	210
40	Rockwell Collins Australia	33	56	593
	Total/Average	**7,592**	**23,491**	**353**
8	Lend Lease Building Pty Ltd	450	195	2,308
10	Spotless Group Limited	290	2010	144
11	Serco Australia Pty Ltd (Serco Defence)	234	635	369
15	Aspen Medical	182	2,500	73
17	IBM Australia Limited	126	285	441
19	Accenture	110		
37	DHL Global Forwarding	38		
20	ESS Defence	90	800	113
29	Laing O'Rourke	49	2,698	18
36	GHD Pty Ltd	38		
33	Aurecon	43		
	Total	**1,649**	-	-

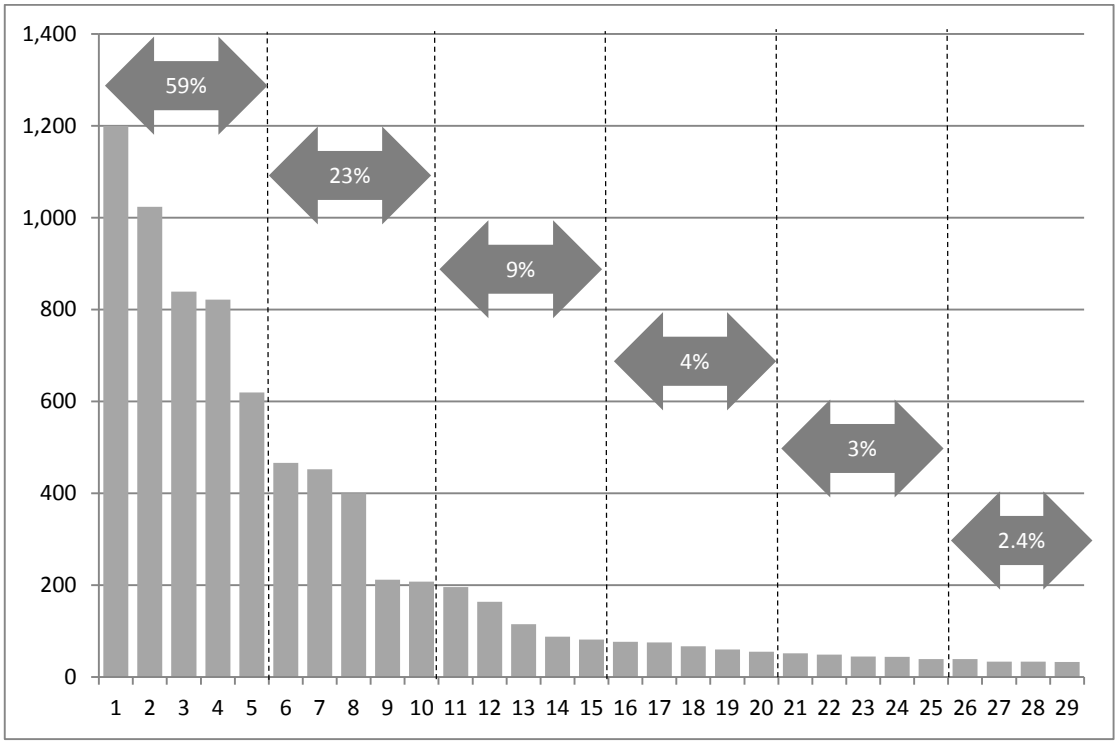
Source: ADM Top-40 Defence Contractors –1995-2015, published by Australian Defence Magazine, Dec/Jan edition each year.

The data reveals several interesting things. To start with, several companies have surprisingly low revenues per employee—as low as $33,000 in one instance, which probably reflects an overstatement of the number of employees engaged in defence work within the firm. Conversely, a number of firms have surprisingly high revenues per employee, of the sort more commonly attached to large-scale capital-intensive primary production. Setting aside the possibility that Defence is simply paying egregious monopoly rents, there are two likely explanations. First, some firms might have included revenue earned from retailing imported equipment. Indeed, several of the companies in question import weapons systems on a large scale. Second, other firms (particularly in the facilities construction sector) have a heavy reliance on subcontractors.

Taking the data at face value, it says that the top 29 contractors by defence revenue have a collective turnover of $7.6 billion and employ around 23,491 people, implying average revenue per employee of $323,000 a year. These figures are broadly commensurate with those derived earlier from Defence's estimate of employment in the sector.

Over the past twenty years, the top five firms in any given year have accounted for, on average, around 65% of total revenue of defence materiel contractors in the *ADM Top-40*. In 2015, as shown in Figure 7.1, that share was 59%.

Figure 7.1: Revenue distribution ($ million) for *ADM Top-40* 2015



Source: ADM Top-40 Defence Contractors –1995-2015, published by Australian Defence Magazine, Dec/Jan edition each year.

The actual companies in the top five change from year to year as contracts ebb and flow. Yet the current major players are easily identified. Table 7.3 reproduces the key prime contractors identified in the government's 2010 defence industry policy statement. It's important to note that only one of the firms—the government-owned ASC Pty Ltd—is controlled by an Australian-based entity, with the remainder split between the United States and Europe.

Table 7.3: Key Australia-based prime contractors

Prime	Parent company or owner	Country of origin	Key activities	Per cent of parent revenues	Stock exchange listing
ASC Pty Ltd	Australian Government	Australia	submarines and ships	n/a	n/a
Airbus Group Asia Pacific	EADS	France, Germany & Spain	helicopters	< 1	Paris
BAE Systems Australia	BAE	United Kingdom	varied	3.2	London
Boeing Defence Australia	Boeing	United States	aerospace	0.5	New York
Raytheon Australia	Raytheon	United States	systems integration	1.3	New York
Saab Systems	Saab AB	Sweden	land and maritime	3.1	Stockholm
Lockheed Martin Australia	Lockheed Martin	United States	electronic and information systems	<1	New York
Thales Australia	Thales	France	maritime and varied	2	Paris

Source: 2010 Defence Industry Policy Statement.

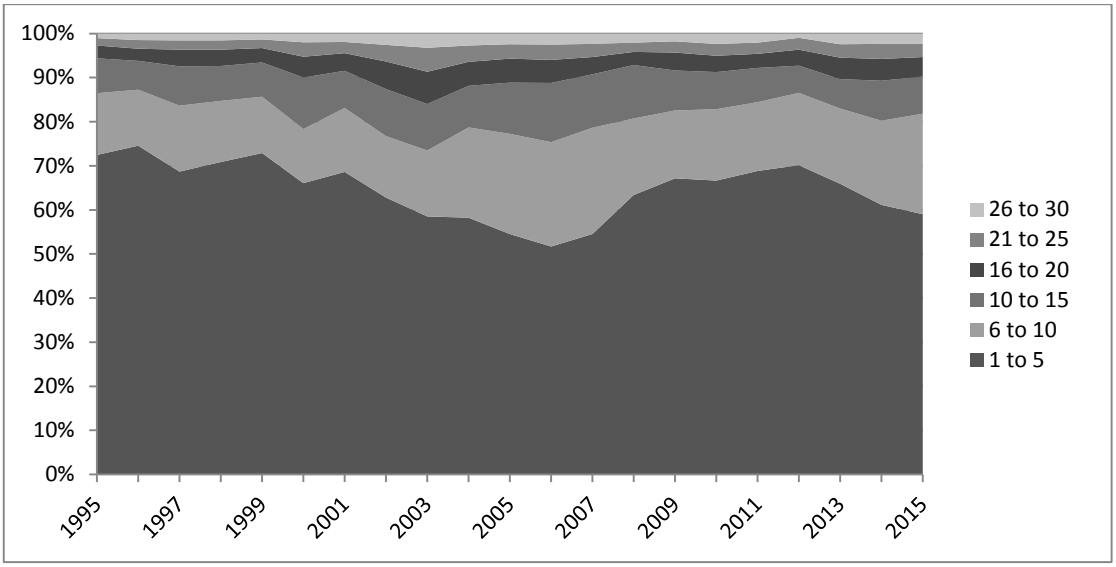
Foreign ownership of our key prime defence contractors brings benefits and risks. On the plus side, we undoubtedly get better access to foreign weapons systems than we otherwise would. In addition, foreign subsidiaries in Australia can 'reach back' to their parent owners for skilled personnel, knowledge and intellectual property. In addition, large foreign firms provide an avenue for local firms to supply global supply chains and build skills through subcontracting. Finally, because we have relationships with arms manufacturers on both sides of the Atlantic, in theory competitive pressures can be brought to bear when making purchases.

On the minus side, because foreign-owned Australian primes account for very small shares of parent company revenue, they're unlikely to command priority if a commercial or strategic conflict of interest arises. For example, if a foreign parent has to choose between supplying Australia or its home country with munitions in a crisis, there's no question about what will happen. In most areas this is unavoidable; Australia doesn't have sufficient demand to support fully indigenous defence industrial capabilities in all but a limited range of niche areas. Choosing and maintaining such capabilities is a strategic challenge of the first order—with stockpiling and supply chain diversification the alternatives.

The relatively small number of prime contractors operating in Australia is consistent with the consolidation of defence manufacturing that has been underway in Europe and the United States since 1945 and which accelerated following the end of the Cold War. However, in our particular case, the local cycle of having a small number of large defence projects dominating spending at any one time is probably also important. It's perhaps noteworthy that revenue among local defence firms broadened between 1995 and 2006 (as the Anzac and Collins programs were completed) and narrowed again between 2006 and 2012 (see Figure 7.2). The consolidation of various local companies over the years might have also

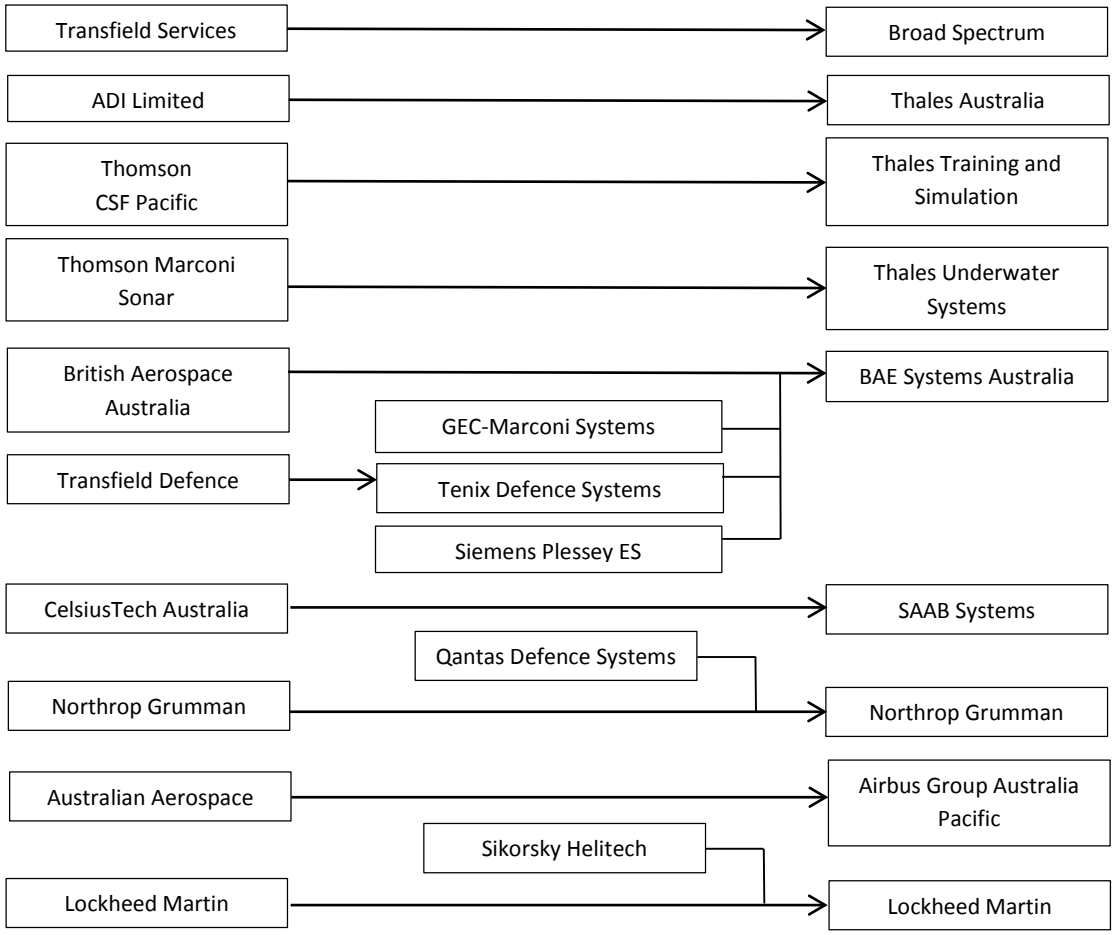
played a role. Some of the key mergers and acquisitions are depicted in Figure 7.3. The recent acquisition of parts of Forgacs by Civmec has been excluded because their future defence role is not yet clear.

Figure 7.2: Revenue distribution for top 30 defence contractors 1995 to 2015



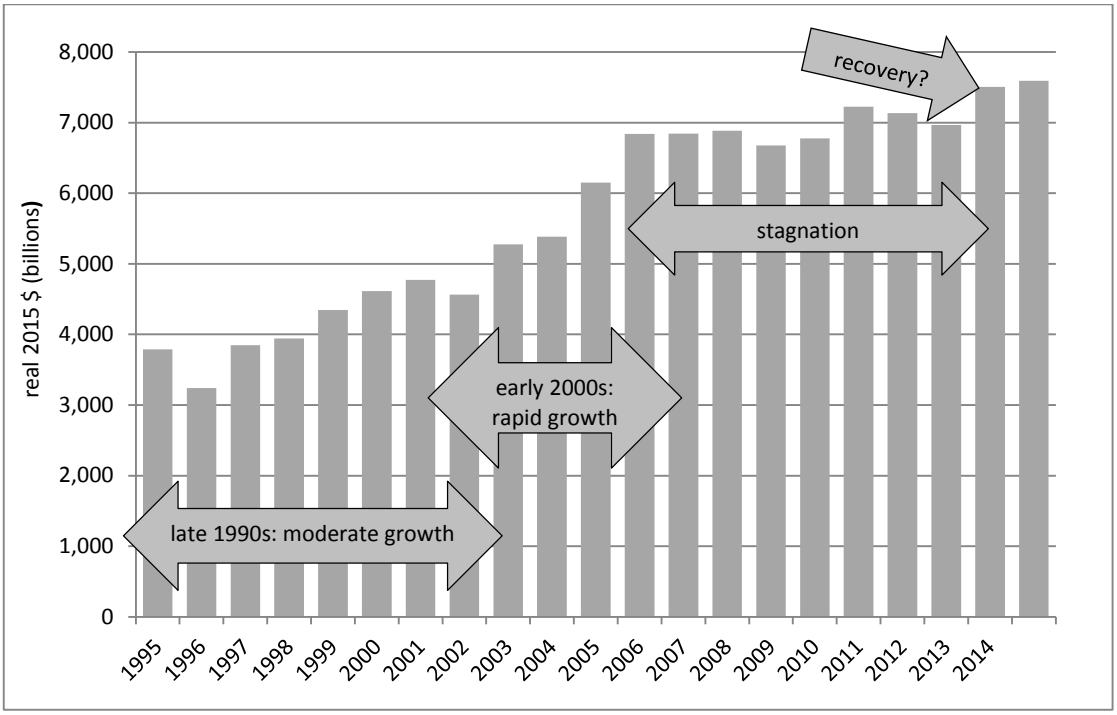
Source: ADM Top 40 Defence Contractors –1995-2015, published by Australian Defence Magazine, Dec/Jan edition each year.

Figure 7.3: Key mergers, acquisitions and name changes in local defence industry



With more than twenty years of data on local defence industry, the obvious question is whether the sector has grown or contracted over time. Figure 7.4 provides the answer using the Consumer Price Index to inflate historical data. Because total revenues are dominated by a small number of large turnover firms every year, changes to the *ADM Top 40* over time are a credible indicator of trends in the sector. Roughly speaking, the size of the sector in revenue terms has almost doubled since the mid-1990s. Looking more closely, three eras can be identified; moderate growth during the late 1990s, rapid growth in the early- to mid-2000s, and stagnation over the past seven years at a higher level. It's not surprising that revenues grew in the years following the 2000 White Paper as extra money flowed into Defence. Similarly, the mounting deferrals of investment and various efficiency measures of recent years broadly accord with the observed stagnation. The jump in the final year suggests that growth may soon recommence.

Figure 7.4: Growth and stagnation: Turnover of defence materiel contractors in *ADM Top 40*



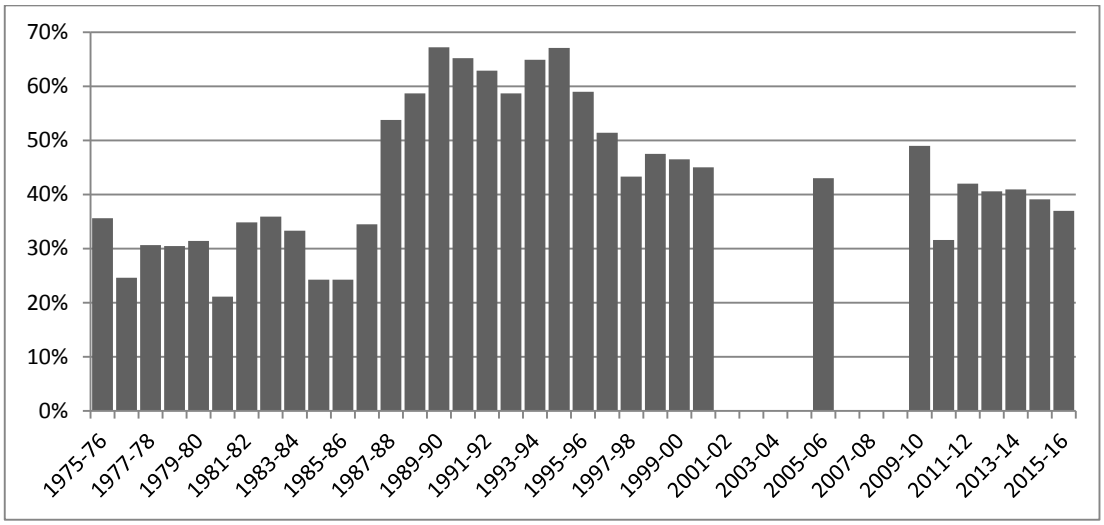
Source: ADM Top 40 Defence Contractors –1995-2014, published by Australian Defence Magazine, Dec/Jan edition each year.

At this point it's natural to compare the trends in local defence industry with spending by Defence on materiel. However, this can only be done with the caveat that repeated changes to Defence's accounting rules and reporting make this difficult, as does the absence and unreliability of data in the years around the turn of the century. Our best attempt to make sense of the available data appears in Figure 7.5. It looks as though the share of local work rose and fell with the wave of large naval construction and aviation upgrades in the 1990s. Note that the figures refer to acquisition only. Defence advises that the historical range of local acquisition plus sustainment spending is 50% to 55%.

It's possible that the levelling off in revenue for local firms after 2006 (and the corresponding reduced share of total investment) also reflects the increasing tendency of governments to purchase equipment off-the-shelf from foreign suppliers. Recent examples include the 24 F/A-18 Super Hornet fighters and five C-17 Globemaster transport aircraft. Fortunately, the

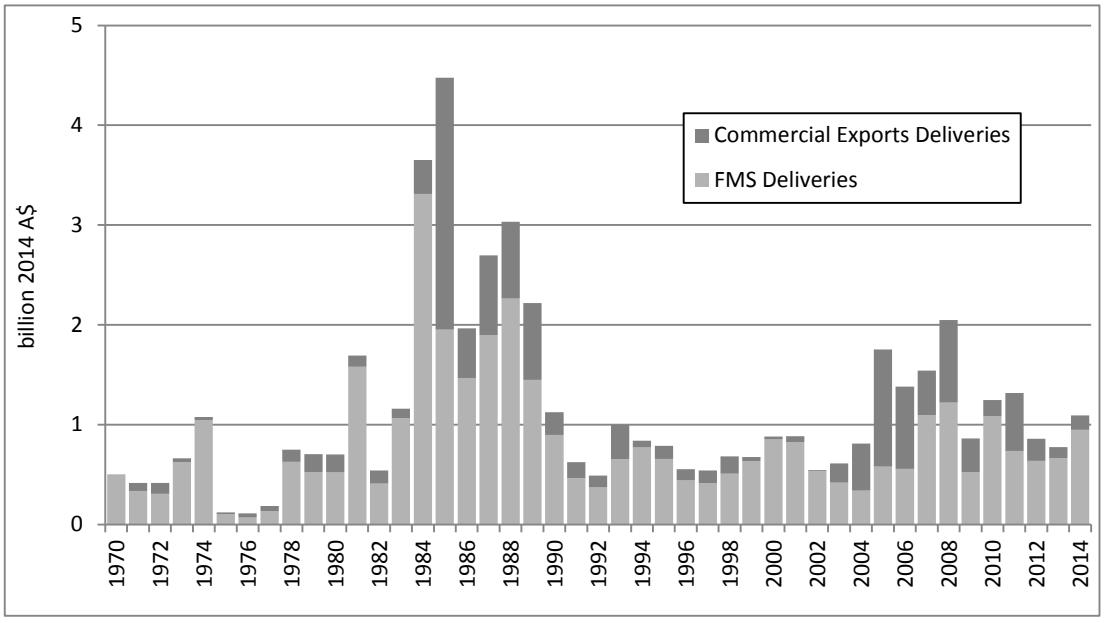
United States Government collects and discloses detailed information on commercial and government-to-government arms exports through the US Foreign Military Sales (FMS) program. Historical trends in US defence exports to Australia are shown in Figure 7.6, where it should be noted that the figures include both equipment acquisitions and sustainment goods and services such as spare parts and repair of rotable items. To allow comparison, the value of each year's exports has been converted from US to Australian dollars at the prevailing exchange rate, before being translated into 2013 dollars. Another view of defence exports to Australia can be found in the annual reporting of extant (typically multi-year) arms export licences to commercial US and UK firms for the export of defence materiel to Australia, see Figure 7.7.

Figure 7.5: Percentage of equipment by cost purchased locally 1975 to 2015-16



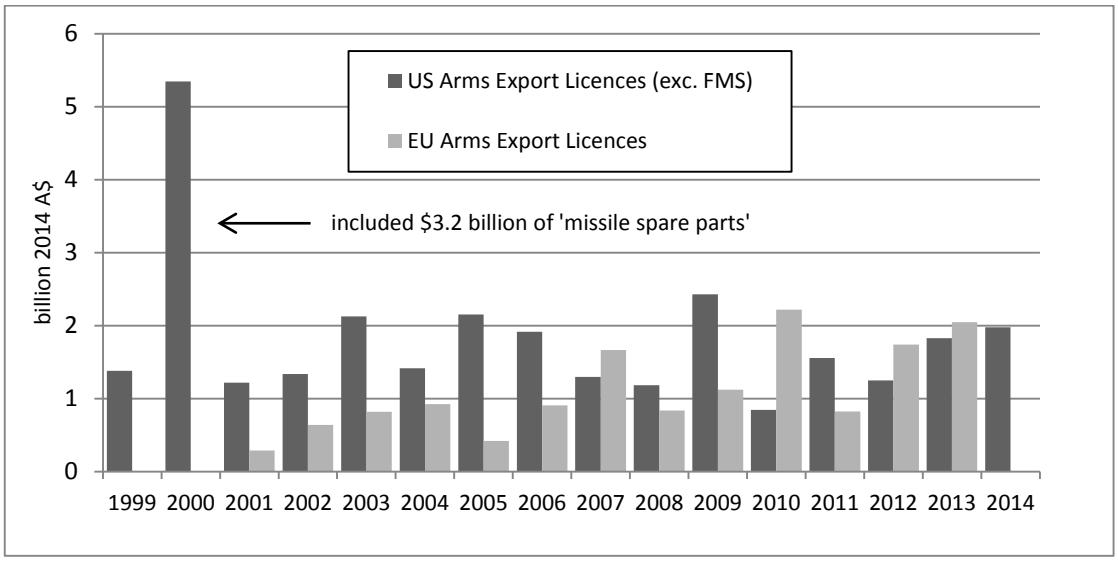
Source: Defence Annual Reports and FAD&T SLC Question on Notice 44, 29 May 2012, advice from Defence.

Figure 7.6: US defence exports to Australia



Source: Data from US Security Cooperation Agency, US State Department export controls reports.

Figure 7.7: US and EU export licences for defence exports to Australia



Source: Data from US Security Cooperation Agency, US State Department export controls reports, EU arms export reporting.

2016 Defence Industry Policy Statement

The government released a new Defence Industry Policy Statement (DIPS) alongside the new Defence White Paper in February this year. It's most recent predecessors date from 2010, 2007 and 1998.

The 2016 DIPS is an unsurprising document. Like most government glossies, it talks up its big-ticket 'announcables'. Specifically, $1.6 billion over ten years to establish:

- Centre for Defence Industry Capability (CDIC) 'to drive the strategic partnership with Defence, involve industry in governance of the industry programs and provide a range of business and skilling services'
- Defence Innovation Hub (DIH) 'to undertake collaborative innovation activities from initial concept, through prototyping and testing to introduction into service'
- Next Generations Technologies Fund (NGTF) 'to invest in strategic technologies that have the potential to deliver game-changing capabilities'.

The first two initiatives will be funded entirely by redirecting $870 million from existing programs. While there's some relabelling afoot, the joint defence-industry CDIC is an entirely new concept. The remaining $730 million for the technology fund will come from Defence's investment program. On the scale of defence spending, $73 million a year is a significant but not over-the-top investment in new technology.

So much for feeding the technology chickens; two other aspects to defence industry policy are much more important. The first is ensuring that the ADF has access to the industry capabilities it needs. To this end, the existing Priority and Strategic Industry Capability Framework will be replaced by a Sovereign Industrial Capability Assessment Framework 'to improve the identification and management of the sovereign industrial capabilities that develop and support our ADF capabilities'. In addition, industry has been recognised as a *Fundamental Input to Capability* with the goal of driving 'more formal consideration of industry impacts through the early stages of the capability development life cycle'. Responsibility for doing so will fall on the Capability Managers (a.k.a the service chiefs and VCDF) who will be assisted by the CDIC.

The test of the new approach will come with the new Defence Industrial Capability Plan, promised for 2017, with sovereign industrial capabilities identified through a 'collaborative process between Defence and the CDIC'. Past attempts to identify key defence industry capabilities have succumbed to special pleading by incumbents in a case of 'we have to do what we do because it's what we do'. Although a dispassionate assessment of industry priorities is difficult at the best of times, the stronger role of industry will increase the influence of firms with a stake in the outcome.

The other critical question for defence industry policy is how much preference will be given to local suppliers. In the 1980s and 90s we had explicit programs, such as the Australian Industry Involvement scheme, that favoured local suppliers irrespective of cost. More recently, however, governments have taken a more economically rational approach that saw

equipment purchased off-the-shelf from overseas while creating opportunities for local firms to bid competitively into global supply chains.

The new DIPS maintains the existing overarching approach to defence procurement. That is, apart from sovereign requirements, decisions will 'seek to achieve the best value for money' with consideration of 'opportunities to maximise internationally competitive Australian industry involvement'.

Thus, in terms of what matters, the new DIPS reflects continuity. There's no changed preference for local suppliers, and the arrangements for managing sovereign industry capabilities are not markedly different to the old ones for priority/strategic industry capabilities. If there has been a noteworthy change, it's arguably the extra $73 million a year to invest in 'game-changing technologies'.

But defence industry policy is a slippery beast. It's always possible to hide a preference for local suppliers behind a fig leaf of preserving sovereign capability. Moreover, if firms bidding for defence contracts think there's an advantage in offering high local content, they'll happily do so and pass on the costs. For these reasons, the government's actual procurement decisions, and how it explains those decisions, are every bit as important as its declared policy. Which brings us to the submarine announcement.

When asked about local content in the submarine program, the prime minister said

> 'I am determined that every dollar we spend on defence procurement as far as possible should be spent in Australia, and our commitment to that is precisely for the reasons that Marise and I and Christopher and the Vice-Admiral have spoken about. Because when we invest in Australian industry and jobs, Australian technology, we are strengthening our whole economy.'

Apart from expressing an unqualified preference for local suppliers in stark contradiction to the DIPS, the prime minister stressed the economic benefits of doing so. It was not an isolated mention; the same point is made at three other points during the announcement. Yet, the DIPS says absolutely nothing—not a single mention—about using defence procurement to build a stronger economy.

It's not that there's an iron-clad strategic argument for building submarines in Australia, otherwise the government wouldn't have asked for offshore and hybrid options from the contenders. Rather, a judgement has been made that the cost premium for local production, which the government concedes exists, is outweighed by economic and other benefits. That might be the case, but it's not reassuring that the government refuses to disclose the cost premium or to release the economic impact report it commissioned on the submarines (at a cost of $387,000). If it's such a good deal, why are we being kept in the dark?

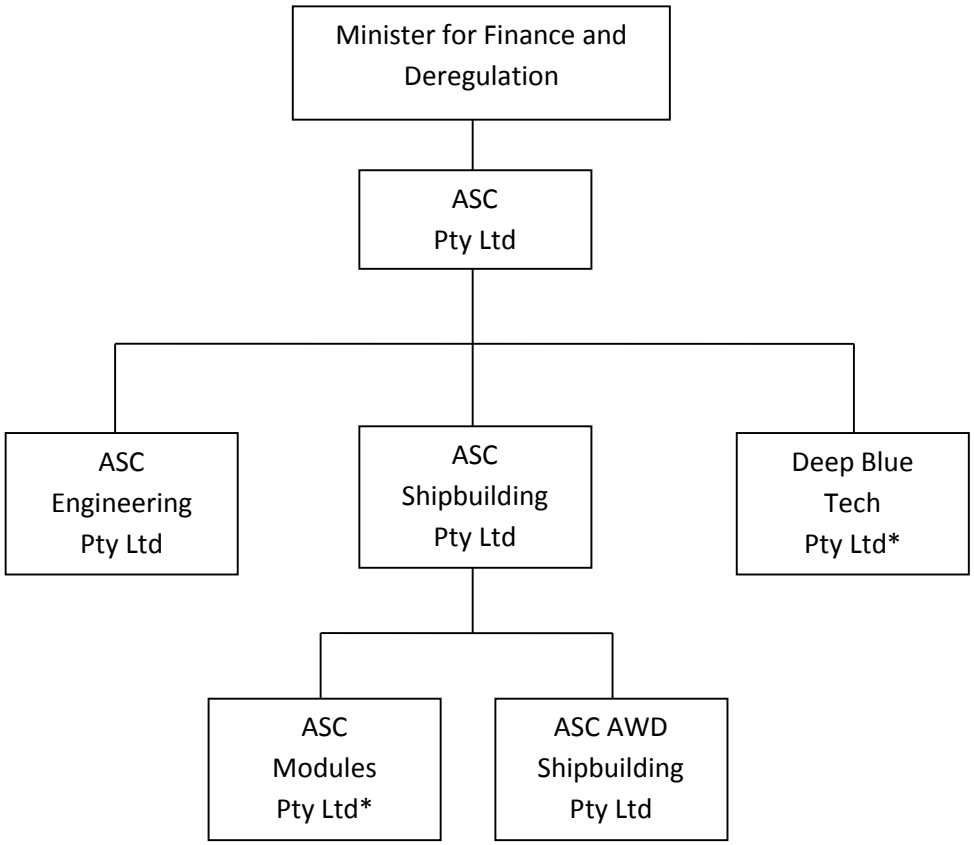
There's no denying that there were political factors behind the submarine decision, but that doesn't mean that there hasn't been an important change in policy; it merely explains why. Mindful of what the prime minister said in Adelaide, future bidders for defence contracts will be packing in as much local content as they can, with the risks borne by the ADF and the costs by taxpayers.

ASC Pty Ltd (formerly the Australian Submarine Corporation)

The Australian Submarine Corporation was formed in 1985, and in 1987 was awarded the contract to build six Collins class submarines. Initially, ownership of the corporation was shared between the Australian Government, submarine designer Kockums of Sweden, Wormald International and Chicago Bridge and Iron, but by 1991 only Kockums and the government remained shareholders. In 2000, the Australian Government bought out Kockums and became the sole owner.

Overview

At present, ASC is operated as a Government Business Enterprise (GBE) under the *Commonwealth Authorities and Companies Act 1997* with the Minister for Finance as sole shareholder. Consistent with its status as a GBE, the company has a board made up of executive and non-executive members. The corporate structure appears below.



*Dormant entities

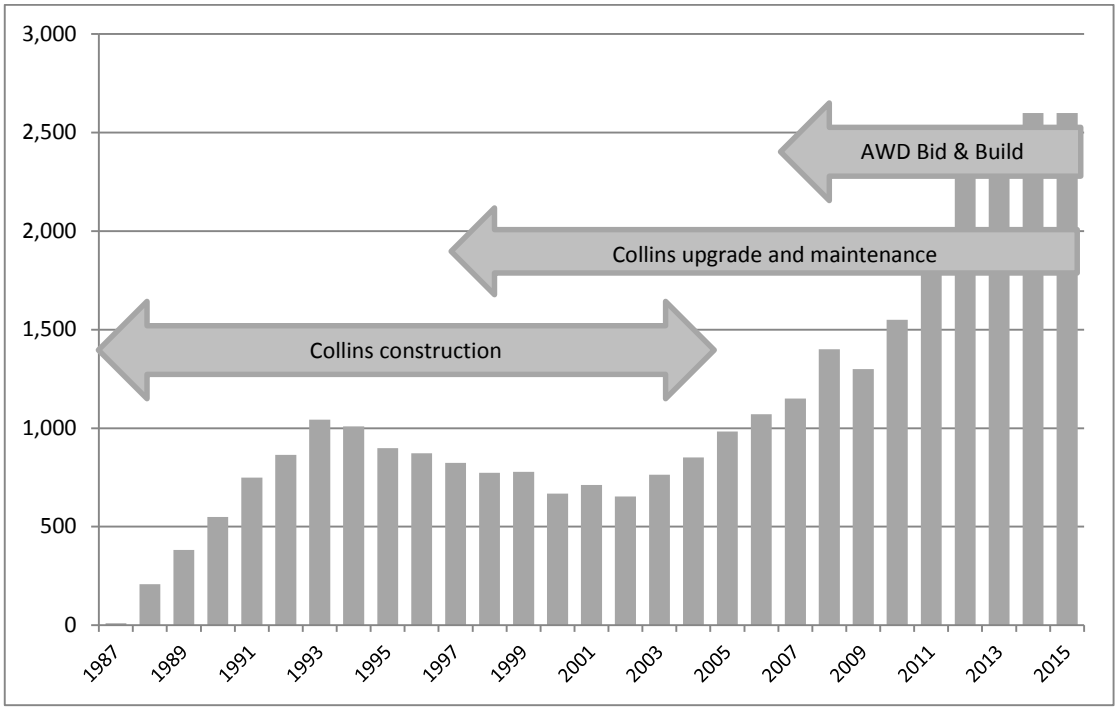
The three direct subsidiaries of ASC reflect the diversification of ASC into areas beyond the construction, upgrade and maintenance of the Collins class. *ASC Engineering* was established to undertake the design, construction and project management of civil heavy engineering projects. At present, *ASC Engineering* isn't an active entity. *Deep Blue Tech* was established to secure a role in the design of the Collins class replacement. The largest of the three entities, A*SC Shipbuilding,* was established to bid for what has become the $9.1 billion Air Warfare Destroyer project for the RAN. Its two subsidiaries *ASC Modules* and *ASC AWD*

Shipbuilding were created to operate within the *AWD Alliance*, which we explore in detail in the next section. ASC also runs a submarine training school for the RAN in WA.

Putting aside the latent *ASC Engineering* and unclear status of *Deep Blue Tech,* there are two main projects underway at ASC: the construction of the AWD, and sustainment and upgrade of the Collins fleet. The former occurs at the 'ASC South' facility at Osborne SA while the latter occurs mostly at the (original) 'ASC North' facility, also at Osborne. Additional submarine maintenance is also undertaken at 'ASC West' in WA near the RAN submarine homeport. ASC South and ASC North are separated by the SA Government's taxpayer-funded Common User Facility which includes the massive ship-lift and hardstand being used for the consolidation and launch of the three AWDs by ASC.

There are two ways to track the scale of activity at ASC over time: financial turnover and personnel numbers. As shown in Figure 7.8, the ASC workforce grew during the construction of the Collins fleet, then fell before rising again as the full volume of Collins class remediation, upgrade and maintenance work was felt. In recent years, the ASC workforce has grown to around 2,600 as the AWD workload approaches its maximum. However, in late 2015, ASC announced the first redundancies (45 workers) from the draw-down of the AWD program, and 640 positions are expected to be lost by the end of 2017.

Figure 7.8: ASC workforce 1987 to 2015

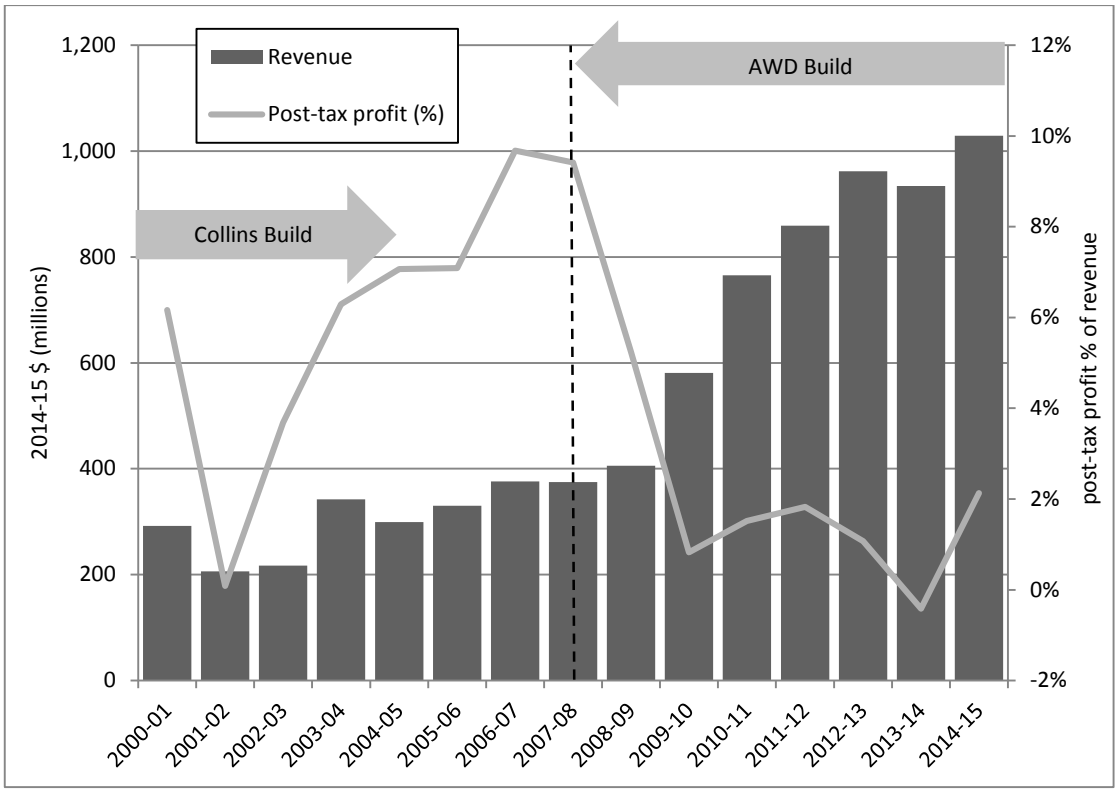


Source: ASC Pty Ltd Annual Reports

Only a small number of personnel were employed by ASC on the AWD project prior to 2006 (and even in that year the AWD workforce was only about 60 staff). Consequently, by the middle of the last decade, the size of the ASC workforce engaged in submarine post-construction work was close to the peak reached during the Collins construction program twelve years earlier. This demonstrates the relative high labour-intensity of Collins through-life-support compared with construction.

The consolidated corporate turnover and profit for recent years is shown below in Figure 7.9, where the increase in revenue after the commencement of AWD construction in mid-2007 is clear. Note, however, that ASC's after-tax profit as a share of revenue fell from 9.7% in 2007 to 1.1% 2013. In at least the first part of the period, this reflects a decision to reinvest profits back into the business, including into facilities and *Deep Blue Tech*.

Figure 7.9: ASC Key Financial Results



Source: ASC Pty Ltd Annual Reports

We now turn to examine in Dickensian fashion the various activities of ASC.

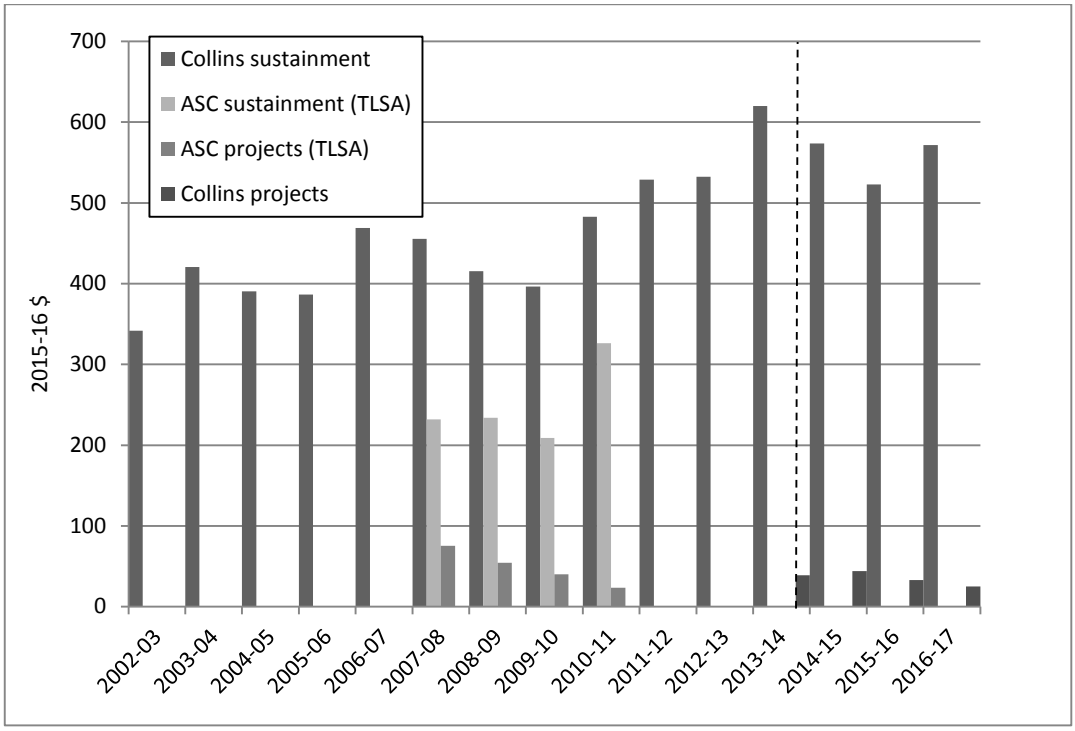
The ghost of submarines past—Collins through-life support

For reasons that aren't clear, Defence failed to have a through-life-support strategy or contract in place for the Collins class at the end of the construction program. Instead, ASC undertook piecemeal work as requested to maintain, repair and upgrade the fleet. In 2003, a long-term Through Life Support Agreement (TLSA) was established. Nominally a 15-year $3.5 billion agreement, the TLSA was essentially a cost-plus contract with limited options for incentives and sanctions.

Because we don't know the price paid each year to ASC to maintain the Collins, we have to rely on the reported total sustainment costs for an indication. Note that total sustainment costs include many things that don't result in payments to ASC (such as fuel and government furnished equipment). In particular, sustainment of mission system items such as sonar, combat system and electronic warfare is provided separately by other suppliers, administered through CASG. Total sustainment costs for the Collins fleet are given in Figure 7.10, beginning with 2002-03, the first year for which data is available. To allow a comparison over time, historical costs have been inflated using the 2.5% deflator applied to

the Defence budget. Known payments to ASC under the TLSA for sustainment and projects have also been included.

Figure 7.10: Total annual Collins class sustainment costs



Source: Defence Annual Reports, 2014-15 PAES, 2015-16 PBS, 2016-17 PBS, FAD&T QoN 19, 17 October 2012, QoN196, 28/29 May 2012, QoN 129, 20 November 201, QoN 66, 26 February 2014 and QoN 170, 22 October 2014.

Caution must be exercised when inferring anything from Figure 7.10. Large year-to-year fluctuations naturally arise due to the timing of full-cycle-dockings, spares purchases, and the RAN's operational activity level.

Notwithstanding these uncertainties, the overall cost of sustaining the Collins fleet is perceived to be high. Coupled with long-standing problems with the availability and reliability of the vessels, this has led to three initiatives that are reshaping the sustainment of the fleet and ASC's role therein.

First, ASC has a comprehensive program to boost labour productivity. As a government-owned entity working under what are effectively cost-plus contracts, it'd be surprising if inefficiency hadn't crept in over time. The latest ASC Annual Report confirms that substantial improvements have been achieved over the past couple of years—including productivity boosts of up to 30% in some areas.

Second, in June 2012 Defence and ASC agreed to a performance-based In-Service Support Contract (ISSC). By moving away from cost-plus reimbursement for work, ASC will have strong incentives to continue productivity and performance improvements within its business.

Third, the government is four years into implementing the recommendations of the review of Collins sustainment undertaken by an independent expert, Mr John Cole. The phase one report, delivered in December 2011, identified a host of problems within and between

Defence, DMO, Navy and ASC that contribute to poor and/or costly outcomes for Collins class sustainment. The phase two report was delivered in December 2012 and suggested the following target levels for the Collins fleet:

- 2 boats available 100% of the time
- 3 boats available 90% of the time
- 4 boats available 50% of the time.

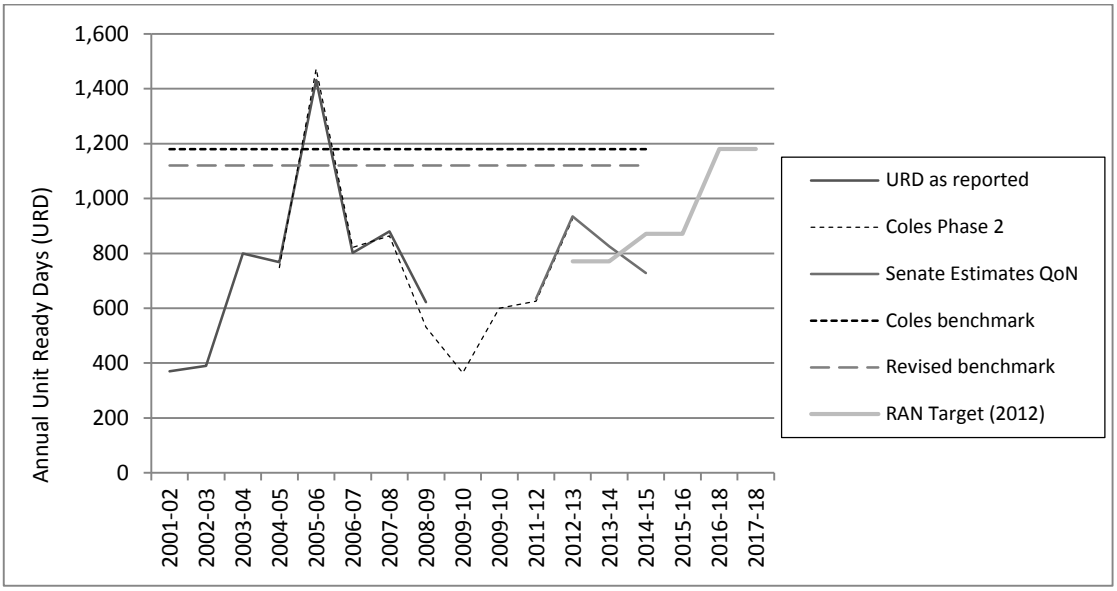
The report made 25 recommendations for how to achieve this, including reducing the length of full-cycle dockings from three to two years, moving to a cycle involving a one-year mid-cycle docking and six-month intermediate dockings, and appointing a Transformation Manager to implement the report's recommendations.

A follow-up report released in April 2014 concluded that 'submarine availability has improved significantly, with the submarine force achieving usually two and frequently three submarines materially available on any one day' as measured over successive financial years. The improvement is attributable to a combination of 'greatly enhanced availability of spares, [fewer] planned maintenance over-runs, few breakdowns and faster repairs to operational boats'.

In the longer term, to meet the targeted availability of the vessels it's critical that major refits are completed in two years. The first two-year Full-Cycle Docking under the new maintenance regime commenced in June 2014 (HMAS *Farncomb*); it's scheduled to return to service in May 2016 and is on track to do so.

Although the Navy ceased disclosing Collins availability in 2008-09, it's easy to reverse engineer other available data to recover a full and reasonably accurate time series, see Figure 7.11. As can be seen, good progress is being made.

Figure 7.11: Total annual Collins Unit Ready Days: reported and estimated



Source: DAR, Coles Review reports, FAD&T Question on Notice No 63, 25 February 2015.

Overall then, it looks as though the arrangements for sustainment of the Collins class have finally been put on a solid technical and commercial base and, so far, the results are very encouraging.

The ghost of ships present—the Air Warfare Destroyer project

In October 2001, the last of the RAN's three Charles F Adams class DDG destroyers, HMAS *Brisbane*, was decommissioned, leaving a capability gap in the area of fleet air defence. The 2000 Defence White Paper (produced after the stable door had been left wide open) included Project SEA 4000 *Air Warfare Destroyer* to redress the shortfall. After preliminary studies in the first half of the decade, the project effectively gained first-pass approval in mid-2005 when two companies, *ASC Shipbuilding* and *Raytheon Australia,* were selected as alliance partners to work with Defence to take the proposal forward to second pass. A third firm, *Gibbs and Cox,* was designated as the preferred designer*,* with Spanish builder *Navantia* also engaged as a design partner.

Two options were developed for second-pass consideration: an Australianised (and smaller) version of the US DDG-51 Arleigh Burke destroyer, the so-called 'baby Burke', and the 'military-off-the-shelf' Spanish F-100 frigate with an Australianised combat system. In each case, the core of the combat system was to be the Lockheed Martin Aegis system with its phased array radar. Purchase of the combat system commenced in 2006 under a Foreign Military Sales (FMS) program with the US Government.

Some people were surprised when the F-100 was announced as the winner in June 2007. Gibbs and Cox, the designer of the DDG-51, had been designated as the 'preferred designer' of the evolved option back in 2005 and many perceived the F-100 as a 'stalking horse' to put commercial pressure on the US option. As it happened, the extra cost and risk associated with a scaled-down but on-paper-only DDG-51 tipped the balance in favour of the smaller pre-existing Spanish vessel.

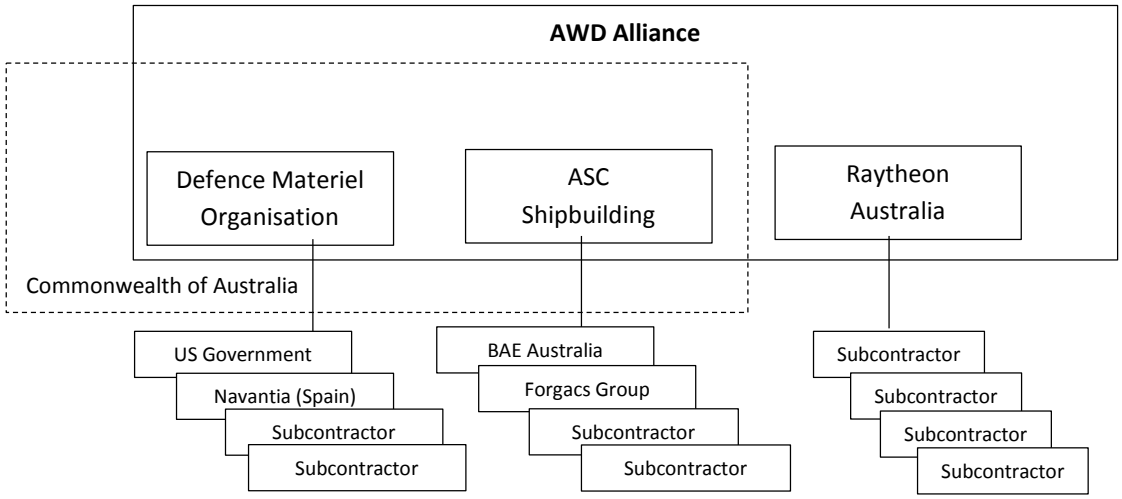
From the commencement of the project through to second pass, a total of $227 million was spent, excluding long lead-time purchases for the Aegis combat system. Most of the money (roughly $186 million) was spent in the two years between mid-2005 and mid-2007. It remains to be explained how so much money was spent simply to make a decision between two designs.

The *AWD Alliance,* as it's known, involves three parties in a contractual arrangement, which is novel for Australian Defence (see Figure 7.12). ASC is the designated shipbuilder, Raytheon Australia is the combat system integrator and DMO acts as both the customer on behalf of the RAN (and ultimately the Commonwealth) and as a full participant in the alliance. Governance is exercised by a Board made up of representatives of the three parties, with a commitment to consensus decision-making.

The alliance is predicated upon an 'equitable sharing of risks and rewards' between the three participants. In practice, this revolves around achieving a Target Cost Estimate (TCE) for the project that was developed back in 2007. The TCE was around $4.5 billion for the work covered by the alliance. This includes the direct recovery cost of planned activities by the participants and their respective subcontractors. The remainder of the $8 billion project

(as originally planned) involved other expenses to be covered directly by Defence, including government furnished equipment such as the Aegis combat system.

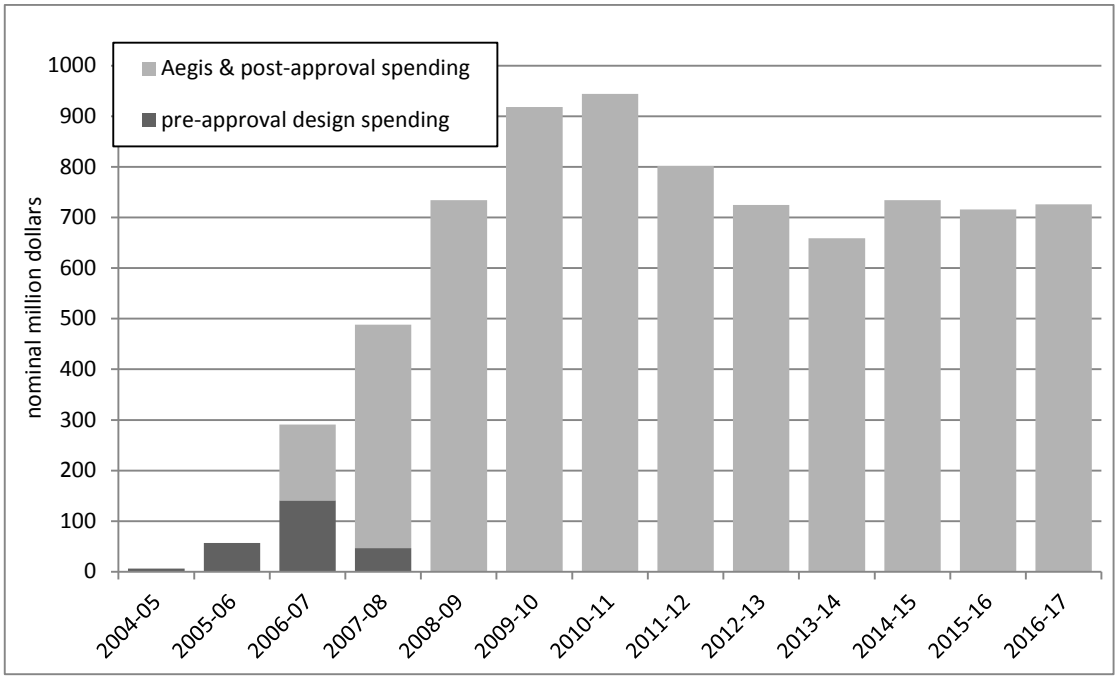
Figure 7.12: The AWD Alliance



In the 2013-14 Budget Brief, we included an extensive discussion of the alliance contracting framework and its incentives (perverse and otherwise). Rather than repeat that material this year, we turn now to look at how the project has been going.

The build phase of the project is expected to have spent $7,381 million by June 2017, from an approved project budget of $9,121 million, representing about 81% of available funds, see Figure 7.13. Some care needs to be taken in inferring progress from aggregate expenditure because a significant share of the budget is allocated to the combat system and weapons purchases, which are somewhat unrelated to the progress in physical construction.

Figure 7.13: AWD expenditure ($m)



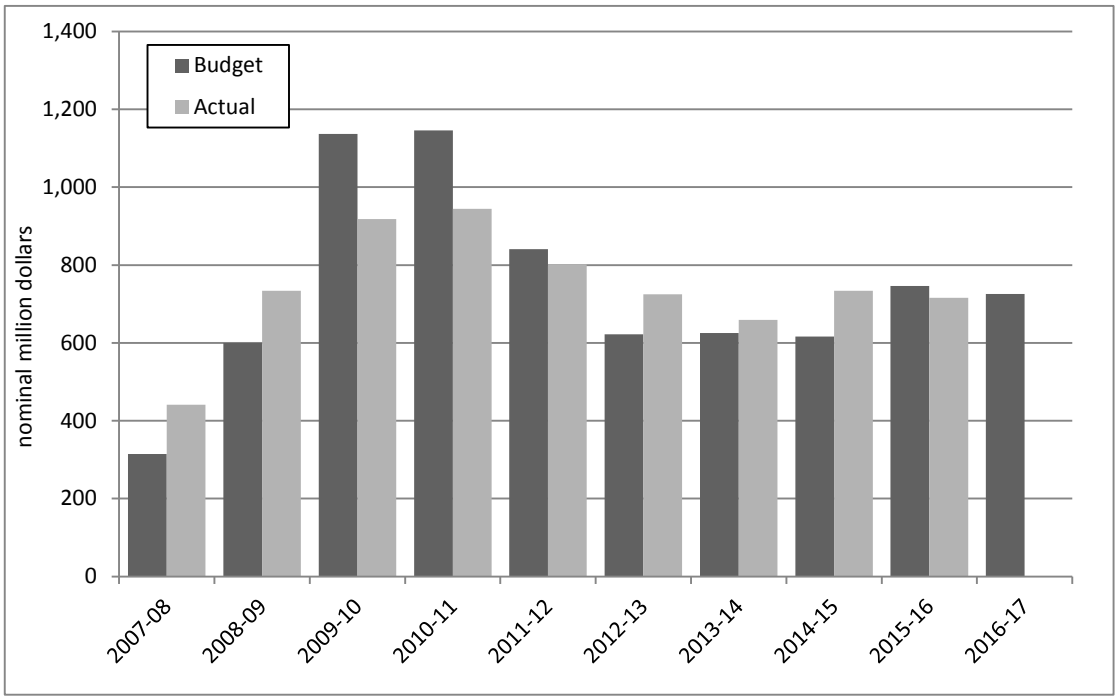
Source: Defence Annual Reports 2015-16 PAES and 2016-17PBS

According to ASC Ltd, the AWD build was 50.5% complete as at June 2012, 69.6% complete as at June 2013, 73% as at June 2014, and 80% complete at April 2015 with around $390 million spent over the final 10 months.

As mentioned above, as best we can estimate, around $186 million was spent prior to the project being approved (excluding the Aegis system). We return to that observation later in the context of the future submarines.

Planned and actual expenditure are compared on a year-by-year basis in Figure 7.14. As can be seen, the project exceeded its spending targets for the first two years, then fell well short for the next two. Over the past four years, planned expenditure targets have been exceeded in three. However, as we'll see, it would be wrong to interpret this as a sign of greater than expected progress.

Figure 7.14: Planned and actual expenditure ($m)



Source: Defence Annual Reports, PBS and PAES

Trouble at the docks

At the time of second-pass approval, the first AWD was scheduled to be delivered in December 2014, the second in March 2016 and the third in June 2017. Due to early problems with the construction of modules, the schedule for the delivery of the first AWD was slipped by twelve months to December 2015.

Specific issues included the difficulty of activating new, and reactivating long unused fabrication operations, as well as problems with learning to work with the style of drawing provided by the Spanish designer. As a result, responsibility for fabricating 18 of the 90 modules was reallocated among subcontractors in May 2011. Then, in March 2012, a further reallocation of modules occurred, resulting in additional work going offshore to Spain.

When the module work was reallocated it was hoped that the changes, coupled with refinements within the consolidation yard, would be sufficient to make the revised schedule

feasible. Indeed, work was well underway on the fabrication of the first two vessels and work had commenced on modules for the third.

However, in September 2012 it was announced that there would be a further delay to AWD delivery. The formal announcement was unhelpfully ambiguous about the reasons for the delay. On one hand it said that the 'revised AWD plan will reduce peak demand on project critical resources and facilities, and reduces project risk'. On the other, it said that 'the delay will help avoid a decline in naval shipbuilding skills before the commencement of Australia's largest and most complex naval project—the Future Submarine'.

It's unlikely the preservation of naval shipbuilding skills was a significant factor in bringing about the delay. As Figure 7.15 shows, most of the workforce was planned to have dissipated well prior to the delivery of the final vessel, so even with the additional nine-month delay for the final vessel, most of the workforce will have moved on from the maritime sector by 2016.

What's more, the skills needed at the end of a shipbuilding project are different to those needed at the start of a submarine project. Add to this that the Future Submarine project isn't due for second-pass consideration until 2016–17 at the earliest, and it's clear that maintaining skills in the sector for that purpose was largely irrelevant to the reschedule.

According to DMO's 2013 *Future Submarine Industry Skills Plan* (FSISP) the financial consequence of the delays to the AWD project had been in the order of $200 million at that stage, which it attributed to a 'lack of experience across production engineering and production supervision'. An alternative measure of the impact of the delays can be garnered from the shipbuilding workforce profiles provided in the FSISP for the period prior, and subsequent, to the delays (Scenario 2 verses Scenario 5). The charts represent the workforce demands from the LHD and AWD projects, but since the LHD project is apparently going well, the difference must be due to the extension of the AWD schedule. With a sharp pencil and a little care, the additional workload can be measured. The result is around an additional 2,153 work-years (representing 19% of the total) to complete the project (as at mid-2013).

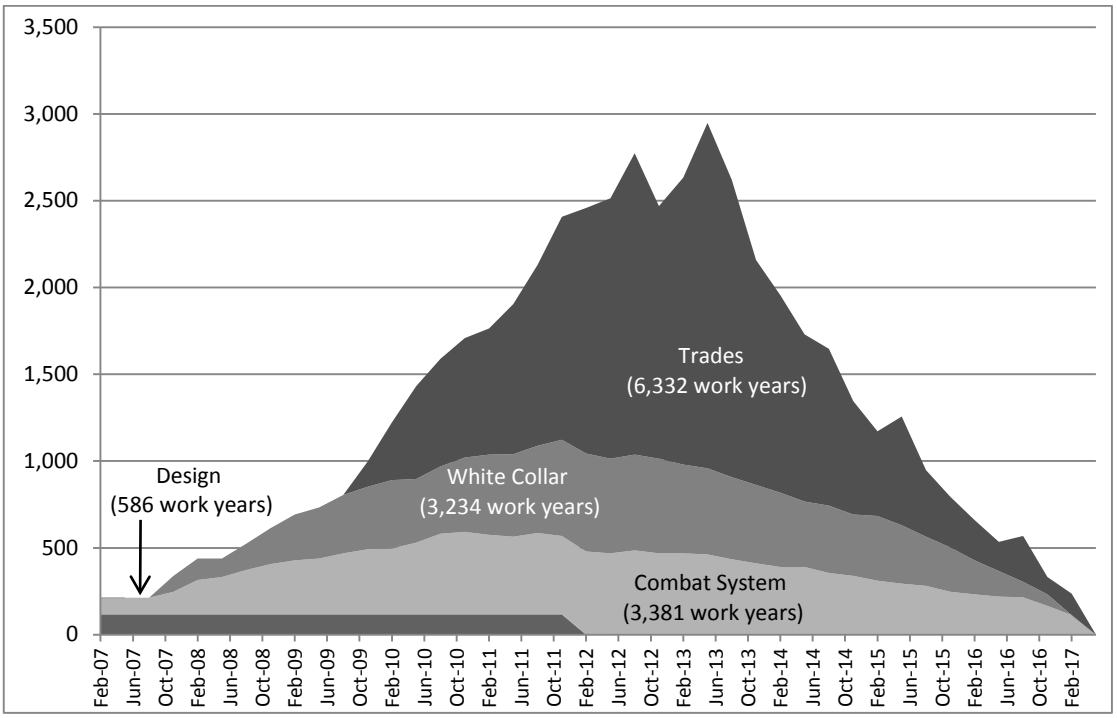
According to an ANAO report released in March 2014, it was estimated in November 2012 that 'the contract for the construction of the DDGs would be completed at an estimated cost of some $302 million or 6.8% in excess of the Target Cost Estimate'.

Again, according to a March 2014 ANAO report, the project has experienced a range of difficulties including 'immaturity in detailed design documentation and block construction problems leading to extensive, time consuming and costly re-work', and 'substantially lower than anticipated construction productivity'. On the latter issue, by November 2013 it was costing $1.60 to produce work originally estimated to cost $1.00.

It would be a mistake to blame the problems experienced with the 'immaturity in detailed design documentation' solely on Navantia. In the period leading up to selection of the design and final government approval, the three members of the alliance had every opportunity to assess the suitability of Navantia as a supplier of design documents and to test the ability of make use of those documents.

Similarly, it would be a mistake to accept the claim by industry and Defence that productivity is low because of having to recommence shipbuilding after an extended hiatus. In the final analysis, the delays to the project reflect a failure by the alliance to understand what could be achieved with the workforce it knew would be available. Nonetheless, for a long time, problems with the AWD were depicted as the result of externalities beyond the control of Defence or Industry.

Figure 7.15: AWD workforce demands – alliance plus local contractors



Source: presentation by Defence official, January 2012

A rescue plan

Government announced an external review of the AWD program in December 2013. The delivery of the resulting 'White-Winter report' was announced in June 2014. Although the report hasn't been publically released, the government said it identified problems with; the initial program plan, inadequate government oversight, the alliance structure's capacity to manage the project, and the performance and capabilities of ASC and major subcontractors.

The recommended remediation plan was to have three parts;

- improve shipbuilding productivity at ASC and its subcontractors
- urgently insert an experienced shipbuilding management team into ASC
- reallocate modules between shipyards to make the program more sustainable.

By any measure, the second of the three steps was the most decisive—putting a new management team into ASC. At first, this seemed to be what would happen, after the government engaged advisors with 'mergers and acquisitions' experience to help with the process. In a case of history repeating itself, it looked as though a private sector shipbuilder would be brought in to save the ailing project, just as had happened back in the 1980s, when the long-troubled FFG project at the then government-owned Williamstown shipyard was

turned over to the private sector to complete. The fact that one of the authors of the report (John White) had been involved in the FFG rescue is noteworthy.

Initially, the government baulked at taking such radical action. Instead, it announced that it would 'insert additional shipbuilding expertise' into the AWD program—a far cry from inserting 'an experienced shipbuilding management team' into the project. Thus, following a competitive process, BAE Systems, Navantia SA and Raytheon Australia were given 'increased roles in the Air Warfare Destroyer program for an interim period'. At the time, the thinking appeared to be that the project had until the end of the year to demonstrate substantial improvements in productivity. Indeed, the implicit deal was that the greenlight for building the future frigates in Australia depended on things being turned around.

But the government lost patience. Following the completion of a 'forensic audit' of the project in May 2015, the government finally moved to more fully adopt the White-Winter recommendations. How fully we cannot say—the report remains under wraps.

The new sense of urgency was likely prompted by the sobering results of the forensic audit, which forecasts further delays and an additional $1.2 billion to complete the program. This is more than twice the cost blow-out previously disclosed. As the Minister for Finance observed, 'these ships are costing $3 billion a ship when equivalent ships in other parts from the world would have cost us $1 billion a ship'.

In May 2015 the government said it would undertake a limited tender process 'to either insert a managing contractor into ASC for the remainder of the AWD build or to further enhance ASC capability through a partnering agreement'. What it meant by 'managing contractor' or 'partnering agreement' isn't clear. In any case, in December 2015, the government announced that, as a result of the limited tender process 'Navantia SA has been selected to bring an experienced shipbuilding management team into ASC Pty Ltd (ASC) to maximise program performance through to the end of the three ships' construction. Navantia will also locate a design team in the Osborne shipyard'. It is not clear how accountability and control will be apportioned between the new 'management team' and the existing executives and engineers at ASC. Nor is it understood how the new team will interact with the remainder of the AWD alliance, and in particular the private sector participant Raytheon. It has to be asked: who (if anyone) is in charge?

On the positive side, the government reported (again in December 2015) that productivity had improved by around 35% in the yard and that the second and third vessels were expected to be delivered 'up to 3 months earlier' than anticipated in May 2015. Table 7.4 shows the progressive slippage in the schedule and the recent positive revision.

The game's not over yet. With 25 months before the first vessel is delivered, there's a lot that could happen. The construction of modules and their consolidation are but initial steps along the way, with fitting out the vessels with their communications, navigation and weapons systems to follow. On past experience, the hard parts are yet to come.

Table 7.4: Progressive delivery schedule for the AWD project

	Original (2007) delivery date	2011 reschedule	2012 reschedule	May 2015 reschedule	Dec 2015 revision*
HMAS *Hobart*	December 2014	December 2015	March 2016	June 2017	June 2017
HMAS *Brisbane*	March 2016	March 2017	September 2017	September 2018	June 2018
HMAS *Sydney*	June 2017	June 2018	March 2019	March 2020	December 2017

*Source: Various Ministerial Media Releases. *'up to 3 months earlier'*

Finally, before leaving the AWD project, there's the long-term question of through-life support. Successive naval platforms have been delivered to the RAN without a coherent sustainment plan or contract in place. The Collins class is perhaps the most visible failure of this type, but other classes of vessel have suffered similarly. Let's hope that a plan emerges soon. For the record, we said this last year, and the year before that, and the year before that, and yes, the year before that as well.

The ghost of submarines future—replacing the Collins

Just prior to the 2012 May budget, the government announced the next steps in the process of replacing the Collins class submarine. In broad terms, the goal was to achieve first-pass approval in late 2013 or early 2014 and second-pass approval in 2017. The options being considered were (verbatim):

- An existing submarine design available off-the-shelf, modified only to meet Australia's regulatory requirements.
- An existing off-the-shelf design modified to incorporate Australia's specific requirements, including in relation to combat systems and weapons.
- An evolved design that enhances the capabilities of existing off-the-shelf designs including the Collins Class.
- An entirely new developmental submarine.

Concurrent with the release of the 2013 Defence White Paper in May 2013, the government announced that it would:

> *'…suspend further investigation of the two Future Submarine options based on military-off-the-shelf designs in favour of focusing resources on progressing an 'evolved Collins' and new design options that are likely to best meet Australia's future strategic and capability requirements'.*

Also in May 2013, the government identified the US AN/BYG-1 as the reference combat system for the development of the Future Submarine and announced the results of a study of the service life of the Collins:

> *'The study found there is no single technical issue that would fundamentally prevent the Collins Class submarines from achieving their indicative service life or a service life extension of one operating cycle for the fleet, which is currently around seven years, excluding docking periods'.*

Given the extended time necessary to execute either of the two options then under consideration, the extension of the Collins life-of-type by an additional operating cycle had seemingly become a foregone conclusion—and a feasible one given the encouraging news from the last Coles Review.

Change of plan

In April 2014, at an ASPI conference on the subject of the future submarine, it rapidly became clear that Defence and the government hadn't yet compared their respective approaches to the project. While Defence was still marching to the beat of the previous government's drum, the new government had some very different ideas. At issue wasn't just the type of submarine to be acquired, but the size of the fleet and location of their construction. The long-promised goal of building 12 new boats in South Australia was now far from certain. Almost overnight, the purchase of fewer than twelve foreign-built boats was firmly on the cards. By the time of the DMO-Industry conference mid-year, the word was on the street; the government was interested in purchasing submarines from Japan.

While in opposition, the government often repeated the mantra of '12 boats built in South Australia', but a close reading of the Coalition's defence policy going into the election showed that their thinking had shifted. There was no mention of numbers, and the commitment to SA left some wiggle room: '…work on the replacement of the current submarine fleet will centre around the South Australian shipyards.' Of course, that does not guarantee that there'll be much work to do.

Rumours about Option J, as it became known, continued, and the government soon disclosed that the option was under consideration. Commentators (me included) expressed concern that in the absence of a rigorous tender process, we wouldn't be able to make a well-informed decision, let alone secure a good deal in either cost or capability terms. Some expressed concern and others delight, about the geopolitical consequences of a closer Australia–Japan strategic partnership.

Matters were brought to a head in February 2015, when a deal was apparently struck between the then Prime Minister and some South Australian members of the party room in the context of a looming leadership spill. After some confusion, it became clear that a 'competitive evaluation process' would be held, with potential suppliers bidding on the basis of a foreign build, local build and/or hybrid approach. At that time, the government advised Australian industry that they would need to work with an international partner. To the surprise of many, Sweden was excluded from the process, leaving the potential suppliers narrowed to France, Germany and Japan.

The competitive evaluation process sought proposals addressing:

- pre-concept designs based on meeting Australian capability criteria
- options for design and build overseas, in Australia, and/or a hybrid approach
- rough order of magnitude costs and schedule for each option
- positions on key commercial issues, for example intellectual property rights and the ability to use and disclose technical data.

In announcing the process, the government said that the new submarines must be replaced 'in time to avoid a capability gap in the mid-2020s when the Collins Class submarine is scheduled to be retired from service', which appears to avoid a life-of-type extension for the Collins. In terms of capability, the government said it wanted:

- range and endurance similar to the Collins Class
- sensor performance and stealth characteristics superior to the Collins Class.

Unsurprisingly, the joint US-AS combat system and heavyweight torpedo were designated as the government's preferred fit-out for the new boats. Although the process was slated to take ten months, which would have meant December 2015 or January 2016, the announcement was delayed until April 2016. Rather than look at the decision in isolation, we now turn to examine the government's emerging plan for Australian naval construction as a whole.

The emerging plan for Australian naval shipbuilding

In August 2014, the Abbott government announced that:

- The replacement of the ANZAC frigate would be brought forward by three years to 2020, with the vessels to be built in Adelaide as part of a continuous build program.
- The planned new class of Offshore Patrol Vessel (OPV) would be brought forward by two years to 2018 to preserve elements of the Adelaide ASC workforce presently engaged on the AWD, with the goal of ensuring that the frigate program does not have a 'cold start'.
- Both the OPV and Frigate program will be progressed via Competitive Evaluation Processes (CEPs).

Subsequent announcements in the first half of 2016 by the Turnbull government included;

- at least the first two OPV will be built in Adelaide, with the remainder of the 12 vessel fleet will be built in Henderson WA
- WA firm Austal will build 21 Pacific Patrol Boats
- DCNS will be the Commonwealth's design partner for the Collins replacement
- Announcement of the three designs down-selected for each of the OPV and Frigate programs.

Apart from the Pacific Patrol Boats, which are being purchased though a routine competitive tender process, the three larger programs involve a staged acquisition strategy similar to that used for the AWD program—with the difference that the design is being selected first. Specifics will likely vary between the three projects, and steps may be omitted, but Figure 7.16 depicts the generic process. The OPV project may take a simplified path without an extensive design phase or combat system integrator. Note that we're presently at a very early stage of all three projects. For example, although we've completed the CEP for the submarines, the results for the Frigates and OPV are pending. Similarly, although there's a limited tender process underway for the submarine combat system integrator, similar action for the Frigates and OPV is yet to occur. Key elements of the various programs are listed in Table 7.5.

Figure 7.16: Generic acquisition strategy for planned major naval projects

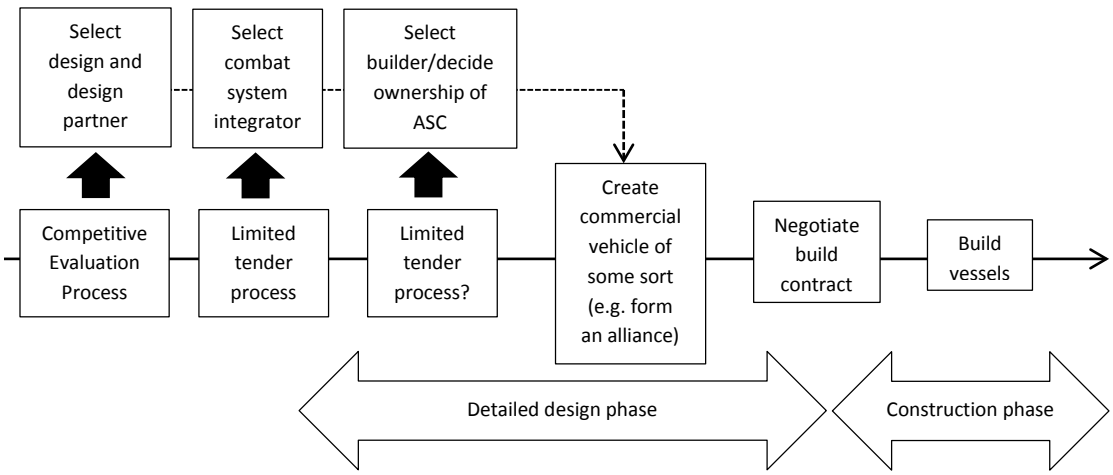


Table 7.5: What we know and don't know about naval shipbuilding plans

	Submarines	Frigates	Offshore Patrol Vessels	Pacific Patrol Boats
Number:	12	9	12	21
Designer:	DCNS	BAE Systems (GB), Fincantieri (IT) or Navantia (ES)	Damen (NL), Fassmer (DE) or Lurssen (DE)	Austal
Builder:	probably ASC, but under unknown ownership and commercial arrangements	ASC, but under unknown ownership and commercial arrangements	unknown in Henderson WA, but will use ASC facilities and workforce in Adelaide	Austal
Combat system integration:	limited tender underway	limited tender anticipated	limited tender anticipated	n/a
Location:	Adelaide SA	Adelaide SA	Henderson WA and Adelaide SA	Henderson WA
Build strategy:	rolling production (which may or may not mean continuous production)	continuous production (with AWD)	continuous production (with other unspecified minor war vessels)	non-continuous
Displacement:	4,500 tonnes	~5,500 tonnes	~1,800 tonnes	~250 tonnes
Cutting steel:	early to mid-2020s	2020	2018	2017
First vessel:	early 2030s	~2026[1]	~2020[1]	2018
Last vessel:	late 2040s to 2050	~2048[1]	~2032[1]	2013
Price:	>$54 billion	$35 billion	$3 billion	$500 million
Labour demand:	1,100 (+ 1,700)*	>2,000	>400	>130

[1] ASPI estimate only, [2] Supply chain jobs

There are many things that remain unclear. For example, the nature of the commercial entity that Defence will contract with in each case. The designer could be the prime contractor, or the shipbuilder, or a special purpose vehicle formed from the two (with possible third parties). We also don't know how the split production of OPV will be managed. Most of all, the future ownership of ASC remains an unanswered question. In various ways, the three large projects will intersect at the ASC facility in SA at the end of the decade. One possible outcome would be a split sale of ASC into two or three parts—shipbuilding, submarine construction and, perhaps, submarine maintenance. Alternatively, ASC could be retained in government ownership under one or more Government-Owned-Commercially-Operated (GOCO) arrangements.

Setting aside the many unresolved issues, the staged approach is neither all good nor all bad. Like any acquisition strategy, it comes with benefits and risks. Two benefits are immediately clear. First, a staged approach gives Defence the option of choosing what it considers to be the best combination of designer, integrator and builder from what's available, rather than have to pick from what might arise if the various parties were to be asked to form teams and bid for the project. Second, it allows Defence to work closely with the designer (and perhaps

also the integrator and builder) to refine the vessel design while making cost-capability trade-offs. By doing so, the Navy is much more likely to get the sort of vessels it wants

On the downside, the selection of industry partners shifts greater responsibility back onto the Commonwealth. Even if the end result is a single prime contractor (as opposed to an alliance or consortium), the Commonwealth can't evade responsibility for the performance of the subcontractors it selects. As the Macintosh-Prescott review into the Collins project observed; 'by imposing its selection of the combat system contractor on the principle contractor the Commonwealth started out on the wrong foot with ASC…'.

But the greatest drawback to the staged approach is that Commonwealth will enter contract negotiations with zero leverage. With the clock ticking on both the submarines and frigates, there'll be no going back. The risk isn't that the suppliers will seek egregious profits; that possibility can easily be prevented through open book accounting. Instead the risk is that, with no competition on the horizon, suppliers will have few incentives to plan efficient production. To the contrary, they'll have every reason to build fat into the negotiated price. That's true irrespective of whether the contract is fixed price or some sort of gain-share pain-share incentive arrangement based around a target price.

The challenge of achieving efficient production will be even more acute under continuous production, which applies to the frigates, OPVs and perhaps even the submarines. Under such a monopoly arrangement, the resulting power of the firms, unions and host state government would preclude any credible threat of going offshore for future builds. With commercial pressures all but absent, the task of achieving and maintaining productivity would be very difficult.

On the bright side, a bloated project will allow the supplier to devote more than adequate resources to the task. The combination of higher staff numbers, better pay and top notch infrastructure will reduce the risk of missing schedule, cost and performance milestones. And if the contract has an agreed fixed profit margin, higher costs will automatically translate into higher profits. Even from the view of the Navy and Defence—who are awash with money from the White Paper—it would be a good day at the office. Two very rare events would coincide; the Navy would get its vessels on time, and the acquisition folks in Defence would get a pat on the back. If it wasn't for the taxpayer, it would be a victimless crime.

A fuller discussion of the challenges to achieving efficient naval construction in Australian, including strategies for managing monopoly supply arrangements, can be found in, *An enterprise-level naval shipbuilding plan*, Andrew Davies and Mark Thomson, ASPI, July 2015. The following sections critically examine the key issues surrounding the OPV, frigate and submarine programs.

Does it make sense to split the OPV build?

The government's recent decision to split the production of OPVs has been met with a mix of delight and dismay. Delight by those with an interest in the shipyards in Adelaide SA and Henderson WA, dismay by those who missed out. There was also more than the usual grumbling by those weary of multi-billion dollar defence projects being used to buy votes. But while the timing of the announcement was politically significant, in terms of the advice

the government has been getting, it makes perfects sense to split production. Here's the story.

In late 2014, the government commissioned the RAND Corporation, at a cost of $2.5 million, to report on Australian naval shipbuilding. Released last year, the report examined the challenge of building frigates to replace the Anzac class when they leave service from the mid-2020s onwards. Using a black box model designed to capture the process of hiring and training shipyard personnel, RAND estimated the cost and schedule impact on the frigate program of the looming gap in shipyard work between the conclusion of the Air Warfare Destroyer (AWD) program and the commencement of the frigate program. Put simply, they estimated the cost and schedule impact of the infamous 'valley of death'.

RAND then analysed options to fill the gap, including building three, four, or five OPVs commencing in 2017. Their insight was that the labour cost of building the OPV could be offset by the reduced cost of the frigate program due to the reduced number of 'unproductive' labour hours. As they put it, taking a four OPV build as an example:

> 'In essence, the four OPVs could be built basically for "free," given that they are sustaining productive labor that reduces the costs of unproductive labor when building the workforce for the Future Frigate construction.'

In addition, RAND predicted that building OPVs will yield substantial improvements to the schedule performance of the frigate program.

For reasons best known to the authors of the RAND report, the results are presented in an obtuse way that makes it difficult to unpack the details. But, after a bit of reverse engineering (see box), it looks like the RAND model forecasts savings of around $140-160 million in the frigate program from building two to five OPVs in Adelaide. The exact figure depends on a number of factors, including the unit cost of labour and the number of OPVs.

The RAND report didn't consider a split program, and the claimed savings will only survive if the additional cost of building OPVs in two locations is less than the savings in the frigate program. That looks to be the case: as best can be estimated, duplicating the OPV production line results in additional labour costs of around $20-40 million, depending on unit labour costs and the numerical split of vessels between the two sites. Even doubling that figure to take account of duplicated non-labour start-up costs still leaves room for a saving. So on the basis of the RAND report, there's a *prima facie* business case for building at least some of the OPVs in Adelaide.

Whether it makes sense to build all the OPV there depends on whether competition for labour between the OPV and frigate program would be problematic once both are underway. The RAND report is silent on that question. However, they present results showing that building even a fifth OPV in Adelaide improves the outcome of the frigate program. So perhaps the RAND modelling is consistent with an 'all in Adelaide' solution. Be that as it may, the government seems committed to establishing minor war vessel construction in WA as a long-term proposition—hence the split program.

Box: Estimating the savings from a split OPV build

According to RAND's modelling, with a two-year drum beat of frigate production (consistent with a continuous build program) the net additional labour cost of building 2 to 5 OPV and 8 frigates is as shown in the table below.

Number of OPV	Net additional labour cost
2	$30 million
3	$120 million
4	$190 million
5	$250 million

The estimated savings above can be decomposed as follows for n OPV in Adelaide:

$$C(n) = \left[H_{OPV}(n) - \Delta H_{Frigates}(n)\right] \times R$$

Where

$C(n) = net\ additional\ labour\ cost\ of\ building\ n\ OPV$

$H_{OPV}(n) = hours\ to\ build\ n\ OPV$

$\Delta H_{Frigate}(n) = reduction\ in\ unproductive\ frigate\ hours$

$R = hourly\ emplyee\ cost$

Using the RAND report's assumption of a 95% learning curve and 700,000 hours to build the second OPV with a 5% premium on the first, we can calculate $H_{OPV}(n)$. We can also calculate the hourly employee cost R from RAND's estimate of the number of hours needed to build eight frigates and the cost of doing so, the answer is $119 per hour. The same employee cost rate can then be used to calculate the additional labour cost of a slit OPV program due to forgone learning curve benefits. The resulting net savings are given in the final column of the table below. The result is chickenfeed in the context of $38 billion scheduled for the two programs.

n	$C(n)$	$C(n)/(\frac{\$119}{hr})$ (hours)	$H_{OPV}(n)$ (hours)	$\Delta H_{Frigates}(n)$ (hours)	Reduced labour cost of frigates	Extra labour cost of split OPV program	Net saving
2	$30m	252,101	1,435,000	1,182,899	$141m	$24m	$117m
3	$120m	1,008,403	2,133,250	1,124,847	$134m	$33m	$101m
4	$190m	1,596,639	2,810,861	1,214,222	$144m	$37m	$107m
5	$250m	2,100,840	3,474,199	1,373,359	$163m	$40m	$123m

The actual per hour labour cost at ASC was only $82 an hour in 2013-14, and the resulting net savings are smaller using that figure. To test the sensitivity to labour costs a figure of $145 was also examined and the net savings only grew to around $200 million for the five vessel option.

In any case, there are a number of countervailing factors the RAND modelling doesn't take into account. First, given the number of potential buyers and the disparate processes underway, it's unlikely that a single firm will operate yards in Adelaide and Henderson. So who'll be responsible for building the initial OPV(s) in South Australia? To provide workforce continuity—the source of RAND's purported savings—it will probably have to be the SA shipbuilder. If so, who'll manage the contracts with suppliers and subcontractors? We could end up with two separate supply chains and two sets of management and engineering overheads for the OPV program.

Second, because different firms have been shortlisted for the OPV and frigate designs, there's a risk that the Adelaide yard will have to adapt to three different design-production schemes in quick succession as they go from AWDs to OPVs to frigates. Don't forget that it's been necessary to bring in a shipbuilding management team from Navantia to get the AWD project back on track, in part at least because of problems arising from a mismatch between the design and production methodologies.

Third, the RAND report assumed that the submarines would be built offshore. We now know that all 12 vessels will be built in Adelaide. So around the end of this decade we'll have no less than five programs (potentially undertaken by five different firms) competing for space, labour and facilities at the Adelaide yards: Collins maintenance and upgrades, the future submarine, the future frigate, the conclusion of the AWD program and the initial OPV build. The competition for skilled labour, facilities, space and technical expertise may become fierce.

Notwithstanding all the potential problems with a split build, surely it's worth a go if there's a saving of up to $120 million to be made? That depends on how much faith you put on the RAND modelling. As I explained here last year, the RAND modelling rests on shaky foundations. The RAND model begins with a production schedule that's doomed to fail, and then simulates its execution by managers with zero foresight. By its very construction, the RAND methodology will unavoidably yield a more pessimistic picture of schedule slippage and cost escalation than reality. Consequently, the true extent of potential savings from the frigate program is likely to be less than predicted by RAND. Or to put it another way, the split OPV may be an unnecessary solution to an exaggerated problem.

The government is taking a big gamble by splitting the production of OPVs between Adelaide and Henderson in pursuit of the uncertain schedule and cost savings promised by RAND. The question of schedule slippage has been rendered largely irrelevant because continuous production delays the delivery of vessels to the point where a life-of-type extension for the Anzacs is necessary anyway (hence the sensor, weapons and combat system upgrades for the Anzacs in the 2016 Integrated Investment Plan). And even if the savings are as large as promised, they only amount to around $120 million out of a $38 billion program. Is it really worth complicating the execution of these massive programs for the sake of saving 0.3% of the total cost?

Does continuous build make sense for Australia?

So far, the government has committed to continuous build programs for the OPV and frigates. By continuous it's meant that vessels will be produced at a steady pace for ever, with fleet size maintained by retiring the oldest vessel when the newest enters service. The government has also said it will have a 'rolling' acquisition program for the submarines, but it is not clear what it means by that.

The first hurdle that any continuous build program has to overcome is matching the number of vessels to the production interval and life-of-type. It is a simple matter of arithmetic that for a continuous build program with n vessels, the life-of-type is $n \times \Delta$ where Δ is the production interval. Thus, for a fleet of 12 vessels and a production interval of 2 years, the life of type is 24 years. Naturally, smaller vessels take less time to build.

By combining with the eventual replacement of the 3 AWDs, the 12-vessel future frigate program could transition to a continuous build cycle by adopting a production interval of two years and a 24-year life-of-type. The life-of-type of a vessel determines its amortised annual capital cost. Not surprisingly, the more frequently vessels are replaced, the more it costs to maintain the size of the fleet. For arguments sake, let's take $2.5 billion per vessel as a conservative figure, consistent with the numbers disclosed by the government for the submarines and frigates. Table 7.6 shows the rapid decrease in average annual capital costs with lengthening life-of-type.

Table 7.6: average annual costs for 12 vessel fleet with unit cost $2.5 billion

Production interval (years)	Life of type (years)	Average annual capital cost
1	12	$2.5 billion
1.5	18	$1.7 billion
2	24	$1.25 billion
2.5	30	$1 billion
3	36	$0.83 billion

The immediate inference is that the production interval should be extended to increase the life-of-type and decrease the average annual cost. But there are limits to doing that. Longer production intervals impose higher overhead costs and complicate the supply chain. There's also the practical problem of getting replacement vessels quickly enough to replace the Anzacs and the Collins as they leave service. Adopting an 18-month production interval for the submarines and a 2-year production interval for the frigates probably represents the limits of what can be done with manageable risk given the time left on the clock for the two fleets, see Table 7.7. In contrast, the much derided 'boom and bust' build model can deliver vessels when they are needed and then keep them in service for 30 years or more.

Table 7.7: average annual costs for 12 vessel fleet with unit cost $2.5 billion

Anzac Frigates – First future frigate delivery mid-2026 with 2-year production interval	
Vessel	**Age**
Anzac	30.1
Arunta	29.6
Warramunga	29.3
Stuart	29.9
Parramatta	30.8
Ballarat	32.0

Collins Submarines – First future submarine delivery mid-2031 with 18-month production interval	
Vessel	**Age**
Collins	35.0
Farncomb	35.1
Waller	35.3
Dechaineux	35.5
Sheean	36.9
Rankin	35.9

It's often argued that shorter life-of-type will generate saving that can offset more frequent replacement—most especially by forgoing the need for major upgrades. I'm not persuaded. Upgrades can be required due to shifts in technology and changing requirements at anytime. How else can you explain the $4–5 billion upgrade over the next decade planned for the yet-to-be delivered AWD?

The inescapable conclusion is that continuous build of either the major surface combatants or submarines will cost the taxpayer hundreds of millions of dollars extra every year—forever. As for the minor combatant, smaller vessels can be produced more quickly, so even adding the minehunters and the OPV together it's hard to see how an economic life-of-type can be achieved. And all this is before the problem of getting efficiency out of a monopoly shipyard is taken into account.

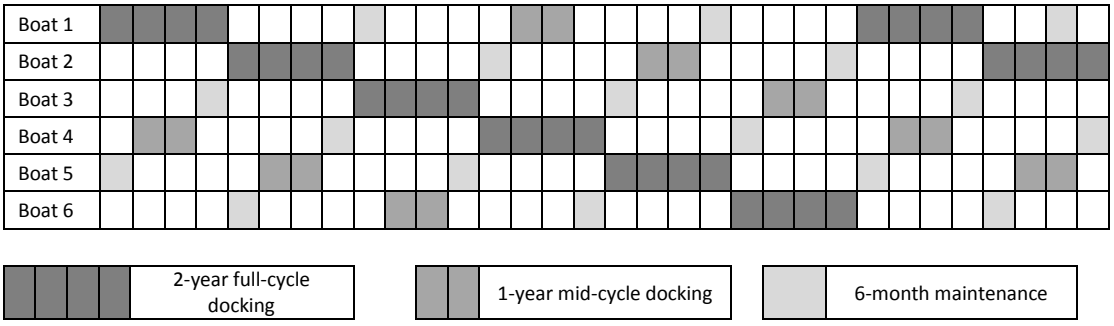
How best can we manage the transition when the Collins retires?

Andrew Davies and I have been looking at the challenge of transitioning from the Collins to the next generation of submarines. We had intended to include the detail here but space prohibits us from doing so. Our granular analysis will have to await another outlet. But the key results are as follows.

First, and as already explained, a continuous build of submarines will impose substantial additional costs due to the need to more frequently replace vessels.

Second, the costly and intensive maintenance of submarines potentially complicates the transition to the new fleet. It's taken a long time to get the availability of the Collins fleet up to an acceptable level, and a good part of that improvement has been due to the adoption of an elegant maintenance cycle (thanks to the Cole review) that allows four vessels to be continuously available for service, Figure 7.17.

Figure 7.17: The 10 +2 duty cycle for the Collins – six month time increments



Establishing a new similarly efficient maintenance cycle will be an important goal for the future submarine project, and managing the interplay between the old and new cycles will be an essential part of avoiding a capability gap between the Collins and its replacement. One option, and certainly the simplest, will be to adopt a similar cycle for the new boats and deliver them with a production interval of either one or two years (noting that a longer gap between the first and second vessels may be necessary to ensure that first-of-class issues can be resolved prior to the shift into steady production).

Third, and perhaps at the risk of stating the obvious, with a single (as opposed to dual) production line, it will take a long time to achieve a twelve vessel fleet. Assuming a start in mid-2032, a one-year production interval will deliver the twelfth boat in mid-2043, an 18-month production interval in early-2049, and a two-year production interval in mid-2054.

Chapter 8 – Australia's Foreign Aid

Australia's foreign aid was administered by the Australian Agency for International Development (AusAID), until that department was absorbed into the Department of Foreign Affairs and Trade (DFAT) in late 2013. As a result, new budgeting arrangements for Australia's Official Development Assistance (ODA) program were put in place in the 2014 Budget. Further changes have occurred over the past two years.

Unfortunately, the new arrangements make it difficult to compare post-2013 budgets for ODA with those from previous years. To make matters worse, the long-standing *Ministerial Statement on International Development Assistance* ('Blue Book') was discontinued in 2014. Fortunately, it was replaced this year by the *Australian Aid Budget Summary 2016-17* ('Orange Book').

Australia's approach to foreign aid

One of former Prime Minister Tony Abbott's first acts after being sworn in on 18 September 2013 was to announce that, along with some other administrative changes, the agency known since 1995 as AusAID would be integrated back into DFAT. The aid organisation had been an 'autonomous agency' within the foreign affairs portfolio from 1973, and an even more independent 'executive agency' from 2010. Although the Coalition's pre-election foreign affairs policy had indicated it was unsatisfied with the strategic priorities and governance of Australia's aid program, and Coalition frontbenchers had signalled a shake-up was likely, few observers expected such a quick or comprehensive re-amalgamation.

Consistent with developing a new approach, the foreign minister Julie Bishop commissioned a series of reviews, including on aid benchmarks, the role of the private sector in promoting growth and poverty reduction, and some key bilateral relationships. In June 2014, Bishop released the government's new aid policy and performance framework via a National Press Club speech entitled; *The new aid paradigm*. Key points from the accompanying press release included:

- Australia's ODA will henceforth focus on ways to drive economic growth in developing nations and create pathways out of poverty.
- Strict performance benchmarks will ensure aid spending is accountable to tax payers and achieve results.
- New aid investments will consider ways to engage the private sector and promote private sector growth.
- Aid for trade investments will be increased to 20 per cent of the aid budget by 2020.
- Australia's ODA will focus on the Indo-Pacific region, with over 90 per cent of country and regional program funding spent in our neighbourhood, the Indo-Pacific.
- A new development innovation hub will be established in DFAT.
- Australia will continue to be one of the world's most generous aid donors with a responsible, affordable and sustainable aid budget of over $5 billion a year.

As we'll see, the last dot-point is no longer government policy.

New budgeting arrangements

Following the absorption of AusAID into DFAT, Australia's aid program is funded through DFAT under Outcome 1:

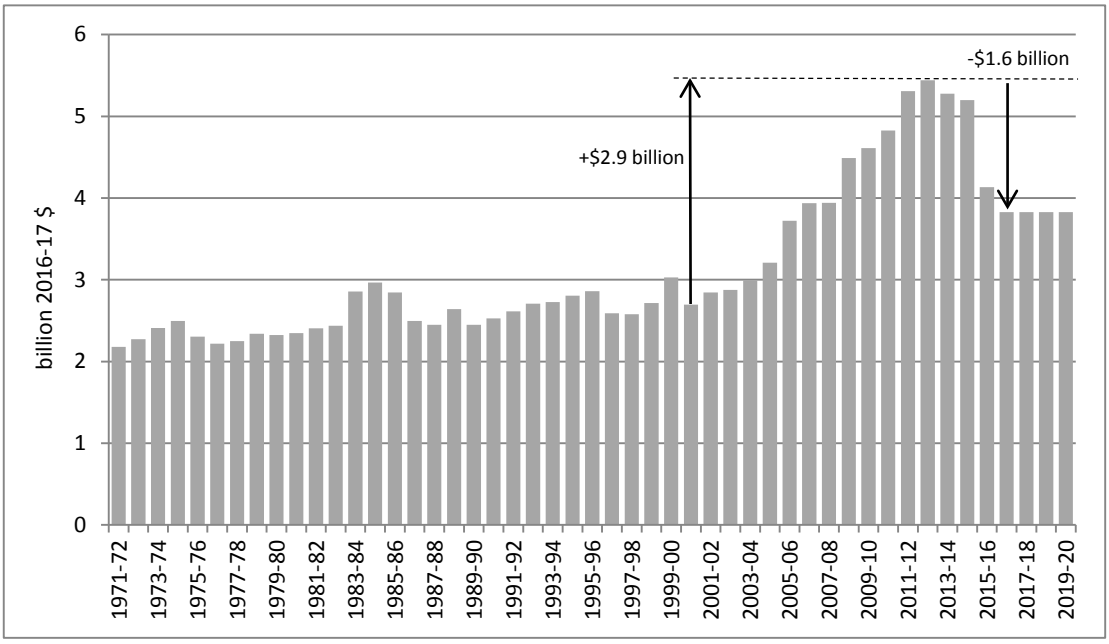
> *The advancement of Australia's international strategic, security and economic interests including through bilateral, regional and multilateral engagement on Australian Government foreign, trade and international development policy priorities.*

Funding relevant to Australia's aid program is mentioned in several places in the DFAT PBS but the new Orange Book provides a clearer picture of what's happening. Where it falls short—for example by not providing time-series of past ODA levels—the Development Policy Centre at the Australian National University has done a great job completing the picture. The Development Policy Centre website is https://devpolicy.crawford.anu.edu.au/.

How much does Australia spend on foreign aid?

In 2016-17 Australian foreign aid will amount to $3.8 billion representing 0.23% of Gross National Income (GNI). Just as defence spending is often expressed as a share of GDP, foreign aid is traditionally expressed as a share of GNI. Funding is about $0.2 billion less than last year representing a nominal 5% decrease. In 2015-16, the aid budget was cut by around 20% from $5 billion down to $4 billion. Figure 8.1 shows actual and planned ODA expenditure from 1971 to the present.

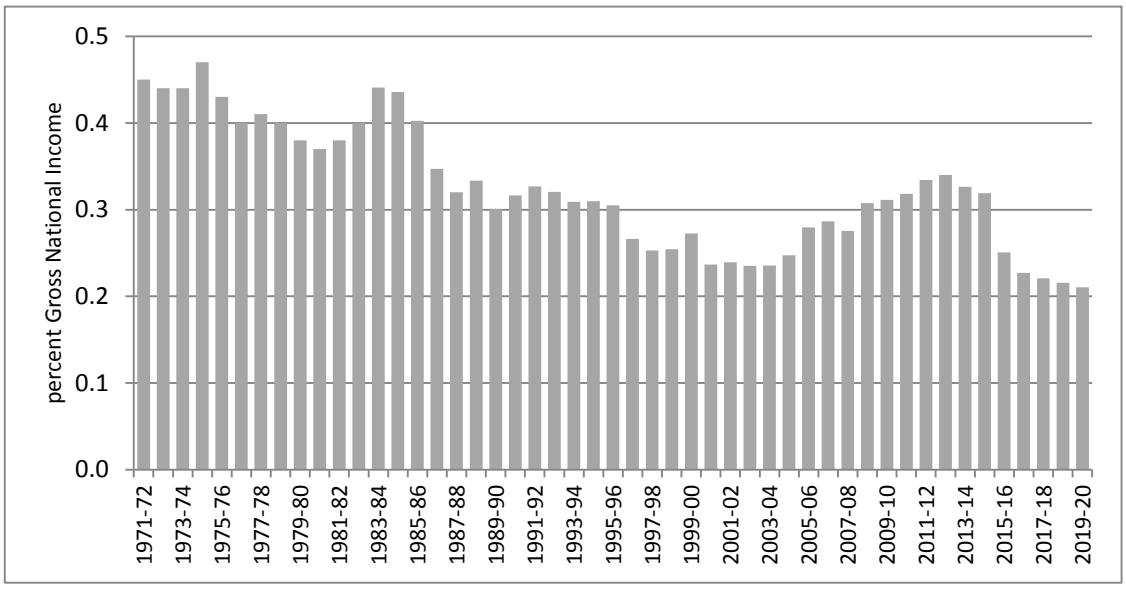
Figure 8.1: Australian spending on foreign aid 1971-72 to 2019-20



Source: DevPol analysis of 2016-17 DFAT PBS.

In addition to omitting historical data for comparison, the new Orange Book fails to express Australia's foreign aid as a percentage of GNI. In fairness, the Defence PBS does not express the defence budget as a share of GDP either. In any case, the nice folks at the ANU Development Policy Centre provide the necessary data, see Figure 8.2.

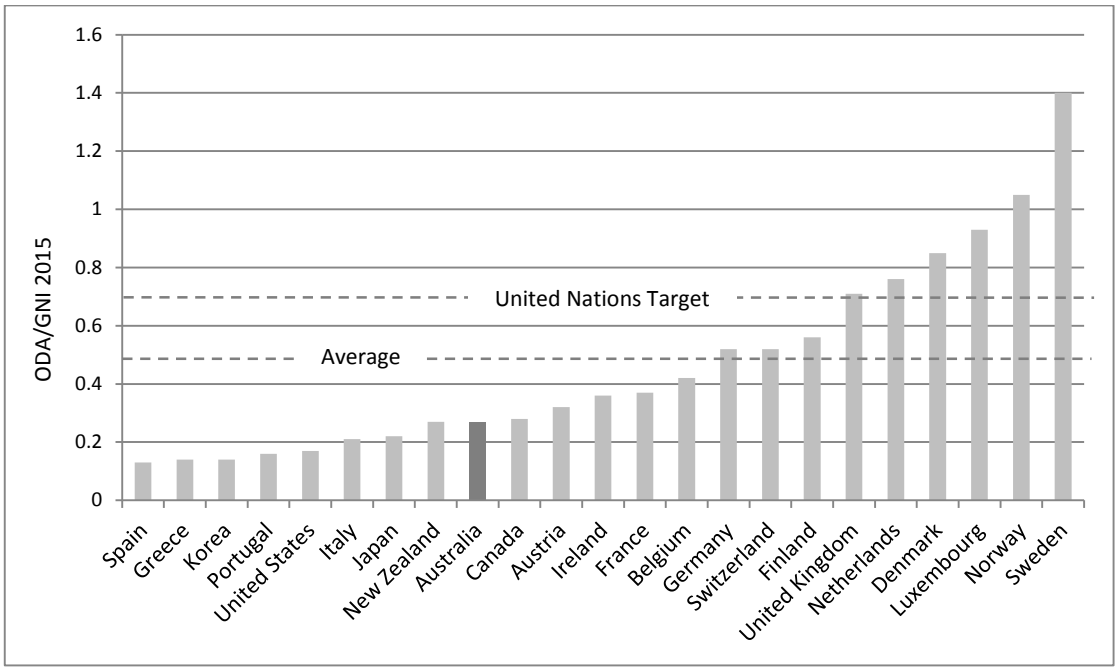
Figure 8.2: Australia's foreign aid as a share of GNI 1971-72 to 2019-20



Source: DevPol analysis of 2016-17 DFAT PBS

Even before the recent cuts, Australian foreign aid spending wasn't especially impressive in international terms. In 2012, the last year for which comparative data is available, Australia ranked 13th out of 23 OECD countries for aid as a share of GNI (see Figure 8.3). Not only do we fall below the average for industrialised nations, but our budgeted GNI figure of 0.27% for 2015 is less than half of the agreed United Nations target of 0.7%, now met by six OECD-DAC countries, including Sweden, Norway and Denmark. Australia's position is set to fall further as our spending drops but global aid expenditure rebounds with OECD countries recovering from the Global Financial Crisis and 'non-traditional donors' that operate outside OECD guidelines, such as China, increasing their development spending.

Figure 8.3: Comparison of ODA from OECD nations



Source: OECD website 2016

A brief history of Australia's foreign aid

A bipartisan consensus from the late Howard era to the first Rudd government to increase Australia's foreign aid to 0.5% of GNI by 2015-16 was faltering by 2012 as the then government grappled for an elusive surplus—abruptly reallocating hundreds of millions of dollars within the aid budget to meet domestic asylum-seeker costs, and deferring the timetable to meet the 0.5% target out to 2017-18. In 2013-14 ODA was only budgeted to be 0.37% of GNI.

The Coalition's pre-election foreign affairs policy recommitted to the 0.5% target as a benchmark but announced it would 'stabilise the aid budget' by reducing previously planned growth to just rises in the consumer price index over the forward estimates, so that only nominal increases in funding could be expected in the immediate term. Before the election, the Coalition signalled it intended to make significant cuts to the aid budget for each of the next several years, and in January 2014 the new government cut $650 million spending for the remainder of 2013-14.

The 2014 budget capped aid spending at $5.03 billion for two financial years, after which it was planned to grow in line with the CPI. That was actually $1 billion more than promised by the Coalition at the time of the 2013 election. However, further cuts were made in December 2014 and confirmed in 2015's budget. As a result, nominal aid spending fell by around $1 billion to reach $4 billion. This year's cut of $0.2 billion takes us down to $3.8 billion.

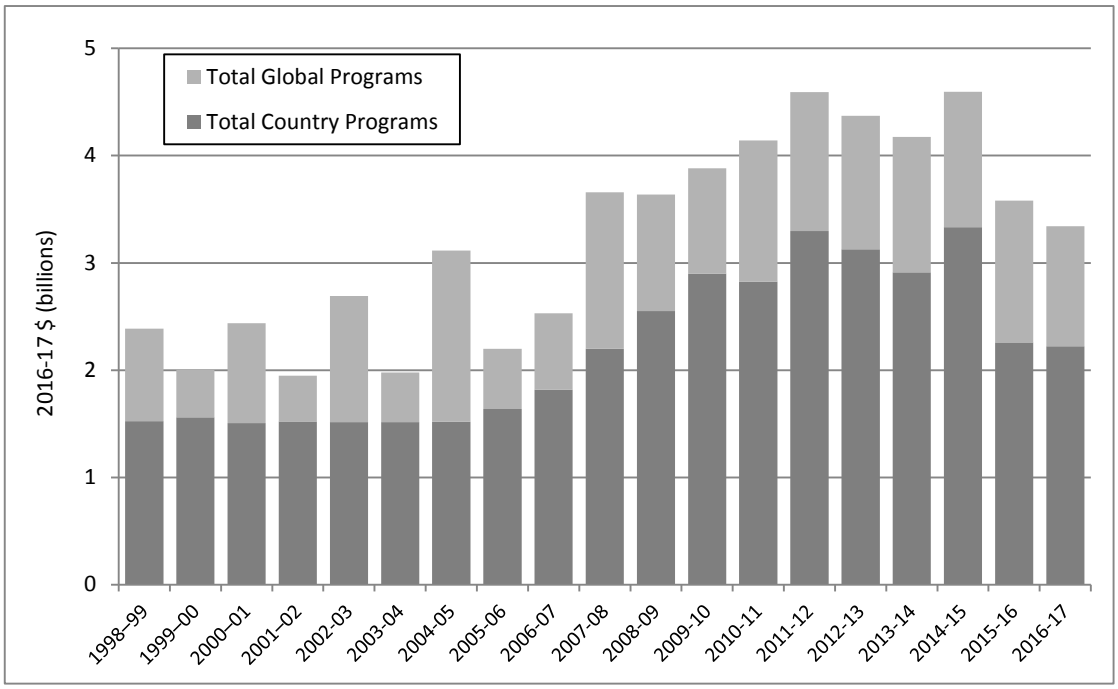
Where does the money go?

The annual aid budget is composed of a country-specific program and a global program, see Figure 8.4. The latter includes payments to various development banks and UN and Commonwealth agencies, including emergency aid through the World Food Program. Because of multi-year payments, the global program can vary greatly from one year to the next (accrual accounting smooths the payments in reporting).

Australian country-specific aid is mostly focused on Asia and Pacific Island states, although locations further afield also benefit. Figure 8.5 shows the amount of country-specific aid by region since 1998. As noted, PNG and regional programs stand out as particular beneficiaries of Australia's aid.

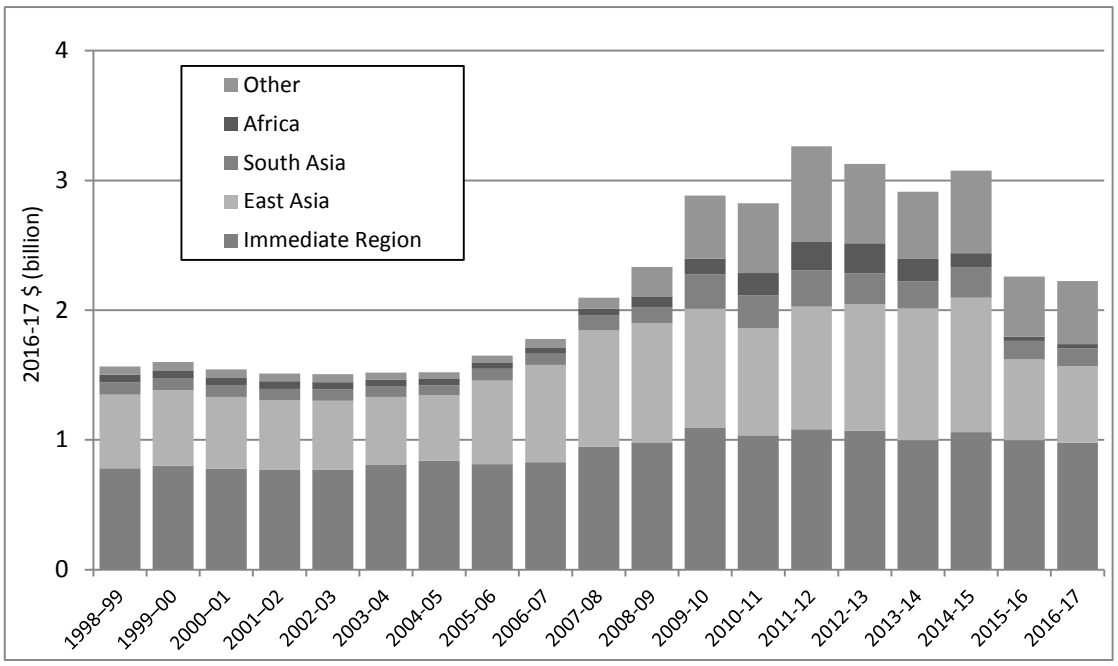
Traditionally, Australian aid tended to be overwhelmingly focused on countries close to Australia. This priority is still apparent in Figure 8.5 where the category of 'immediate region' includes PNG, East Timor and the island states of the Pacific. This focus was strengthened in the 2015-16 budget and beyond. Though not shown, most of the aid to East Asia goes to Southeast Asia and to Indonesia in particular.

Figure 8.4: Australia's aid — Global and Country Programs



Source: AusAID annual reports and 2016-17 Australian Aid Summary

Figure 8.5: Australia's aid — Country Programs, spending by region 1998-2016



Source: AusAID annual reports and 2016-17 Australian Aid Summary

Table 8.1 lists Australia's total budgeted ODA by value for 2015-16 and 2016-17 (including apportionment from global programs where possible and including non-Australian Government aid programs). Additional funds are provided through core contributions to multilateral organisations. Although it is not apparent from the two-year snapshot, there has been a significant fall in funding for countries beyond our immediate region in recent years, see Figure 8.5.

Table 8.1: Australia's aid — spending by partner country/region 2016-17

	2015-16 Revised Estimate ($m)	2016-17 Budget Estimate ($m)		2015-16 Revised Estimate ($m)	2016-17 Budget Estimate ($m)
Papua New Guinea	554.5	558.3	Palestinian Territories	42.8	43.6
Indonesia	375.7	365.7	Laos	37.9	40.7
Solomon Islands	175.9	162.0	Samoa	36.8	37.8
Pacific Regional	120.0	131.6	Nepal	31.4	34.0
Timor-Leste	95.3	93.7	Tonga	30.2	29.6
Cambodia	89.0	90.0	Kiribati	27.9	28.7
Sub-Saharan Africa	95.9	89.5	Sri Lanka	28.9	27.5
Vietnam	89.6	83.6	Nauru	25.2	25.5
Afghanistan	84.6	82.7	South /West Asia Regional	32.8	23.0
Philippines	83.0	81.9	Caribbean & Latin America	13.4	11.0
Fiji	57.8	76.9	Mongolia	10.3	10.0
Vanuatu	60.5	62.5	North Pacific	12.0	9.8
East Asia Regional	66.0	62.3	Tuvalu	10.2	9.2
Myanmar	62.8	59.8	Bhutan	11.2	7.3
Bangladesh	59.8	56.1	Maldives	6.0	5.3
Middle East / North Africa	47.1	51.8	Cook Islands	4.0	3.4
Pakistan	55.7	47.0	Niue and Tokelau	4.1	3.1

Source: 2016-17 Australian Aid Summary

How does aid further Australia's national interests?

Aside from making us feel better about ourselves, foreign aid furthers our national interests in two ways. First, bilateral aid to countries establishes a *quid pro quo* that facilitates access to, and influence with, foreign governments. Second, aid can bolster the institutions, infrastructure and human capital necessary for economic development and political stability. The rationale for the first category is self-evident; the second furthers our national interest by improving the stability of countries important to our security.

Much of Australian aid is of the first sort. Until recently, for example, we gave a small amount of aid to China each year, which had no significant impact on its 1.3 billion people or its economic development. Other aid, like that to Solomon Islands, is directly focused on achieving tangible improvements in governance, human security and economic development. Beyond seeking to address severe deprivation and inequality as potential sparks for violence and instability in nearby countries, aid's direct security dimensions include: stabilising fragile states (whether in regional interventions such as RAMSI, or by supporting ODA-eligible police and other preventive security partnerships before challenges reach crisis-point); assisting security sector reform to help demobilise, disarm and reintegrate ex-combatant groups and prevent violence re-emerging once stabilisation missions wind-down; and civil-military cooperation to provide planning, logistics, transport, communications, and medical equipment and skills following disasters and emergencies.

An informative picture emerges by examining the ratio of Australian aid to a recipient country's GDP. High ratios indicate a real effort to make a difference in a country; small ratios reflect largely diplomatic gestures that will hopefully be repaid through access and

influence. Table 8.2 lists Australian aid recipients in ascending order of the ratio of Australian aid to national GDP. The figures for smaller nations are unreliable.

Table 8.2: Australian aid as a share of GDP

Country	Ratio of Australian aid to GDP (PPP)	2016-17 Australian Aid ($m)	2015 per capita (PPP)	Country	Ratio of Australian aid to GDP (PPP)	2016-17 Australian Aid ($m)	2015 per capita (PPP)
Nauru	24.09%	26	7,350	Afghanistan	0.09%	83	2,932
Tuvalu	16.05%	9	5,268	Maldives	0.07%	5	20,513
Kiribati	9.67%	29	2,563	Bhutan	0.07%	7	13,003
Solomon Islands	9.27%	162	2,911	Laos	0.07%	41	8,407
Vanuatu	5.91%	63	3,845	Nepal	0.03%	34	3,784
Tonga	3.74%	30	7,701	Mongolia	0.02%	10	18,626
Samoa	2.42%	38	8,011	Myanmar	0.01%	60	8,261
PNG	1.73%	558	4,084	Vietnam	0.01%	84	9,428
Cook Islands	1.26%	3	13,377	Indonesia	0.01%	366	17,147
Timor-Leste	0.87%	94	8,267	Sri Lanka	0.01%	28	17,496
Fiji	0.64%	77	13,446	Philippines	0.01%	82	11,345
Palestinian Territories	0.45%	44	4,091	Bangladesh	0.01%	56	5,673
Cambodia	0.10%	90	5,474				

Sources: 2016-17 Australian Aid Summary, IMF World Economic Outlook December 2015.

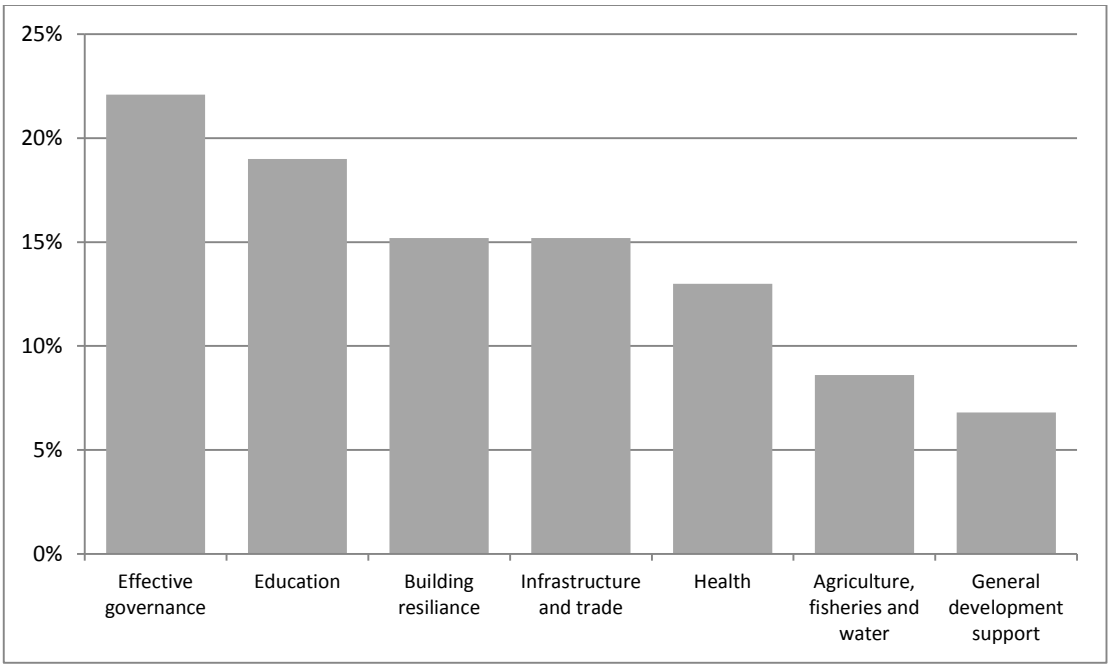
Not surprisingly, Pacific island states head the list followed by other countries in the immediate region. Note that some smaller Pacific countries have been omitted because economic data wasn't available. For comparison, the latest GDP per capita in PPP dollars has been included as a measure of the relative level of poverty in recipient countries. Clearly, Australian aid is only partially directed on the basis of need. The ratio of aid to GDP at which aid becomes an entirely diplomatic gesture is impossible to define, though it's hard to argue that figures below 0.5% of GDP reflect a serious effort to have a significant impact—except perhaps in a limited area like governance. Conversely, it's clear Australia is trying to make a real difference in those countries where aid approaches or exceeds 5% of GDP. As Table 8.2 shows, this category is entirely within our immediate region.

How is Australian aid spent?

There are seven investment priority areas for Australian ODA; effective governance, education, building resilience, infrastructure and trade, health, agriculture, fisheries and water, and general development support. The percentage apportionment of ODA to these priorities is displayed in Figure 8.6. Geographically, 92.9% of Australian ODA goes to the Indo-Pacific region.

In 2016-17, fully 19.5% of Australian ODA will be spent on 'aid for trade', including supporting developing countries to trade focus on trade and investment policy, trade facilitation, global value chains, infrastructure, private sector development, economic empowerment of women, knowledge and skills development, agriculture and services. Further information on recent developments Australian aid policy can be found in; *Strategy for Australia's Aid Investments in Private Sector Development* (May 2016) and the *Ministerial Statement on Engaging the Private Sector in Aid and Development* (August 2015).

Figure 8.6: Australian ODA by investment category



Source: 2016-17 Australian Aid Summary

Australia's military cooperation program

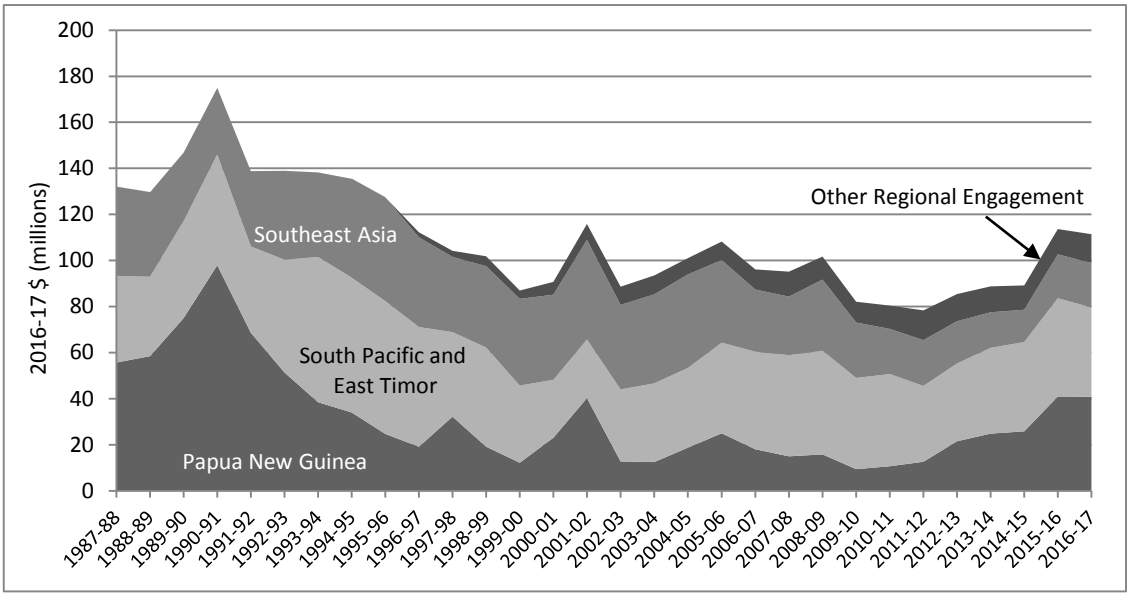
Allied to Australia's international aid effort is the $107 million a year Defence Cooperation Program run and funded by the Department of Defence. According to the 2015-16 Portfolio Budget Statements, the objective of the Defence Cooperation Program 'is to maximise Australia's security through developing close and enduring links with partners that supports their capacity to protect their sovereignty, work effectively with the ADF and contribute to regional security'. The program:

- promotes the capacity of partners
- improves Australia's capacity to work with partners in response to common security challenges
- builds strong people-to-people links with regional militaries at the tactical, operational and strategic levels.

In practice, the Defence Cooperation Program provides assistance to regional security forces through military advisors, training initiatives, bilateral exercises, capacity building, and equipment and infrastructure projects. A long-standing part of the Defence Cooperation Program is the Pacific Patrol Boat (PPB) Program, which provided 22 Patrol Boats along with ongoing training and technical support to 12 Pacific island countries. These vessels allow the countries involved in the Program to independently police their maritime territories. A contract for 22 new vessels was signed in May 2016 at a cost of $305 million.

Figure 8.7 sets out the spending on the Defence Cooperation Program over the past 20-odd years. For ease of display, individual country spending has been aggregated into convenient categories. Country specific data for 2015-16 and 2016-17 appears in Table 8.3.

Figure 8.7: Defence Cooperation Program—1987 to 2015



Source: Defence Budget Papers and Annual Reports

Table 8.3: Defence Cooperation Program—2015-16 and 2016-17

Country	2015-16 ($'000) estimated	2016-17 ($'000) budget	Country	2015-16 ($'000) estimated	2016-17 ($'000) budget
South Pacific			**Southeast Asia**		
Timor-Leste	4,901	5,829	Singapore	60	-
Vanuatu	333	807	Philippines	3,886	3,142
Solomon Islands	898	871	Thailand	2,758	3,034
Tonga	4,499	3,042	Malaysia	4,813	4,250
Samoa	89	232	Indonesia	3,427	4,290
Cook Islands	234	182	Vietnam	2,242	2,552
Fiji	2,383	2,700	Cambodia and Laos	1,352	1,458
Marshall Islands	105	396	Brunei	30	320
Micronesia	67	122	Myanmar	120	288
Tuvalu	210	348	***Sub-total***	**18,688**	**19,334**
Kiribati	266	395	Other regional activities	6,262	7,830
Palau	289	614	Defence International Training Centre	4,496	4,599
DCP Support	3,241	4,102	**Total**	**111,702**	**111,427**
Pacific Patrol Boats	23,347	19,236			
Sub-total	**40,862**	**38,876**			
Papua New Guinea	40,297	40,788			

Note: Singapore is considered part of Defence Engagement from 2016-17 onwards *Source: 2016-17 PBS.*

Chapter 9 – Defence Contracting

Co-authored with Dione Hodgson

Aside from being the agency with the largest procurement budget in the Commonwealth, Defence is also responsible for some of Australia's most complex procurement activities. Due to commercial sensitivities (and the habitual aversion by officials to disclosure), the details of how Defence spends billions of taxpayer dollars money are shrouded in secrecy. Nonetheless, statutory reporting requirements mean that the bare-bones information on every contract of value greater than $10,000 entered into by a Commonwealth agency is disclosed through a database on the AusTender website. This chapter examines what the database tells us, and does not tell us, about Defence contracting.

The remainder of this chapter is structured as follows. First, the AusTender reporting regime is explained, including the additional requirements under Senate Order 192. Second, the statistic distribution of Defence contracts from mid-2007 to mid-2015 is analysed. Third, we look in greater detail at contracts for 2014-15. Fourth, we attempt to explain an interesting statistical regularity in the value of contracts.

Before commencing, an acknowledgement is due. Although the data we've used is publicly available, it is very time consuming to download. A single interrogation of the database yields a maximum of around 1,000 downloadable entries, compared with the more than 250,000 records on Defence and DMO for the period 2007 to 2015. Fortunately, Graeme Dunk from Australian Business Defence Industry has been downloading and analysing the Defence data for several years, and he was kind enough to share the fruits of his hard labour with us. We owe him a debt of gratitude.

Before gaining Mr Dunk's assistance, we approached Defence. It seemed a good place to start because, consistent with Senate Order 192, Defence has published, in pdf format, data on all of its contracts valued greater than $100,000 since 2007. However, when we asked for copies of historical lists that had been removed from its website, we were advised by a Defence spokesperson that "If access is sought to any contract details not available on the public facing internet, these documents should be sought in the usual way - i.e. via lodgement of an FOI request". That's right; to get information that was previously made public, we'd have to make a formal Freedom of Information Request. Thanks for nothing.

Contract Reporting

In accordance with *Commonwealth Procurement Rules*, all government agencies publish data relating to the purchase of goods and services on the AusTender website. AusTender provides a central, web-based publishing facility, which stores Annual Procurement Plans, Multi-Use Lists, Standing Offer Arrangements, Contracts Awarded, and Approach to Markets (ATM). The AusTender site also provides a venue for the electronic distribution and receipt of ATM documentation, addenda and tenders.

With regard to contracts, agencies are required to report on the procurement of goods and services, including purchase orders, leases, corporate credit card transactions, oral and

written contracts, service contracts and maintenance agreements. Reportable contracts must be for the procurement of goods and services that are valued at $10,000 or more and not specifically blocked or exempt from publication. Relevant entities are required to report contracts and amendments on AusTender within 42 days of entering (or amending) a contract.

Senate Order 192 requires government departments to publish a list of procurement and funding agreements following each financial and calendar year for all contracts valued at $100,000 or more, including those entered into in the previous 12 months and those not fully completed by the end of the specified period. Reports must be published by the end of the second month after each reporting period, and Ministers must table a letter, stating that all agencies falling under *The Public Governance, Performance and Accountability Act 2013* responsibility have met this requirement. At present, the list is published on the AusTender website (previously, it was published on the DMO/CASG website). The Senate Order requires the list to include the name of the contractor, the subject matter of each contract, the total contract value, the start date and end date of the contract, and details of any confidentiality provisions.

The Order was first established as a response to increasing outsourcing and confidentiality of the attendant contracts. Concerns emerged that this might impede scrutiny and limit government accountability.

In June 2001, the Senate made a procedural order that would see the continuation of already established disclosure of departmental and agency contracts but including reasons for any confidentiality clauses and claims. The order was informed by three reports of the Senate Finance and Public Administration References Committee, tabled in June 2000, September 2001 and December 2002, as well as ANAO's *Report No. 38 of 2000-2001: The Use of Confidentiality Provisions in Government Contracts*. The Order was amended in September 2001 to require additional information to be included in the online listing and the Ministers' letters.

The Committee reconvened in late 2002, and in December reported on the first year of operation of the order. It made 17 recommendations to clarify the wording of the order and made specific recommendations regarding the definition of a contract, commercial confidentiality, reporting requirements, agencies covered under the order, and presentation and disclosure concerns. In response, the Order was altered in June 2003, changing the reporting period and requiring additional information to be listed. It was altered a third time in December 2003, to provide for annual, rather than biannual, reporting by the Auditor-General on agency compliance with the Order. The ANAO conducted yearly audits of compliance with the Senate Order until 2014.

In 2007, the Committee tabled its second report to the Senate. It included consideration of a proposal from the Department of Finance (Finance) that the AusTender website should be the single reporting mechanism for procurement contracts from 1 July 2007. In response, the Committee recommended that the Order be retained, citing concerns that the new system hadn't proven itself when dealing with large quantities of data. Moreover, the

Committee argued that AusTender would not report on non-procurement contracts and, therefore, if the Order was revoked there would be a reduction in transparency. There were also concerns that the promised improvements in data integrity could not be assumed. The Committee was, however, open to AusTender superseding departmental and agency homepages as the source of contract information.

The Committee held another inquiry into the Order in late 2013-early 2014. The Minister for Finance wrote to the chair of the committee in December 2013, seeking the Committee's support to update the whole-of-government guidance for agencies in order to meet the Order. The Minister claimed the update would reduce duplication in procurement contract reporting by agencies. A new report was released by the Committee in May 2014, reiterating its strong support for the continuation of the Order. It recommended the annual audits of Order compliance be phased out following the tabling of the final audit report in 2014, but requesting the Auditor General to conduct subsequent biennial reports in September 2016 and 2018. A 2015 independent review of whole-of-government internal regulations suggested the $10,000 threshold captured too many non-material, low risk procurements, and recommended this threshold be raised. The committee has expressed reservations regarding this recommendation.

At a Committee hearing in 2014, a demonstration of AusTender failed to prove that the website was capable of producing reports that complied with the Order. The Committee agreed that if the problems with AusTender were remedied, agencies could use AusTender to meet Order reporting obligations for a trial period of 18 months from 1 January 2015. A review of operations will occur at the end of the trial. At that time, the committee will also consider the Minister for Finance's proposal for the Order to feature contracts 'published' in the reporting period, rather than contracts 'active' during the past 12 months.

The ANAO yearly audits of the Order have shown a decline in the use of confidentiality provisions, and therefore an improvement in access to information. The decrease in the proportion of government contracts containing confidentiality provisions went from 24% in the 2001-02 financial year to 4% in the 2012 calendar year. However, the audits have also identified issues with the completeness, accuracy and timeliness of agencies' contract reporting. Examples of these failings included agencies inadvertently excluding contracts, double reporting of contracts, reporting purchasing orders as contracts, and not recording the same contract information between AusTender and the Senate Order.

Contract categorisation

Within the search parameters of the AusTender website, contracts can be searched and divided by categories. This categorisation system is universal to all departments and agencies, and includes 50 different categories. When looking at these categories in regards to Defence, some of these categories are particularly useful and logical, such as 'Commercial and Military and Private Vehicles and their Accessories and Maintenance' and 'Engineering and Research and Technology Based Services', while others, such as 'Farming and Fishing and Forestry services' or 'Time Pieces, Jewellery and Gemstone Products' are less so.

Defence contracting statistics 2007-2015

Because Defence and the Defence Materiel Organisation (DMO) were separate entities until June 2015, they are listed separately on the AusTender database. In total, there are 138,698 entries for Defence and 120,904 entries for DMO. Table 9.1 shows the number, value and average duration of new contracts commenced by Defence, DMO and Defence plus DMO each year from 2007-08 to 2014-15. Interestingly, despite having carriage of large acquisition projects, the DMO result are on average only marginally more expensive than Defence's.

Table 9.1: Defence and DMO new contracts commenced 2007-08 to 2014-15

Year	Number of contracts commenced	Contracted value commenced ($ million)	Average contract value ($)	Average duration (months)
Defence				
2007-08	19,722	9,221	467,562	5.1
2008-09	20,104	8,822	438,794	5.4
2009-10	18,298	8,644	472,387	5.2
2010-11	18,489	8,002	432,776	5.6
2011-12	18,797	11,462	609,774	5.7
2012-13	13,270	8,706	656,060	6.6
2013-14	14,143	8,256	583,750	6.8
2014-15	15,875	13,385	843,178	6.5
Total/Average	**138,698**	**76,498**	**563,035**	**5.9**
DMO				
2007-08	11,752	10,078	857,556	6.5
2008-09	17,119	8,435	492,727	5.9
2009-10	16,234	8,626	531,353	5.2
2010-11	16,440	6,748	410,462	4.7
2011-12	18,429	10,729	582,180	5.1
2012-13	13,544	6,779	500,516	4.8
2013-14	13,194	9,695	734,803	6.2
2014-15	14,192	12,998	915,868	6.2
Total/Average	**120,904**	**74,008**	**612,783**	**5.6**
Defence plus DMO				
2007-08	31,474	19,299	662,559	5.8
2008-09	37,223	17,257	465,761	5.65
2009-10	34,532	17,270	501,870	5.2
2010-11	34,929	14,750	421,619	5.15
2011-12	37,226	22,191	595,977	5.4
2012-13	26,814	15,485	578,288	5.7
2013-14	27,337	17,951	659,277	6.5
2014-15	30,067	26,383	879,523	6.4
Total/Average	**259,602**	**150,586**	**595,609**	**5.7**

Source: ASPI analysis of data from AusTender database.

Table 9.2 shows the number, value and average duration of new contracts underway for the two entities from 2007-08 to 2014-15. The effect of accumulating long-duration projects is apparent. Once again, the difference between DMO and Defence is not substantial. Averages and totals are not calculated across years to avoid double counting.

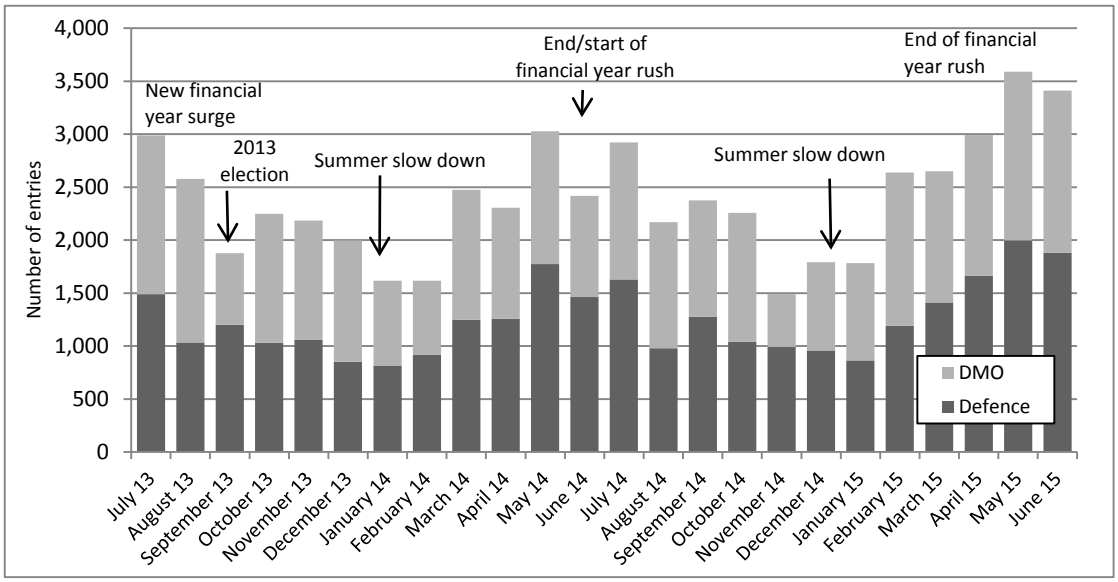
Table 9.2: Defence and DMO contracts underway 2007-08 to 2014-15

Year	Number of contracts underway	Contracted value underway ($ million)	Average contract value ($)	Average duration (months)
Defence				
2007-08	19,722	9,221	467,562	5.1
2008-09	23,308	15,145	649,797	6.7
2009-10	21,953	20,034	912,583	7.5
2010-11	22,142	24,041	1,085,777	8.4
2011-12	23,023	29,851	1,296,576	8.8
2012-13	18,099	33,392	1,844,955	10.9
2013-14	19,159	36,208	1,889,876	11.1
2014-15	20,964	43,197	2,060,546	10.6
-	-	-	-	-
DMO				
2007-08	11,752	10,078	857,556	6.5
2008-09	21,053	17,274	820,500	7.4
2009-10	21,871	22,638	1,035,069	8.3
2010-11	20,876	25,010	1,198,026	8.5
2011-12	23,278	30,344	1,303,548	8.6
2012-13	18,706	30,701	1,641,238	10
2013-14	17,167	34,545	2,012,291	11.7
2014-15	18,769	42,260	2,251,585	12
-	-	-	-	-
Defence plus DMO				
2007-08	31,474	19,299	662,559	5.8
2008-09	44,361	32,419	735,149	7.1
2009-10	43,824	42,672	973,826	7.9
2010-11	43,018	49,051	1,141,902	8.5
2011-12	46,301	60,195	1,300,062	8.7
2012-13	36,805	64,093	1,743,097	10.5
2013-14	36,326	70,753	1,951,084	11.4
2014-15	39,733	85,457	2,156,066	11.3
-	-	-	-	-

Source: ASPI analysis of data from AusTender database.

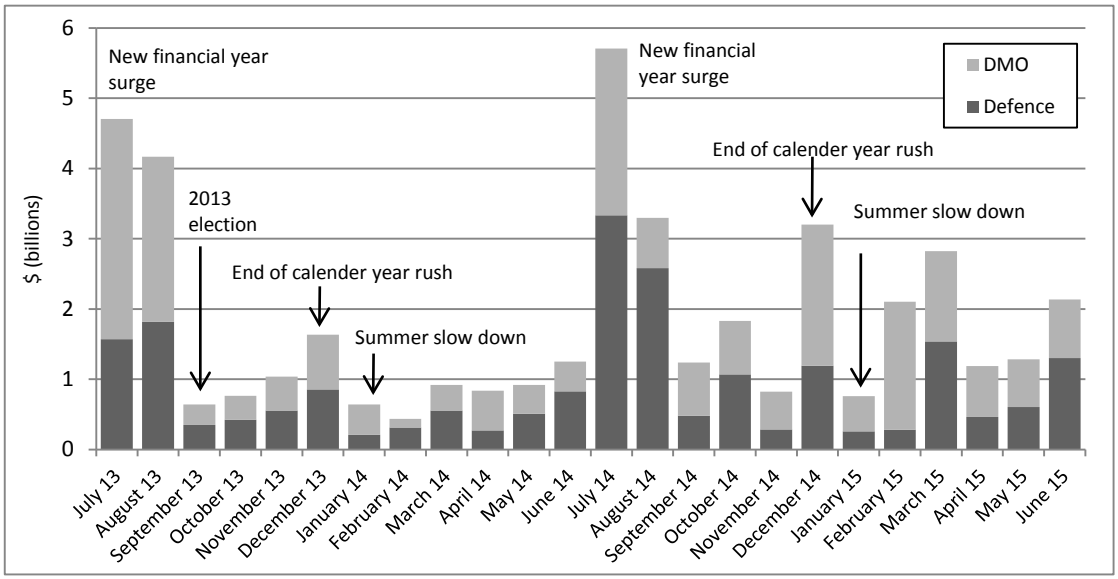
The timing of contract starts isn't distributed evenly throughout the year. Figures 9.1 and 9.2 display the distribution of contract numbers and total value by month for FY 2013-14 and FY 2014-15. Labels in the figures suggest the reasons for the substantial variations from one time of the year to another. The variation is neither surprising nor concerning; there's a natural rhythm of activity due to the annual financial and calendar cycle. Note that the 2013 election didn't result in a dramatic reduction in the number of contracts, but large contracts (which would have required consultation under the caretaker convention) are clearly absent. The most outstanding feature of the two graphs is the very large value of contracts (presumably corresponding to large acquisition projects) that are signed at the start of the financial year.

Figure 9.1: Defence and DMO contracts commenced by month



Source: ASPI analysis of data from AusTender database.

Figure 9.2: Defence and DMO contracts value commenced by month

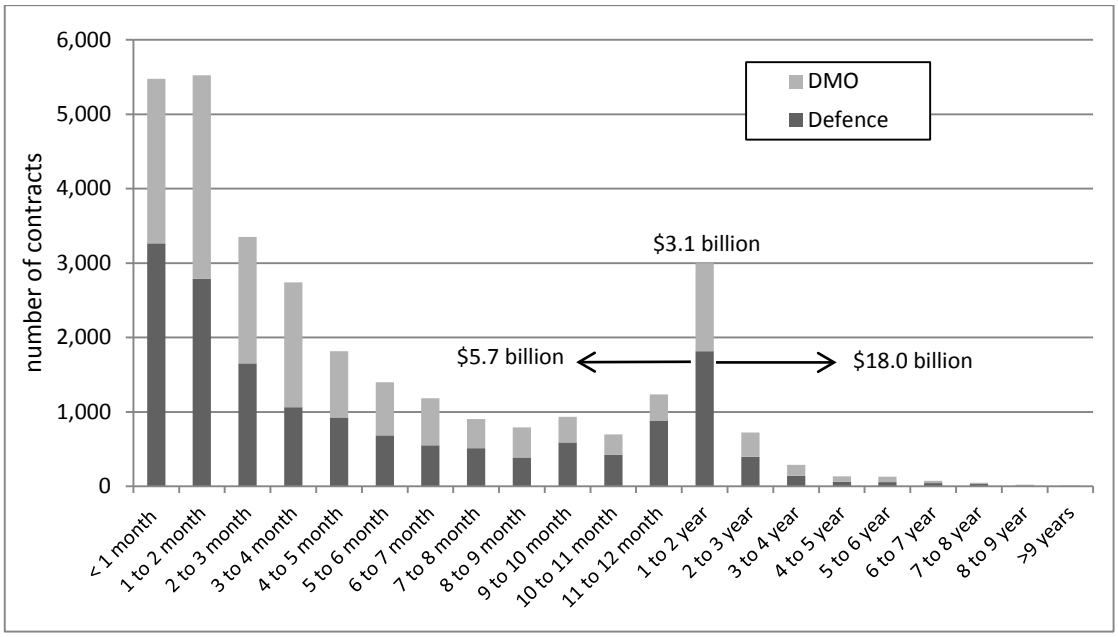


Source: ASPI analysis of data from AusTender database.

A detailed look at 2014-15—new contracts commenced

Defence and DMO commenced 30,067 contracts in 2014–15, valued in total at $26.4 billion. The average duration of contracts was 6.4 months, and the average contract value was $879,523. Apart from ten contracts that finished before they started (presumably data-entry errors), contracts ranged in duration from 0 days to 10 years. The distribution of contracts by duration appears in Figure 9.3. A propensity to package work in 1-month, 2-month, 3-month and 1-year duration activities is apparent. Although the bulk of contracts are for less than 12 months duration, the much greater value of individual longer contracts means that they dominate the total spend by about 2 to 1.

Figure 9.3: Distribution of new contracts by duration



Source: ASPI analysis of data from AusTender database.

The top 20 contract categories for Defence and DMO by value and ranking are listed in Table 9.3. It's surprising that so much money was spent by Defence on military equipment given that is was the role of DMO at the time. However, maybe that arises because of the pre-approval role of the then Capability Development Group. It's also somewhat unexpected that each of the organisations appear to have spent around $550 million on fuel. Yet, upon checking, the two figures result from adding distinct payments of different sizes. Thus, it appears as though Defence and DMO between them spent in excess of $1.1 billion on fuel in 2014-15.

Most of the top-spending areas in Defence are unsurprising, such as 'building, construction, maintenance and repair', 'computer hardware maintenance and support' and 'comprehensive health services'. Less expected are the large amounts listed for 'management advisory services' ($168 million) and 'management support services' ($81 million). Naturally, we checked the scale of spending in areas such as advertising, market research and consultants which are reported in the Defence Annual Report. No inconsistencies were apparent.

Table 9.3: Top 20 categories of contract for DMO and Defence 2014-15

Ranking	Category	Number of contracts	Category	Value $ (m)
	DMO		**DMO**	
1	Military watercraft	957	Aircraft	2,119
2	Aerospace systems and comp. and equip.	897	Marine craft systems and subassemblies	1,502
3	Marine craft systems and subassemblies	894	Aerospace systems and comp. and equip.	995
4	War vehicles	772	Military fixed wing aircraft	759
5	Professional engineering services	548	Light weapons and ammunition	649
6	Military fixed wing aircraft	522	Communications Devices and Accessories	556
7	Aircraft equipment	474	Fuels	549
8	Aircraft maintenance and repair services	468	Military watercraft	508
9	Communications Devices and Accessories	353	War vehicles	446
10	Electronic hardware parts and accessories	350	Missiles	399
11	Personal safety and protection	330	Aircraft equipment	351
12	Surveillance and detection equipment	321	Security surveillance and detection	284
13	Motor vehicles	301	Professional engineering services	266
14	Software	280	Military services and national defence	266
15	Medical Equipment and Acc. and Supplies	253	Electronic hardware, parts and accessories	231
16	Arms and ammunition accessories	197	Management support services	207
17	Computer Equipment and Accessories	188	Software or hardware engineering	178
18	Light weapons and ammunition	185	Batteries, generators, power transmission	152
19	Management advisory services	179	Specialised and recreational vehicles	152
20	Lubricants and oils and greases etc.	176	Management advisory services	142
	Defence		**Defence**	
1	Building, construction, maintenance and repair	1,314	Building, construction, maintenance and repair	6,568
2	Project management	1,233	Military fixed wing aircraft	998
3	Education and training services	1,055	Computer hardware maintenance and support	952
4	Computer equipment and accessories	613	Fuels	543
5	Vehicle and maintenance support	569	Comprehensive health services	378
6	Software	547	Aircraft	294
7	Professional engineering services	487	Project management	289
8	War vehicles	485	Military rotary wing aircraft	245
9	Legal services	377	Software	224
10	Management advisory services	373	Software or hardware engineering	196
11	Laboratory and scientific equipment	246	Management advisory services	168
12	Software or hardware engineering	226	Professional engineering services	148
13	Management support services	218	Education and training services	136
14	Software maintenance and support	210	Software maintenance or support	135
15	Communications devices and accessories	159	Aerospace systems	125
16	Vehicle bodies and trailers	156	Computer equipment and accessories	99
17	Motor vehicles	153	Commercial marine craft	87
18	Military science and research	143	Management support services	81
19	Furniture	138	Missiles	81
20	Information technology consultation services	136	Satellites	81

Source: ASPI analysis of data from AusTender database.

The top 20 private sector suppliers (by new contract starts in 2014-15) for Defence and DMO and are listed in Table 9.4 and 9.6 respectively. Table 9.5 lists the larger foreign government supplier contracts that commenced in 2014-15 for both Defence and DMO. In compiling Tables 9.4 to 9.6, multiple subsidiaries of major suppliers have been brought together under the name of the parent firm.

Table 9.4: Top 20 suppliers to Defence in 2014-15

Ranking	Suppliers	Number of contracts	Suppliers by contract value	Value $ (million)
1	AUGILITY	467	TRANSFIELD SERVICES	1825
2	AURECON	305	SPOTLESS P&F PTY LTD	1123
3	JACOBS AUSTRALIA	305	LEND LEASE BUILDING PTY LTD	1038
4	SPOTLESS P&F PTY LTD	284	LOCKHEED MARTIN	954
5	THALES	223	BROOKFIELD JOHNSON CONTROLS	516
6	RGM MAINTENANCE	201	COMPASS GROUP DEFENCE	505
7	GENERAL DYNAMICS LAND SYSTEM	198	WILSON SECURITY PTY LTD	435
8	HEWLETT PACKARD	169	MEDIBANK	377
9	ETHAN GROUP PTY LTD	167	CALTEX	328
10	FUJITSU	167	MSS SECURITY PTY LTD	297
11	DIMENSION DATA AUSTRALIA	138	BOEING	241
12	KPMG	126	RAYETHON AUSTRALIA	158
13	VOLVO	125	CIT AEROSPACE INTERNATIONAL	143
14	TOLL INTERNATIONAL	120	TELSTRA	134
15	BAE SYSTEMS	117	EADS-CASA	127
16	DEFENCE MAINTENANCE MANGT.	107	BP	118
17	TELSTRA	107	AIRBUS	97
18	QUINN TRUCK SERVICES	103	FUJITSU	96
19	QINETIQ	98	DMS MARITIME PTY LTD	90
20	WATPAC CONSTRUCTION PTY LTD	93	BAULDERSTONE PTY LTD	83

Source: ASPI analysis of data from AusTender database.

Table 9.5: Top foreign government contracts for DMO and Defence 2014-15

	DMO		Defence	
	Value $ (million)	Number of contracts	Value $ (million)	Number of contracts
FMS ACCOUNT	2,031	322	564	116
P8 POSEIDON PROGRAM	893	36	730	8
JSF OFFICIAL AUSTRALIAN ACCOUNT	340	24	30	8
NATO SEASPARROW SURFACE MISSILE SYSTEM	178	14	35	2

Source: ASPI analysis of data from AusTender database.

Table 9.6: Top 20 suppliers to DMO in 2014-15

Ranking	Suppliers	Number of contracts	Suppliers by contract value	Value $ (million)
1	THALES	1,075	ASC PTY LTD	1,219
2	BAE SYSTEMS	593	THALES	1,014
3	BOEING	370	AIRBUS	977
4	AIRBUS	333	BAE SYSTEMS	707
5	ANSPEC PTY LTD	298	BOEING	671
6	NORTHROP GRUMMAN	268	GENERAL ELECTRIC	440
7	RAYETHON AUSTRALIA	230	RAYETHON AUSTRALIA	344
8	MERCEDES BENZ	206	CALTEX AUSTRALIA	298
9	GENERAL DYNAMICS	202	HARRIS CORPORATION	243
10	AIRFLITE PTY LTD	192	JACOBS AUSTRALIA	171
11	A & P GROUP LTD	159	SUPACAT LTD	153
12	SAAB	115	NORTHROP GRUMMAN	152
13	MILITARY AND AVIATION SPARES	106	PACIFIC MARINE BATTERIES	148
14	AUSTRALIAN AEROSPACE	102	BP	122
15	MTU DETROIT DIESEL	101	NAVAL SHIP MANAGEMENT	97
16	LOCKHEED MARTIN	100	SGFLEET	97
17	AUSTRALIAN DEFENCE APPAREL	99	JAMES FISHER DEFENCE	95
18	ROLLS ROYCE	94	ELBIT SYSTEMS LTD	90
19	JACOBS AUSTRALIA	89	INTERSCAN NAVIGATION SYSTEMS	78
20	PILATUS AIRCRAFT LTD	84	LOCKHEED MARTIN	69

Source: ASPI analysis of data from AusTender database.

The extent of opportunities available to small to medium-sizedenterprises (SMEs) comes up frequently in the context of defence industry policy. The contract information for DMO provides an opportunity to directly measure the scale and distribution of defence materiel spending, including potentially to SMEs. The distribution of DMO spending to different firms is given in Table 9.7 in broad bands. Clearly, a small number of firms capture the vast bulk of what's spent directly by DMO. The potential consolation is that smaller firms may receive further revenue by working as subcontractors to the leviathans, but that's impossible to measure from the data at hand.

An upper bound can be put on the number of defence materiel SMEs receiving direct revenue from DMO, and the scale of that revenue, by subtracting identifiable non-SMEs and non-materiel suppliers from the dataset. This was done on a line by line basis for the first 200 or so largest firms by revenue. Non-materiel firms include law and accountancy firms, fuel suppliers, management consultants and the like. Local subsidiaries of multinational firms have been grouped in with the large firms. The results are in Table 9.8. Fully 85% of the money went to 121 defence materiel firms, with the vast majority of the money going to subsidiaries of large foreign firms. Another 6% of spending went to 25 identifiably non-materiel firms, including, once again, many subsidiaries of large foreign firms. That leaves a maximum of 1,784 local SMEs to account for the remaining 9% of revenue. However, the number receiving less than $100,000 a year was 843, with average revenue of only $43,000

each. Of the firms that might be a local SME, only 171 received revenues from DMO exceeding $1 million. It's interesting that so little money goes directly to local SMEs.

Table 9.7: Distribution of firm revenue form DMO in 2014-15

Income per firm	Aggregate value	Number of firms
> $1 billion	4,262,941,468	3
1 to 0.5 billion	3,145,423,845	4
0.1 to 0.5 billion	2,691,788,457	12
50 to 100 million	876,909,651	12
10 to 50 million	1,059,072,302	54
5 to 10 million	295,844,821	43
1 to 5 million	415,596,500	183
100 to 500 thousand	98,180,244	141
50 to 100 thousand	115,792,055	489
10 to 50 thousand	19,011,573	266
Total	**17,361,050**	**1930**

Source: ASPI analysis of data from AusTender database.

Table 9.8: Maximum DMO direct local SME spending for 2014-15

	Number of firms	Total revenue from DMO ($ million)	Average revenue per firm ($ million)
Recognisable large defence-materiel firms including local subsidiaries of large foreign firms	121	11,017	91.0
Non-materiel firms and inter- and intra-government transfers	25	730	29.2
Maximum Australian-owned SME with Defence revenue > $100,000	941	1,215	1.3
Maximum Australian-owned SME with Defence revenue < $100,000	843	36	0.04
Average/Total	**1,930**	**12,998**	**6.7**

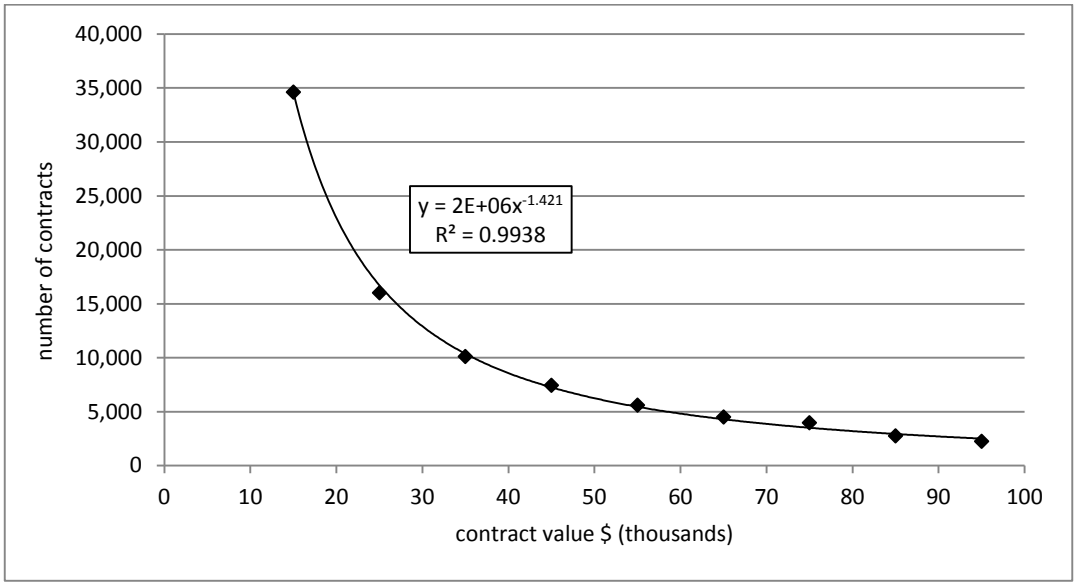
Source: ASPI analysis of data from AusTender database.

The distribution of contracts by value (a mathematical diversion)

A curious pattern emerges in the distribution of contracts by value. While it's not surprising that there are many more small contracts than large contracts, the distribution of contracts by value displays a remarkable regularity. Consider below Figure 9.4, which graphs the number of DMO projects between $10,000 and $100,000 over the period 2007 to 2014. All nine data points are remarkably well fitted by a simple Power Law function with only two parameters. The R^2 figure on the chart provides a statistical measure of how well the curve fits the data, with $R^2 = 1$ corresponding to perfect fit and $R^2 = 0$ the opposite. The fact

that a simple two-parameter function fits the data so well implies an underlying mechanism behind the distribution.

Figure 9.4: DMO contracts by value $10,000 to $100,000 (2007-08 to 2014-15)



Source: ASPI analysis of data from AusTender database.

To better understand what's going on, a closer look at Power Law functions is needed. With no claim of rigour, Power Law distributions have the form

$$f(x) = Cx^{-\alpha}$$

where $f(x)$ is the frequency of events around the value x. In the present problem; x is the value of a contract and $f(x)$ is the number of contracts around x. The constant C sets the scale of the distribution (and is not so interesting) while α represents the bias against contracts with larger values of x. For example, if $\alpha = 2$,

$$f(2x) = \frac{1}{4}f(x).$$

That means that there are only one-quarter as many $50,000 contracts as $25,000 contracts, and so on. If $\alpha = 3$,

$$f(2x) = \tfrac{1}{8}f(x).$$

Thus, the higher the value of α, the fewer large contracts we expect to find.

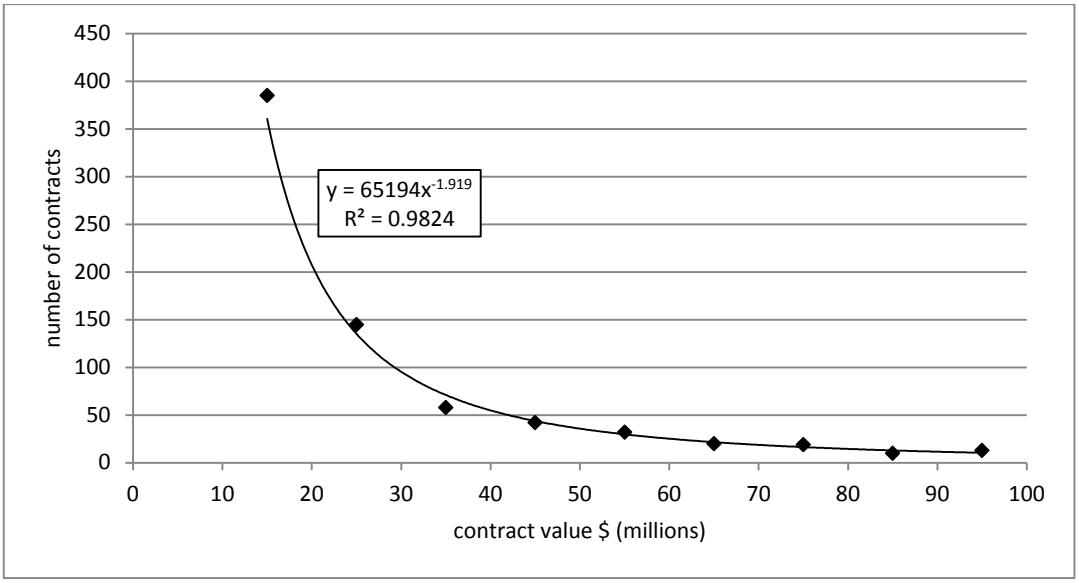
A priori there's no obvious reason why the distribution of contract values should obey a power law. Yet, over five orders of magnitude, it turns out to be the case for both Defence and DMO. Well, almost. A pure power law distribution exhibits strict scale invariance. That is

$$f(\mu x) \propto f(x)$$

no matter how big x is. However, in the Defence and DMO contract data, as the scale increases, so too does the exponent α in the curve of best fit. Or to put it another way, as we go to bigger contract scales, the distribution tends to fall off faster.

For example, consider Figure 9.5, which shows the distribution of projects valued between $10 million and $100 million. Despite being one thousand times more costly than the projects in Figure 9.6, the pattern is the same—albeit with a different α in the Power Law function.

Figure 9.5: DMO contracts by value $10 million to $100 million (2007-08 to 2014-15)



Source: ASPI analysis of data from AusTender database.

Looking across the data from both DMO and Defence, the Power Laws that best fit the data at different scales are given in Table 9.9. As can be seen, at larger scales the bias against larger contracts grows. As a general rule, the number of Defence contracts falls off faster (i.e. a larger value for α at any given scale) than DMO. Note the relatively high values of R^2 all the way up to contracts of $100 million value.

Table 9.9: Curves of best fit to distribution of Defence and DMO contract values

		$10 to $100 thousand	$100 thousand to $1 million	$1 million to $10 million	$10 million to $100 million	$100 million to $1 billion
DMO	α	1.42	1.69	1.90	1.92	1.94
	R^2	0.994	0.999	0.988	0.982	0.802
Defence	α	1.58	1.82	1.93	1.93	
	R^2	0.994	0.999	0.990	0.974	

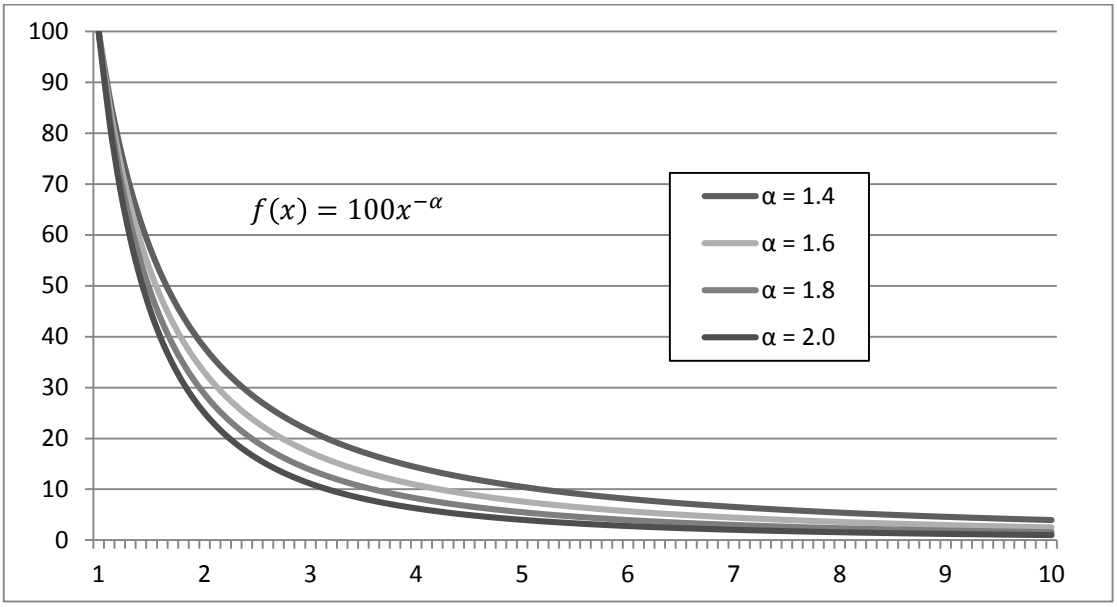
Source: ASPI analysis of data from AusTender database.

The differences between Power Law distributions with α in the range 1.4 to 2.0 are significant but not substantial, see Figure 9.6.

Power Law distributions are common in science and economics. In the late 19th century and early 20th centuries, Power Law distributions were observed in income distributions

(Pareto), word frequencies (Zipf's law) and the distribution of population size in cities (also known as Zipf's law). Phenomenon that have since been found to exhibit such behaviour include journal citations, book sales, earthquake magnitudes, firm size, stock market movements, web hits, individual net worth, executive remuneration and the diameter of craters on the surface of the moon.

Figure 9.6: Comparison of different power law distributions

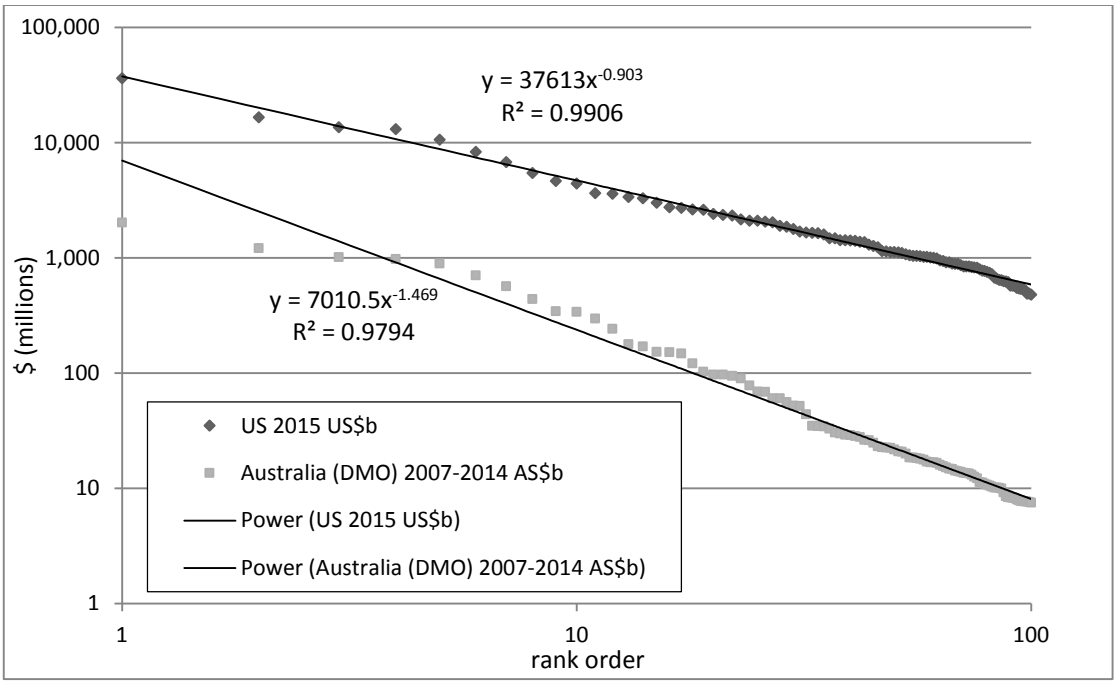


Although explanations for the emergence of power law distributions vary, the most common centre on 'proportional random growth'. It turns out an initial distribution will converge to a Power Law distribution if (1) its elements expand and contract at a random growth rate, and (2) the system has some friction (such as a lower bound on the size of the elements). Qualitatively, in many cases the model makes intuitive sense, for example, in the case of the size of firms.

So why would the same mechanism apply to the size of Defence contracts? One possible explanation is that the distribution of contract size mirrors the size of firms that are counterparties to the contracts. A more plausible explanation is that Defence's internal budgeting processes, coupled with negotiations with suppliers, directly results in a proportional random growth mechanism. The finite size of the overall budget provides one of several possible sources of friction in the system.

If the mechanism is as suggested, similar results would be expected from other large bureaucratic purchasing agencies. As it happens, one ready source for comparison can be found in the 100 top contractors to the US Government, as reported on the official US Federal Procurement Data System. Figure 9.7plots the Top 100 contactors by contract revenue across the entire US Government in 2015, and the same for DMO over the period 2007-2014. Note that the graphs employ dual logarithmic scales and the data is plotted in rank order rather than as a frequency distribution. The shift from frequency distribution to rank order isn't significant; we're still looking at the same underlying thing. As can be seen, both data sets obey a Power Law (but with different exponents).

Figure 9.7: Top 100 contractors by contract value, US Government and DMO



Source: ASPI analysis of data from AusTender database and US Federal Procurement Data System.

Finally, as a demonstration of the strange pervasiveness of Power Law functions, consider Figure 9.8 below, which plots baseline ADF officer salaries (including Service Allowance where applicable) and baseline Defence civilian salaries from 2015. The explanation is left as a problem for the reader.

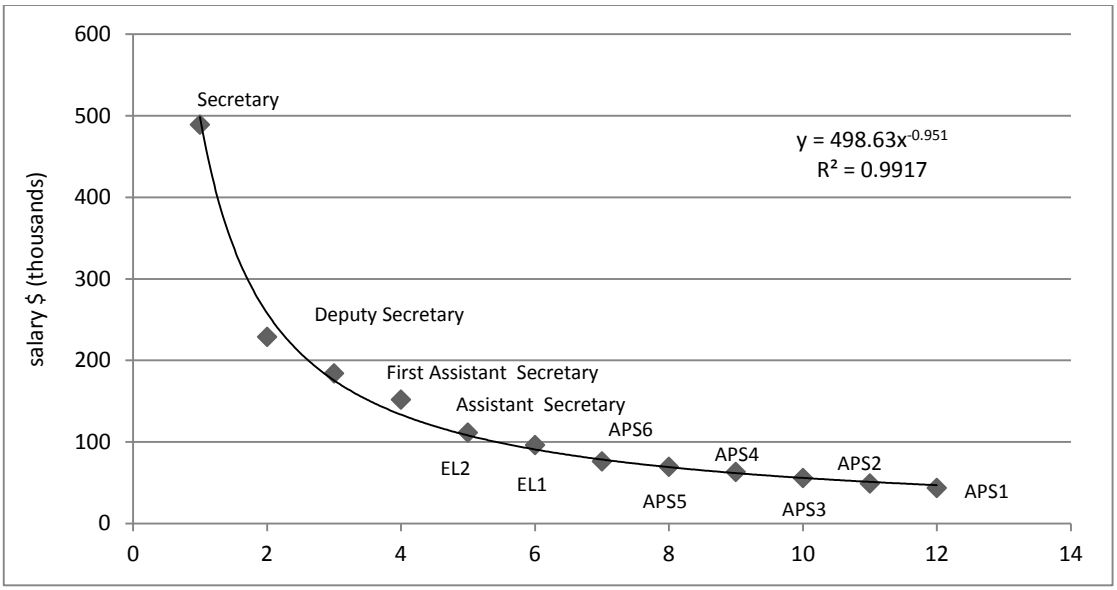
Further reading

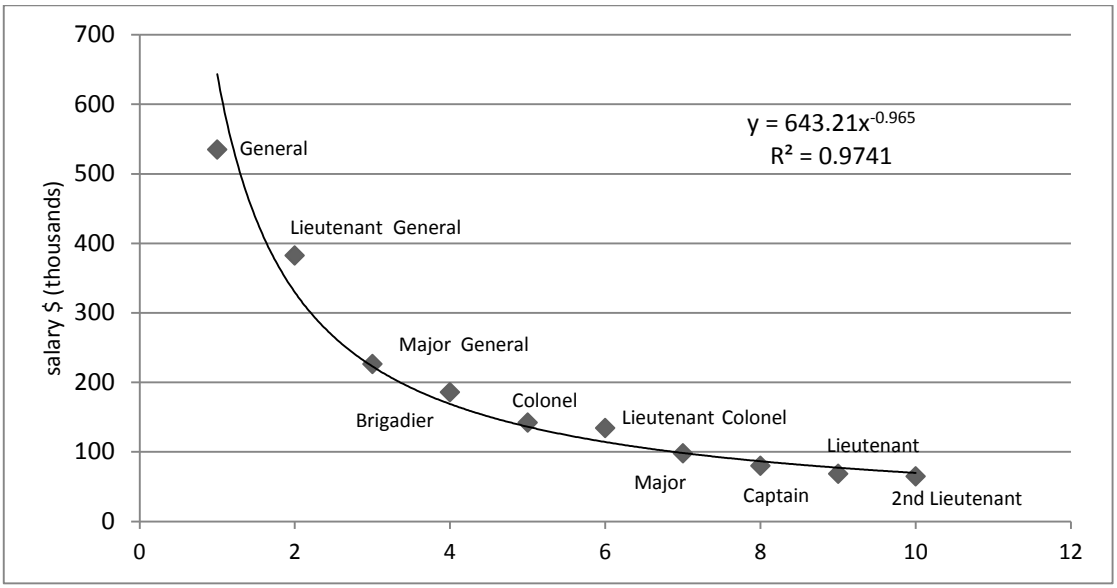
M.E.J Newman, 'Power laws, Pareto distributions and Zipf's law', *Contemporary Physics*, Vol. 46, No. 5, September–October 2005, 323 – 351.

Xavier Gabaix, 'Power Laws in Economics and Finance', *Annual Review of Econo*mics, 2009. 1:255–93

Xavier Gabaix, 'Power Laws in Economics: An Introduction', *Journal of Economic Perspectives*—Volume 30, Number 1—Winter 2016—Pages 185–206

Figure 9.8: ADF officer and Defence APS baseline salaries circa 2015





Source: ASPI analysis of data Defence People Group website.

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Glossary

ADF	Australian Defence Force
AEW&C	Airborne Early Warning & Control
ANAO	Australian National Audit Office
APS	Australian Public Service
AWD	Air Warfare Destroyer
CDF	Chief of the Defence Force
CIOG	Chief Information Officer Group
CSP	Commercial Support Program
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
GNI	Gross National Income
GST	Goods and services tax
NPOC	Net Personnel and Operating Costs
OPA	Official Public Account
PAES	Portfolio Additional Estimates Statements
PBS	Portfolio Budget Statement
SES	Senior Executive Service
WRA	Workplace Remuneration Arrangement

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