

2008 Audit of the Defence Budget

Department of Defence

3 April 2009

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3 April 2009

The Hon Joel Fitzgibbon MP
Minister for Defence

Dear Minister,

The attached report summarises the findings and recommendations of the Audit of the Defence Budget undertaken between May 2008 and February 2009. The objectives of the Audit were to:

- a. Advise Ministers on the efficiency and effectiveness of, and future risks associated with, the Defence budget; and
- b. Recommend to Ministers improved arrangements for managing the Defence budget

The 'Terms of Reference' for the Audit are contained in the Appendices.

My appointment by you to lead the Audit took place in May 2008 and a supporting team of expert consultants from McKinsey & Company was appointed in June of that year. The consultants and I were assisted by a secretariat from the Finance function. The Audit was undertaken in parallel with the preparation of the current Defence White Paper and associated companion reviews. It has been informed by, and has also provided input to, that work. It has also considered the work of the project led by Mr David Mortimer reviewing the effectiveness of the Defence Materiel Organisation (DMO), undertaken at the same time as this Audit. The recent Defence Management Review conducted by Elizabeth Proust, among other reviews of Defence's performance, provided valuable input to the Audit.

The consulting team undertook both extensive and intensive analyses of Defence's finances, operations and management processes. The team comprised 9 full-time consultants, based in Australia, supplemented by 11 part-time experts with relevant experience from McKinsey's overseas offices. Extensive use was made of the consulting firm's databases and prior experience in comparable overseas defence work.

The data and information for the team's analysis came from a wide range of sources, within and outside the Department of Defence. During the course of the Audit, the consultants and I interviewed and worked with over 250 individuals from Defence and visited 18 establishments. Outside the

Department of Defence, we consulted with the Departments of Finance, Treasury, and Prime Minister and Cabinet (PM&C), as well as ASPI, the Defence Force Remuneration Tribunal and others.

The work was conducted on an interactive basis to keep relevant stakeholders regularly informed of progress. This involved regular review meetings with the Secretary of Defence and the Chief of the Defence Force (Sec/CDF), the Defence Committee, the Audit Steering Committee comprising the Secretaries of Finance, Treasury and PM&C and Sec/CDF, and the relevant Ministers. The purpose of this extensive interaction was to ensure the validity of our analysis, minimise inconsistencies with other work, and to help prepare the organisation for the fundamental reform program that is recommended in our report.

Indeed, the need for fundamental reform is the major conclusion of the Audit. The reform activities in which Defence has been engaged over many years need to be continued, consolidated and intensified. Deep reform is required to:

- Provide much greater transparency in the \$22 billion annual budget for Australia's Defence
- Understand better the underlying drivers of the costs of Defence
- Develop a funding model that accurately reflects the cost drivers and promotes discipline in Defence spending
- Provide a more informed basis by which Government can choose where and when to spend our money to provide the most effective capability to defend Australia
- Achieve the required productivity and efficiency gains necessary to fund required capability.

The required reforms are detailed in the report. Achieving them will require leadership and discipline—qualities that are in abundance in our Defence forces. Other countries and organisations have faced and dealt with similar challenges. I am confident that Australia's Defence organisation can do the same or better.

Part of the reason for my confidence comes from the constructive relationship the Audit team has enjoyed with the Department. Mr Nick Warner, Secretary, and Air Chief Marshall Angus Houston, CDF, have set

the tone for a frank, open and analytically robust basis for interaction. I would like to acknowledge their valuable contribution. Lieutenant General David Hurley and each of the service chiefs (Air Marshall Mark Binskin, Vice Admiral Russell Crane and Lieutenant General Ken Gillespie) have provided unfettered access for the Audit team. Similarly, Mr Phillip Prior, CFO, Mr Mike Pezzullo, Deputy Secretary White Paper, Dr Stephen Gumley, CEO DMO, Mr Steve Merchant, Mr Phil Minns, Mr Martin Bowles, Mr Greg Farr, Vice Admiral Matt Tripovich and their staff have not only provided data to the team, but also valuable insights. We have agreed often and disagreed frequently—but always on a constructive basis.

A further reason for my confidence that Defence can meet the challenges presented by this reform agenda is their commitment to target the top end of the estimated savings range of \$1.3 to \$1.8 billion per annum. It is a very positive first step.

The initial savings estimates and reform recommendations were developed between May and November 2008. Then, from December 2008 to February 2009, the consulting team worked closely with teams from Defence, to ensure:

- A common understanding of our methodology and recommendations. Given Defence's commitment to target the top end of the savings range, the need for this common understanding was essential.
- Agreement with our savings estimates and our recommended approach to realising savings. This is a necessary precondition for proper implementation and 'banking' the savings.
- Current Defence plans and Audit recommendations were properly integrated and accurately dimensioned to create one Strategic Reform Program.

In addition to working with Defence on the magnitude of savings available, the team worked hard to agree on the pace of reform, and the speed at which savings can be realised. Defence has committed to implement the operational cost savings identified in the Defence Budget Audit, which will total \$15 billion across the decade. Prior to the Audit, Defence had identified operational cost savings from individual groups and services, worth \$5 billion over the decade 2009/10 to 2018/19. These savings have effectively been integrated with or replaced by the Audit savings.

Finally, work has been done to prepare preliminary cost estimates and, while much further work will need to be done to refine these prior to final approval, the team have agreed that reasonable estimates have been prepared.

I wish to acknowledge and thank the team from McKinsey & Company, led by Dr Rufus Black, Mr David Dyer and Dr Simon Blackburn. The team has worked tirelessly on this project applying their strong analytical skills most productively. They need to be commended on the depth of their analysis and the clarity of its presentation. The team were ably supported by four full-time team members from Defence: Traci-Ann Byrnes, Lieutenant Colonel Phil Moses, Ellen Swaveley and Glenn Whatman.

I would also like to acknowledge the valuable contribution of my small but dedicated secretariat. Mr Mike Gibson not only contributed insight and analysis but, along with Mrs Sonia Dowsing, also made sure that all administrative matters were never a strain on myself and the team.

With the completion of this report, one phase of the reform process is complete and another must begin. It would be far too simplistic to take the numerical targets for efficiency gains from this work, lock them into future budget forecasts and assume they will somehow be realised. It would also be a mistake to set aside the numbers and concentrate only on process improvement. Defence should be accountable for reaching the total savings targets to which they have committed. Provided Defence remains true to implementing the changes in work practices outlined in the report and committed to delivering the overall saving, allowing some flexibility in individual line item savings is appropriate.

Everyone who has been involved in programs that have achieved lasting reform knows that a balance is required between aspirational targets and process change. That is what we recommend in this report. That is the key to a much more efficient and a much more effective Australian Defence Force.



George Pappas

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Executive Summary

Australia's \$22 billion annual spending on Defence is under intense scrutiny and constant pressure. A commitment by Government to a real increase in funding of 3% pa for the next decade seems insufficient to provide for all of Australia's defence needs. The real cost of military equipment continues to rise, the operational demands and strategic challenges for our defence forces remain high, and the call on the national budget from other priority areas is considerable. The current general economic downturn intensifies these pressures.

Many nations face a similar situation, but those with a highly effective defence budget and operations management gain a strategic and national advantage—they free up resources for investing in a sustainable strategic edge and reduce the pressures on other areas of national budgets.

The Department of Defence, the Australian Defence Force (ADF) and the Defence Materiel Organisation (DMO)—which we have collectively referred to as 'Defence' in this report—have a substantial record of management reform and, in a number of areas, are looked to by other nations as an exemplar. In recent times, the Kinnaird Review has led to major improvements in the procurement of military equipment, and the Proust Review established a substantial agenda of management improvement. There is, however, a general recognition that more reform is required. Hence, this audit has been commissioned to complement the White Paper process and a series of Companion Reviews of key areas of the Defence business.

All this work sets out a challenge to write a new chapter of reform that will keep Defence ahead of budgetary pressures—pressures which, given Australia's strategic circumstances and size, are as great as those of any Western country.

To support Defence's next chapter of reform this report:

- Explores and explains the cost pressures on Defence, and the drivers of these pressures
- Identifies the opportunities to get ahead of the cost pressures through:
 - A tighter budget process
 - Driving productivity in Defence
- Describes the required approach for reform, which will enable Defence to capture improvement opportunities.

Implementing the recommended reforms creates the opportunity for Australia to have the most lethal and productive force of its size in the world.

UNDERSTANDING THE COST PRESSURES ON DEFENCE

There are significant underlying cost pressures on the Defence budget. These pressures mean that simply to maintain today's military capability will cost more in real terms over the long run. Should Government choose to increase Australia's military capability, those costs would increase further.

The underlying cost pressures on Defence to maintain today's capability are understood best if the budget is disaggregated into three categories (military equipment, personnel, and facilities and other operating costs), each with its own particular set of long-term drivers.

- **Military equipment costs** grow in real terms because every generation of Specialised Military Equipment (SME) improves in capability. For example, a 2005 fighter aircraft has superior thrust-to-weight and radar performance compared to a 1970s model. As the generational replacement of equipment occurs so do real cost increases to maintain the same number of platforms. We have calculated that this requires a real growth rate of 3.5% in capital expenditure on SME, just to replace today's equipment. To deliver the capabilities proposed in the recommended Force Structure Option requires a real growth rate of 4.2%.
- **Personnel costs** are subject to the real cost pressure of sustaining constant levels of combat personnel, and countervailing downward pressure from the productivity savings that can be obtained from military and civilian support functions.
 - Military personnel costs increase in real terms because wages rise faster than inflation, but the number of military personnel required to maintain today's capability remains roughly the same.
 - Support personnel costs are subject to downward pressure because productivity gains more than offset the rate of wages growth. For example, real efficiency gains are possible in areas such as maintenance, supply chain and human resources functions (for example, payroll processing).

Over the long run, we calculate that this means Defence personnel costs will grow at 0.4% in real terms. If additional personnel are required, as per the recommended Force Structure Option, then costs will grow at 1.1% until the new workforce target is reached and at 0.5% thereafter.

- **Facilities and other operating costs** have a diverse set of drivers that range from construction costs, which have increased above underlying inflation, to computer service costs, which have grown below underlying inflation. This basket of drivers largely balances out and we calculate that it will grow at 0.7% in real terms.

The current funding arrangement of 3% real growth is committed until 2017/18. The weighted average real cost growth above the Non-Farm GDP Implicit Price Deflator (NFGDP-IPD) for the decade starting 2018/19 (based on the current projected mix of military equipment, personnel, and facilities and other operating costs in that decade) is:

- 1.8% just to maintain today's capability (replacing existing equipment, with no additional personnel)
- 2.2% to fund the recommended Force Structure Option.

These figures do not include the cost of remediating existing capability gaps.

The analysis reveals that for Defence to remain within, or to get ahead of, long-term cost pressures, two areas are critical:

- Tight management is required of the whole process of planning, budgeting, acquiring and sustaining. The process needs to ensure that the right funds are spent on the right capability, at the right price, and at the right time.
- Productivity gains need to be made in support costs, especially support personnel costs. Without these gains the real cost growth in Defence will be substantially higher.

MANAGING COST PRESSURES THROUGH A TIGHTER BUDGET PROCESS

Tight management of the entire budget process is essential for Defence to stay within the constraints created by long-term Defence cost pressures. There are many opportunities to tighten the management of each stage of the process.

- **Funding** that actually matches the underlying costs of Defence is essential to help manage long-term cost constraints. This requires a change from the current funding model, which does not reflect underlying cost drivers, and which results in cycles of over and under funding

This situation can be improved by a funding model that enables Defence to maintain current capability. This model is based on a tailored basket of inflators and different growth rates for the four main categories of expenditure (military equipment, personnel, facilities and other operating

costs), followed by providing additional funding for any remediation or increases in capability, plus no-win, no-loss funding for operations.

- **Strategic planning** that tightly links strategic objectives and required capability with the actual force structure is critical—this will ensure there is no leakage of expenditure on the acquisition of capability that does not match strategic requirements. If leakage occurs, Defence’s cost pressures will grow substantially.

The current risk of this leakage can be reduced by tightening the links between strategy and capability acquisition. Measures that will achieve this include: more specific and clearly prioritised strategic guidance; focusing on the delivery of whole capabilities rather than platforms; and a new unit to manage end-to-end processes.

- **Accurately forecasting** major acquisitions, and the operating costs associated with them, is necessary for developing Defence’s long-term budget. This will allow Defence to stay within cost constraints as current systematic underestimates put substantial pressure on the budget.

Defence can improve forecast accuracy by: using a more consistently applied and systematic costing methodology; better understanding today’s Defence costs; improving governance and oversight of cost estimates; and increasing the experience and expertise of those conducting the forecasting.

- **Effective planning and managing major equipment expenditure (programming)** is important because schedule delays (slippage) lead to: significant unplanned expenditure for maintaining often increasingly expensive legacy platform costs; increased project costs; and even the requirement for additional capability to fill gaps. The most significant reason for slippage today is the high proportion of developmental (36%) and Australianised (49%) versus Military Off The Shelf (MOTS) (19%) equipment that is being purchased.

Where feasible, the extent of slippage should be reduced by purchasing more MOTS equipment and improved management of the technical risk associated with leading edge and modified equipment. To reduce slippage, the practises of over planning and over programming, which are used to manage the project and cash management consequences of delays, will need to change. While some slippage is inevitable, management practices will need to move from a planning-based model to a time-based planning model. As slippage reduces, changes in contingency management and provision will be needed. Currently, there is sufficient slippage that contingency does not need to be called upon in any year; however, with reduced slippage, contingency will start to be required.

MANAGING COST PRESSURES THROUGH INCREASED PRODUCTIVITY

To successfully manage the cost pressures Defence faces, increased productivity in the way combat forces are supported and capability is delivered will be required. In some limited cases it will also require reducing the cost to provide the combat forces themselves. Productivity is not, and cannot be, about compromising effectiveness or capability, or the ability to attract and retain high-quality people. Rather, productivity in Defence is about more efficient ways to get work done and lower input costs.

More efficient ways to get work done in Defence can be achieved in three ways:

- **Creating a lean military support backbone.** Defence has an integrated ‘backbone’ of military support functions: maintenance of military equipment; inventory management; and supply-chain management. The opportunity exists to significantly increase the productivity of this backbone by:
 - Consolidating physical facilities and standard types of work
 - Applying the principles of lean operations to redesign the way work is done (for example, work practices and end-to-end processes)
 - Increasing cost-conscious decision making
 - Developing greater expert commercial capabilities.

These productivity improvements will save Defence between \$354 and \$615 million per year in operating costs and provide a one-off saving of \$218 to \$398 million.

In addition to cost savings, improvements in these areas will significantly enhance the effectiveness of Defence’s military capability. Specific opportunities identified within the five platforms examined include:

- [REDACTED] increase in sea days for Collins Class submarines
- [REDACTED] additional serviceable F/A-18 Hornets on the flight line
- [REDACTED] increase in availability for critical Land Rover variants.

These enhancements to capability are indicative of the improvements that could be expected across other platforms.

- **Creating efficient enterprise support functions.** There is a significant opportunity to improve the efficiency of the enterprise support functions (Human Resources, Finance, Defence Support Group, ICT, and sustainment procurement) by:
 - Completing the shift to a more centralised service provision

- Introducing lean practices to the way work is done
- Reducing the use of contractors
- Shifting to a largely civilian and professionalised non-deployed workforce.

These productivity improvements will save Defence between \$363 and \$406 million per year in operating costs.

- **Capturing efficiency while reforming ICT.** A holistic ICT transformation is planned to significantly improve the quality of the ICT infrastructure provided to Defence. While the current focus on the transformation effort is primarily on quality, there should be an increased focus on capturing the significant efficiencies in the process.

These reforms could save Defence 15 to 30% per year in operating costs, dependent on the future ICT strategy. These savings are estimated at \$215 million per year, but have not been analysed in detail because the ICT strategy is beyond the scope of this review.

Reducing the cost of Defence inputs can be achieved in three ways:

- **Reducing non-equipment procurement costs.** Defence procures a wide range of commercial products and services such as building services, travel and relocation services. Clear opportunities exist to reduce these costs by:
 - Procuring more competitively priced products and services. For example, unbundling routes and removing price arbitrage on removal contracts.
 - Changing the specifications for what is required to obtain less costly products, where doing so will not compromise capability. For example, increasing the procurement requirement that military clothing is imported from low cost countries.
 - Changing patterns of use. For example, making greater use of Defence's extensive video-conference network rather than undertaking single day travel.

These improvements can save Defence between \$326 and \$518 million per year in non-equipment expenditure.

- **Reducing the cost of major equipment procurement.** Although a long-term task, there are significant opportunities to reduce the cost of major equipment procurement through:
 - Procuring a higher proportion of MOTS equipment
 - Increasing the level of competition for major equipment acquisition and sustainment contracts

- Reviewing the proportion of local sourcing which is not justified by strategic requirements.

Purchasing a greater proportion of MOTS (which the most recent Defence Capability Plan (DCP) plans for) and increasing the level of competition on major contracts (which partially overlaps with savings identified in the lean backbone section) could ease cost pressures by \$345 to \$660 million, but these are not ‘banked’ as savings.

- **Reducing the cost of combat capability through the use of Reserves.**

Beyond support functions, there is also an opportunity to deliver the same military capability at a lower cost through a flexible surge model. This model makes expanded use of Reserves and deployable contractors.

These changes could reduce the cost of combat capability by ~\$50 million per year.

The total productivity dividend from all of these measures is in the range of \$1.3 to \$1.8 billion per year, and a one-off saving of \$218 to \$398 million. The extent of reform required to capture these savings will take 3 to 5 years. The operational cost savings already identified by Defence (as part of the Defence Savings Plan, also known as ‘E2’) have been integrated with or replaced by the Audit savings, which provide analytical substance, much greater detail and show where Defence can go further to realise additional savings.

Removing the long-term structural inefficiencies of a fragmented estate. This can be achieved by starting the process of consolidating estates into an efficient superbase model, laying the foundation for the next ‘S’ curve in Defence productivity. A superbase model would dramatically reduce subscale base costs, extensive travel and relocation expenses, and the costs associated with managing a complicated supply-chain network.

The estimated yearly savings from a superbase model that would meet Australia’s strategic requirements would increase over time (assuming a staged consolidation), and could reach \$700 to \$1,050 million by 2035 (in 2008 dollars).

DRIVING DEEP REFORM IN DEFENCE

Defence has the opportunity to create a strategic and national advantage by managing a tighter budget process and driving a Defence productivity agenda. To achieve that advantage, Defence needs to establish two programs:

- **A deep reform program** aimed at fundamental changes in the way Defence conducts business. The program will be built on:

- Challenging targets and establishing a clear vision to be the world's most productive defence force
- Establishing strong line ownership and leadership
- Fundamentally redesigning the way work is done
- Creating expert commercial and high-level executive capability.

Deep reform inevitably takes time because it requires not just process change but also culture change. A realistic timeframe for this type of program is 3 to 5 years.

- **An outputs-driven budget management model.** This will create the management framework needed to support the reform program, and provide the incentives for sustained productivity improvement even after the reform program has ended.

The model creates clear accountability for the Service Chiefs to deliver defence output required by the CDF Preparedness Directive, while also substantially increasing their authority to manage their budget and operations. At the same time, the support functions are given clear accountability and authority to drive down their overhead costs by moving to more efficient service models, while also driving down the cost of their services by negotiating lower input prices.

In conclusion, a program of this scale is ambitious and wide-ranging, particularly for a Government organisation. These reforms would create:

- Transparency that brings clarity to the strategic, operational and managerial decisions taken at all levels of Defence
- Discipline in decision making and execution, due to clear, effective processes
- Efficiency in operations, due to a constant drive for improvement
- Flexibility as Defence is able to use resources, especially people, to maximum effect.

The national importance of Defence's mission, and the cost pressures Defence will continue to face, requires reform of the extent outlined above. We reiterate the prize: implementing the recommended reforms creates the opportunity for Australia to have the most lethal and productive force of its size in the world.

Part A. Understanding the cost pressures on Defence

There are significant underlying cost pressures on the Defence budget. These pressures mean that simply to maintain today's military capability will cost more in real terms over the long run. Should Government choose to increase Australia's military capability, those costs would increase further.

The underlying cost pressures on Defence to maintain today's capability are understood best if the budget is disaggregated into three categories (military equipment, personnel, and facilities and other operating costs), each with its own particular set of long-term drivers.

- **Military equipment costs** grow in real terms because every generation of Specialised Military Equipment (SME) improves in capability. For example, a 2005 fighter aircraft has superior thrust-to-weight and radar performance compared to a 1970s model. As the generational replacement of equipment occurs so do real cost increases to maintain the same number of platforms. We have calculated that this requires a real growth rate of 3.5% in capital expenditure on SME, just to replace today's equipment. To deliver the capabilities proposed in the recommended Force Structure Option requires a real growth rate of 4.2%.
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Over the long run, we calculate that this means Defence personnel costs will grow at 0.4% in real terms. If additional personnel are required, as per the recommended Force Structure Option, then costs will grow at 1.1% until the new workforce target is reached and at 0.5% thereafter.

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These figures do not include the cost of remediating existing capability gaps.

The analysis reveals that for Defence to remain within, or to get ahead of, long-term cost pressures, two areas are critical:

- Tight management is required of the whole process of planning, budgeting, acquiring and sustaining. The process needs to ensure that the right funds are spent on the right capability, at the right price, and at the right time.
- Productivity gains need to be made in support costs, especially support personnel costs. Without these gains the real cost growth in Defence will be substantially higher.

1 The real cost drivers for Defence

In this chapter, we disaggregate Defence's cost drivers to better understand the cost pressures it faces. We use this disaggregation to demonstrate that maintaining today's relative capability will cost an additional ~1.8% pa in real terms.

First, we define what we mean by 'today's relative capability'. We then decompose the Defence budget and, assuming Government wants to maintain today's level of relative capability, assess what drives each major cost area: (i) military equipment; (ii) personnel; and (iii) facilities and other operating costs.

Strategic choices and relative capability

The strategic objectives the Federal Government requires from Defence, and the capabilities Defence needs to acquire and sustain, are the primary determinants of Defence cost. Government sets strategic objectives based on its perception of the external environment and its risk appetite. The strategic planning process, especially the White Paper, should articulate the external environment and how it is likely to change, and help Government determine its risk appetite. If potential adversaries are upgrading or expanding their armed forces, if new threats requiring additional capabilities emerge, or if Government wants to increase Australia's relative edge over potential adversaries, then a step-change in capability is required. This could take the form of: (a) a greater quantity of resources (for example, additional submarines or a new battalion); and/or (b) more sophisticated resources (for example, replacing equipment more rapidly or acquiring equipment closer to the technical frontier). We have not investigated the need for, or the costs of, these sorts of strategic choices—that is the role of the White Paper. Instead we have disaggregated the cost of maintaining today's relative capability.

The cost of maintaining today's relative capability

We have disaggregated the major components of Defence expenditure and what drives them. In essence, Defence costs grow in real terms (that is, above inflation) because every generation of Specialised Military Equipment (SME) is more capable than the previous one, and because it is difficult to realise (in a cash sense) any productivity gains from military personnel.

We have estimated the cost of maintaining today's relative capability. This estimate excludes the impact of any strategic choices that Government may or may not make in response to the external environment (for example, potential adversaries investing heavily in military force or acting in a manner which suggests the risk of conflict is greater) or its risk appetite.

Our disaggregation takes current expenditure as the starting point. Part C of our report identifies substantial efficiency improvements, which would change the composition of expenditure (for example, reducing the portion of labour). We have not built these efficiencies into our calculations, nor have we included the cost of remediation—although we have been given many examples where Defence personnel believe there are serious holes in the organisation's capabilities that need to be remedied.

It is important that the cost drivers of Defence are clearly articulated to: (a) give Government confidence it is spending resources responsibly; (b) provide clarity on the capability Government can expect in return; and (c) enable Defence to manage those resources in a disciplined manner. For these reasons, rather than conflate long-term cost drivers with one-off efficiencies and remediation, we: (a) address the long-term cost drivers in this section; (b) discuss the implications for funding and budgeting in Part B; (c) quantify the one-off efficiencies in Part C; and (d) propose a mechanism to capture these efficiencies and use them for remediation in Part D.

We emphasise that Chapter 2 explains how we believe the actual amount of funding Defence receives in annual appropriations should be calculated, while this chapter sets out what the cost drivers are. To present real figures, we have used the Australian Non-Farm GDP Implicit Price Deflator (NFGDP-IPD) to remove nominal price effects—because it is a reference point familiar to Government and Defence. In Chapter 2, we recommend a more tailored basket of inflators be used for funding purposes.

1.1 DRIVERS OF MILITARY EQUIPMENT CAPITAL AND SUSTAINMENT COSTS

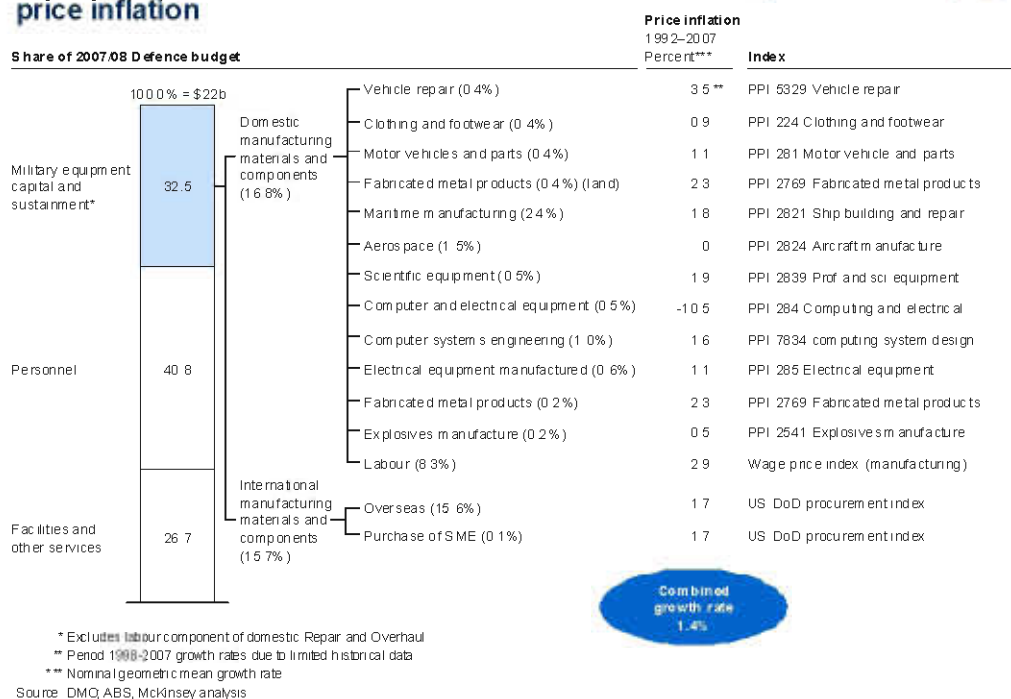
Thirty-three percent of Defence expenditure is allocated to military equipment capital and sustainment—purchasing specialised military equipment, including explosive ordnance and inventory. This figure excludes domestic labour associated with repair and overhaul.

Exhibit 1 presents a detailed disaggregation of military equipment capital and sustainment costs, which we mapped to specific price inflation indices (for

example, the Producer Price Index (PPI) for aircraft). This basket of inflators grew at 1.4% pa between 1992 and 2007—below the NFGDP-IPD figure of 2.4%.

Exhibit 1

Military equipment and sustainment costs: share of budget and underlying price inflation



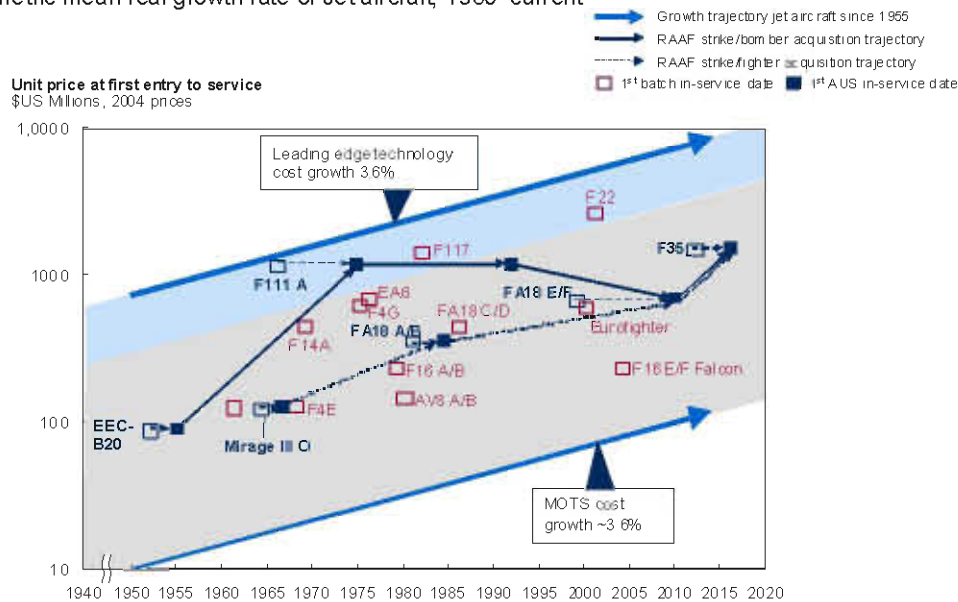
The real driver of cost is increased capability. Every generation of SME significantly improves in capability. For example, a 2005 fighter aircraft has superior thrust-to-weight and radar performance compared to a 1970s model. In real terms, this translates to a higher per unit purchase price.

Exhibit 2 shows the unit cost of jet aircraft (in 2004 dollars), at the time of first entry to service. The regression line through the graph illustrates a 3.6% pa real cost increase. The graph helps illustrate how choices about the type and timing of equipment purchases determine the cost per unit.

Exhibit 2

Growth trajectory of Australian acquisitions vs broader mix

Geometric mean real growth rate of Jet aircraft, 1950–current*



* Real with respect to US CPI
Source: DMO/CDG analysis, interviews, Janes

- Aircraft such as F-111, F-117 and F-22 were at the leading edge of technology at the time they were first introduced into service. Others, such as the F/A-18 (both A/B Hornets and E/F Super Hornets) were further from the technical frontier. This is reflected in their unit costs.¹
- Australia has maintained a similar distance from leading edge technology for strike/fighters over time—from the Mirage, through the F/A-18 Hornet and potentially the F-35. These aircraft were also purchased relatively soon after the first batch in-service date. This approach—where every generation of aircraft has a similar level of technical sophistication for its era and has a similar gap between the first batch in-service date and the first Australian in-service date—would translate to ~3.6% real growth. A similar position has been chosen over three generations of equipment.
- Australia moved closer to leading edge technology when it replaced the Canberra B20 with the F-111, which has remained in service for a particularly long period. The F/A-18 E/F Super Hornet is further from the technical frontier. The purchasing pattern here is very different:

- The cost of going from a B20 to an F-111 would have been greater than 3.6% pa because of the transition closer to the technical frontier
- The cost of moving from the F-111 to the Super Hornet would be less than 3.6% pa because of the move away from the technical frontier
- Moving from a Super Hornet to an F-35 would be another steeper gradient—because compared to the F-35, the Super Hornet will have been in service for a much longer period prior to the proposed Australian entry date. The rate of cost escalation would be greater than 3.6% pa.

The type and timing of equipment purchases determine the cost per unit which, combined with the quantity, determine the overall cost.

The analysis in Exhibit 2 was performed by the Defence Materiel Organisation (DMO) and Capability Development Group (CDG) scientists, who have completed the same, detailed and rigorous analysis for a number of different types of equipment (Exhibit 3) and from which we have built our analysis.

Exhibit 3

Historical escalation rates of specialist military equipment

Item	Real growth, Percent ¹	Item	Real growth, Percent ¹
Electronic platforms	1.8	ASW helicopter	7.6
Frigate/destroyer	4.0	Attack helicopter	8.9
Patrol vessel	2.5	Medium/heavy helicopter	6.1
Conventional submarine	4.0	Cargo/utility helicopter	3.4
Aviation capable	1.4	Reconnaissance UAV	6.8
General purpose amphibious	1.5	Main battle tank	4.7
Amphibious assault	2.4	Fire vehicles	1.9
Support vessel	0.8	Armoured personnel carrier	3.1
Auxiliary oiler	1.8	Infantry fighting vehicle	3.1
Auxiliary supply	2.7	Supply/truck/ lorry/utility vehicle	1.0
Landing craft (ferries and dinghies)	2.8	Towed artillery	4.7
Fighter/strike	3.6	Self propelled artillery	5.2
Fixed wing electronic platform	1.9	Mine counter measures	4.4
Transport/tanker craft	5.0	Mortar	1.2
Primary trainer aircraft	6.3	Machine gun/pistol	4.7

Weighted average growth rate of recommended force structure option = 3.5%

¹ Real with respect to US CPI
Source: FACET 20 05, DMO/CDG cost escalation report 2005, CDG interviews, McKinsey analysis

¹ Unit price is a useful but imperfect proxy for proximity technical sophistication. Production scale effects can also affect the unit price—the sheer scale of the F-35 production in comparison with the F-22 at least partially explains its lower unit price.

The recommended Force Structure Option, developed as part of the White Paper process, provides a 20-year plan for the capability replacements required—a sufficiently long sample to give us confidence it captures the major capability choices required in the future.² We worked with the CDG to classify the recommended Force Structure Option into three types of expenditure:

- Equipment that is a similar distance from the technological frontier as the equipment it is replacing—essentially a like-for-like replacement one generation on. CDG identified 198 items in this group.
- Equipment that is more than a like-for-like replacement one generation on. CDG identified one item in this group.
- Equipment that is an entirely new capability. CDG identified 23 items in this group.

We excluded the entirely new capabilities and the effect of leaping ahead more than one generation.³ The expenditure weightings on the rest of the 20-year recommended Force Structure Option were multiplied by the escalation rates in Exhibit 3, to create a weighted average growth rate for military equipment capital and sustainment costs. This gives an annual growth rate of 3.5% in real terms (above the NFGDP-IPD).

We note three implicit assumptions in our work:

- That the cost of sustainment equipment grows in line with platform acquisitions. We believe this is justified, given that ~50% of inventory stocks are repairable items (and these turn over quickly, relative to other Defence inventory), which can increase in capability (for example, new radar units replacing older models). In addition, another 22% are guided weapons, which are complex pieces of equipment in their own right.
- That the current level of expenditure on capital equipment and sustainment is an appropriate base from which to grow.
 - The White Paper process has built Force Structure Options from the current baseline (at different growth rates) and, while there are pressures on what is affordable, there is no indication that today's equipment acquisition baseline is either markedly insufficient or too generous. Our

² An alternative approach would have been to use the existing force structure, but this would have implicitly assumed that the existing force structure is the appropriate structure for the future.

³ We kept this item in the baseline (on the basis that some form of replacement would be required), but used the growth rate to replace it with a 'like-for-like replacement one generation on'.

terms of reference preclude us from recommending a quantum of funding, so we have not investigated this further, other than to satisfy ourselves the implicit assumption is valid.

- We note there are cost pressures on sustainment with requests from the Services for additional funding to support ageing platforms. Adequate funding for sustainment is obviously necessary to maintain today's relative capability, and is likely to be an area requiring remediation. In Chapter 6, we observe that it is also an area with significant opportunities for efficiencies.
- That US Consumer Price Index (US CPI) and the Australian Non-Farm GDP Implicit Price Deflator will continue to be similar. The cost-growth rates used in Exhibit 3 were converted (where necessary) to US dollars at the year of entry into service, then deflated using the US CPI. Over the past 15 years, the growth rates of CPI and NFGDP-IPD have been 2.6% and 2.4%, respectively.

1.2 DRIVERS OF MILITARY AND CIVILIAN PERSONNEL COSTS

Personnel costs are 41% of the budget and include salaries, superannuation and allowances/bonuses. We note that Defence usually includes other costs such as health and housing as 'personnel'. This is appropriate for budgeting, but given the cost drivers are different, we have assessed them separately in section 1.3.

Personnel costs have been assessed using economy-wide, wage-cost pressures for two reasons:

- Defence competes for personnel in the Australian labour market, and in the long run wages need to grow in line with the rest of the economy to remain competitive.
- Using a Defence-specific wage inflator creates an element of moral hazard—there is less incentive to manage wage growth closely if it is automatically reimbursed.

An appropriate productivity target for Defence

This section explains why we believe the long-run cost of the 'support' portion of the Defence workforce should exhibit zero growth in real terms. The following section disaggregates the workforce into six categories, defines those categories which are 'support' versus other, and discusses the appropriate growth rate for the non-support elements of the workforce.

Across the Australian economy, wages have risen faster than inflation. Total Average Weekly Earnings (AWE) from 1984 to 2007 grew at 3.9%, while NFGDP-IPD over the same period was 3.2%—a real increase of 0.7% pa. Across the economy, however, increases in productivity have offset these wage rises. The Wage Price Index (WPI), and similar indices that precede it,⁴ grew at 3.1% over the same period—approximately equal to NFGDP-IPD, implying roughly zero real wage cost growth. An alternative measure, the Real Unit Labour Cost series reported by the ABS shows, on a national level, that the cost of labour per unit of output has decreased in real terms by 0.5% pa between 1984 and 2008.⁵

We have assumed that wages will continue to grow in real terms at ~0.7% pa, in line with historical data, and that after an initial step-change in productivity—associated with the initial reform program—Defence will maintain zero real wage growth on support personnel, by achieving an additional annual productivity saving of ~0.7%. We believe this is an appropriate productivity target for three reasons:

- **It is based on economy-wide historical data.** Our estimate of ongoing labour productivity is based on comparing the WPI to AWE. While there are alternative measures of labour productivity, these are ‘partial productivity’ measures which attribute all changes in output to the change in the volume of labour. These measures therefore tend to overstate the contribution of labour to overall productivity gains (which could, for example, be driven by capital deepening). Economy-wide labour productivity has been estimated at an average of ~1.8% over the past 30 years, although some industries have realised much larger improvements.⁶

The WPI removes the effect of changes due to the ‘inherent productivity of employees’ by removing wage movements that are dependent on changes in a range of personal attributes (including experience, qualifications and skill levels). The WPI also excludes any bonuses or commissions based on

⁴ As movements in productivity can take a long time to appear in official statistics, we have used historical data dating back to 1984 (the start of the AWE series). WPI data is only reported from 1998, and in Appendix 1 we describe how we used the Wage Cost Index and Award Rates of Pay Index to construct a WPI composite series dating back to 1984. We compared the results of this analysis with those for the period 1998 to 2008: there was no difference in real growth in AWE (compared to the NFGDP-IPD), and the WPI/WPI composite was within 0.1% of NFGDP-IPD in both periods.

⁵ ABS Series 5206.0, Table 38, series A2433077V. We also reviewed US data since 1973, which showed a similar pattern of average compensation tracking at or below productivity gains (US Economic Policy Institute).

⁶ *Intergenerational Report 2007*, Commonwealth of Australia; ABS Series 5204.0, Table 15, various series.

individual employee performance. However, the WPI is not adjusted for other causes of increased multi-factor productivity and capital deepening.

By contrast, the AWE series captures all wage movements, including those driven by the ‘inherent productivity of employees’, bonuses and commissions. While period-to-period movements in the two series are not directly comparable, sustained differences over time do provide an indication of the level of labour productivity growth.

While there are some limitations when comparing the WPI and AWE, which are detailed in Appendix 1, comparing the two avoids many of the problems of partial productivity measures, as the effect of increased capital productivity is captured in both series, and cancelled out when the two are compared.

The estimate of labour productivity derived from comparing the WPI to AWE and used in this report of ~0.7% per annum is a lower end estimate.

- **There are factors which constrain Defence from realising higher ongoing levels of productivity gains.** Defence can realise productivity improvements by applying new management and operational practices, changing organisational arrangements and introducing new technologies. Private sector firms can also realise economies of scale by merging or acquiring rival firms, or by expanding the scope of their operations to new products or geographies. Security criteria are likely to constrain the extent to which Defence is able to outsource or offshore some of its operations, limiting the ability to realise economies of scale. Further, while investment in new systems and technologies can improve productivity in administrative and other support functions, the extent to which productivity can be driven by capital deepening is limited compared to some other industries, such as mining or manufacturing. As a result, we believe using the lower productivity estimate obtained by comparing WPI to AWE is appropriate for Defence.
- **It is realistic given Defence should realise a significant step change in productivity over the next 5 years.** Chapter 7 of this document analyses the opportunity for Defence to create more efficient enterprise support functions, and remove ~3,500 positions. On a base of ~22,000 support staff, this constitutes a one-off reduction of 16%. Over 5 years, this ‘step change’ constitutes an average of 3.3% in increased productivity per year. Combining this initial 3.3% pa ‘step change’ in productivity with a 0.7% pa ongoing productivity improvement yields an average of 1.4% pa over the next 20 years.

Applying labour productivity assumptions to the Defence workforce

Translating productivity gains into a monetary saving requires a steady downsizing of the workforce. If Government's strategic objectives require the military workforce to be a constant size, then Defence cannot realise productivity savings in monetary form—any productivity gains are effectively reinvested in capability. It is important, therefore, to distinguish roles which have a direct (even one for one) relationship with capability (such as the number of infantry) from those roles which have an important but more flexible link to capability (the number of trainers, for example, could be reduced as new training techniques or simulators are introduced). We disaggregated the workforce into six groups:

- **Combat and combat-related military staff.** We have assumed no productivity savings are realised from combat and combat-related military staff—this is based on two reasons. The main reason is that Government has traditionally set a target size for the Australian Defence Force (ADF), and productivity gains cannot be realised in a cash form if employee numbers are fixed. Second, the number of combat and combat-related military staff has a direct relationship with capability. We have, throughout our report, taken an approach of ensuring capability first and only then looking for efficiencies. We have classified 76% of military staff as being in combat or combat-related roles at any one time.⁷ Assuming there are no productivity savings—and assuming real wages grow in line with historic real wage growth across the Australian economy—wage costs are expected to grow at 0.7% pa in real terms.
- **Civilian Intelligence and Information and Communications Technology (ICT) Operations staff.** We have assumed no productivity savings are made from the civilian intelligence and ICT Operations staff, who also have a direct relationship with capability. These staff constitute only 3% of the Defence workforce and wage costs are expected to grow at 0.7% pa in real terms.
- **Military support staff.** We have assumed productivity savings can be realised from military staff in support roles, so that wage costs are not expected to grow in real terms. Many of these staff perform roles that are critical for sustaining military capability, but the relationship between employee numbers and capability is not as 'one for one' as the number of soldiers in an infantry battalion, for example. We believe many of these roles

⁷ These include: Combat Force HQ, Brigade and Division level troops; pilots and flight line support; at sea and fleet command roles; Logistics; Training; Joint Operations Command; Chief Information Officer Group (CIOG) Operations; and Intelligence, Security & International Policy (IS&IP).

can be performed more efficiently over time, allowing productivity gains. We have classified 22% of military employees as military support.⁸ This amounts to ~11,000 employees. Productivity gains of 0.7% pa imply a reduction of ~80 personnel per year. While many of the military personnel working in military support roles are in ‘respite’ positions, and will rotate back to combat or combat-support roles, we identify in Chapter 7 (on workforce reform) over 1,100 military roles which could be civilianised—due to those roles not being deployable and not being required for respite. Therefore, productivity gains can be realised from this portion of the workforce without compromising frontline capability. We note that if our Chapter 7 recommendations were fully adopted, then productivity gains would be harder to capture from these staff.⁹

- **Civilian support staff.** We have assumed productivity gains can be realised from civilian staff (excluding Intelligence) that constitute 27% of the workforce. As a result, wage costs of civilian support staff will not grow in real terms.
- **Staff required for the acquisition of major equipment capital.** We have assumed productivity gains can be realised from the DMO and CDG staff (military and civilian) responsible for major capital equipment acquisitions. We note, however, the large volume of capital expenditure anticipated in the 10-year Defence Capability Plan (DCP) and the 20-year recommended Force Structure Option. Cross-industry procurement benchmarks indicate that average corporate organisations can increase the capital per person ratio by ~3% pa in real terms. Applying a capital growth rate of 3.5% (from section 1.1 above) and deducting productivity gains of 3% on a procurement spend per employee basis, leaves a 0.5% increase in DMO and CDG personnel. This net increase represents a significant productivity gain. Combined with a wage increase of 0.7%, this translates to a 1.2% real increase in wage costs, on ~7,300 employees.
- **Contractors, including Professional Service Providers (PSPs), and repair and overhaul labour.** We have assumed that productivity gains can be captured by reducing over time the number of contractors, and by driving continuous improvement in the outsourced repair and overhaul operations.

⁸ This includes personnel reporting into the office of CDF, VCDF, DSG, CIOG support, CDG and DMO.

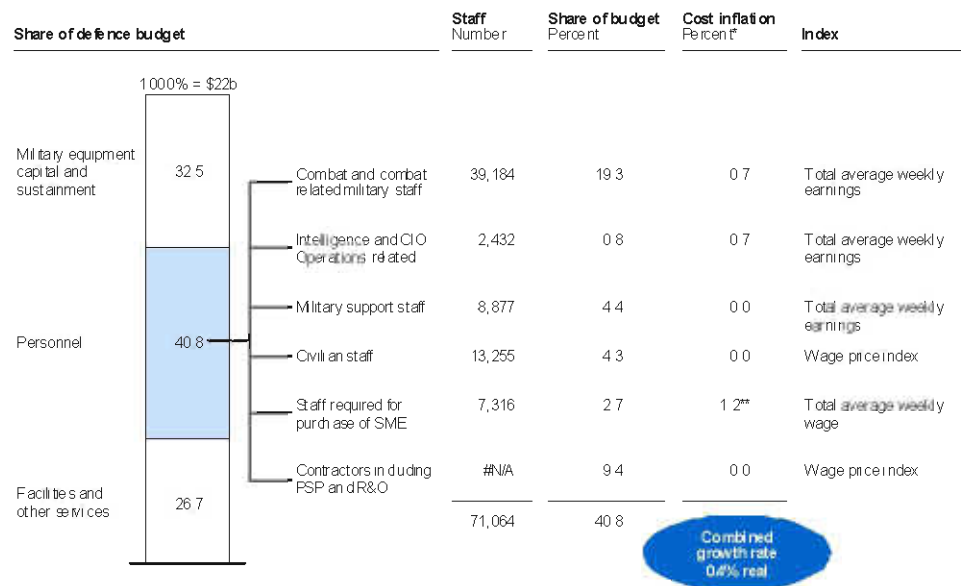
⁹ If Defence does reduce the number of military positions by creating leaner enterprise support functions, and through civilianisation, then the number of military positions excess to respite requirements will diminish. The difference in the overall real cost of Defence from capturing productivity savings on military support staff is less than 0.1%.

Our review of maintenance and the supply chain in Part C has demonstrated there is substantial opportunity to drive improvements here.

The weighted average of these six components gives an annual labour growth rate of 0.4% in real terms (Exhibit 4). Superannuation and allowances/bonuses are assumed to grow in line with overall wages growth.

Exhibit 4

Personnel cost drivers



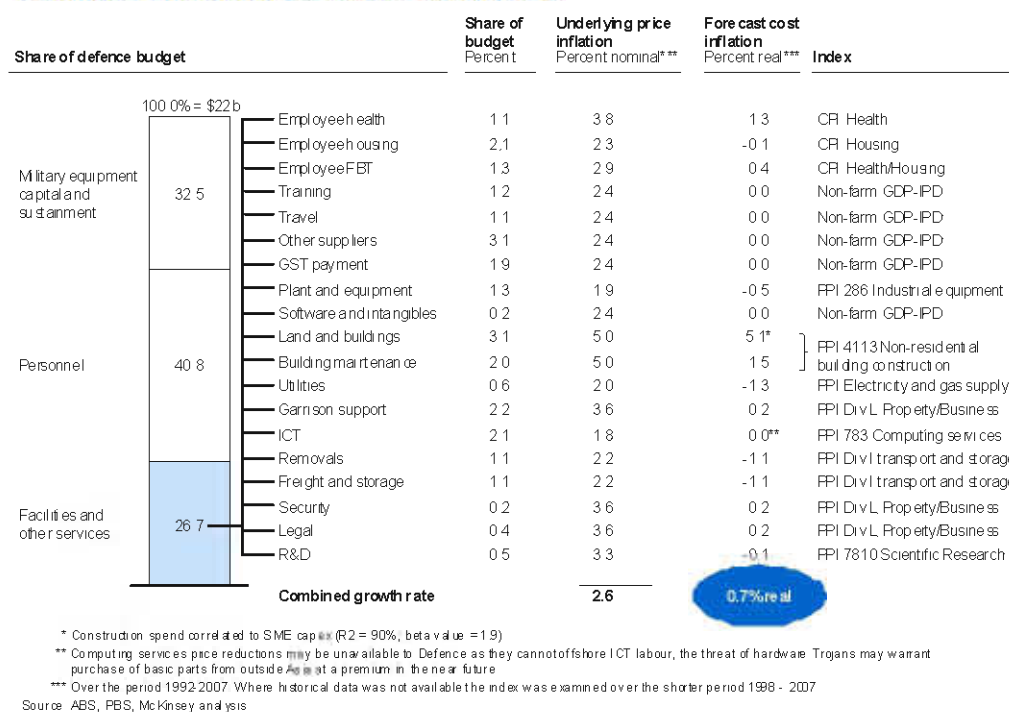
* Real, above NFGDP-IPD
 ** Comprising annual 0.5% increase in workforce and 0.7% real increase in earnings
 Source: ABS, PMKeys, Workforce planning, PBS, McKinsey analysis

1.3 DRIVERS OF FACILITIES AND OTHER SERVICES COSTS

Facilities and other services costs total 27% of the Defence budget. We disaggregated these costs into items such as building and facilities maintenance, garrison support, communications and ICT, housing, and health. We aligned these types of expenditure with standard price indices, such as the Non-Residential Building Construction Index and the CPI Health Cost Index (Exhibit 5). Where data allowed, we used the historic growth rates from 1992 to 2007 (as the economy had settled following the 1989 recession, and moved into a new, lower inflation paradigm). Taking a 15-year time series also gave a longer term record of the economic cycle, rather than a shorter period which could be distorted by the recent resources boom.

Exhibit 5

Facilities and other services cost drivers



Some of the price indices have grown faster than the NFGDP-IPD, while others have experienced slower growth rates. The CPI Health Cost Index has grown above underlying inflation, driven by increasingly expensive medical technology and an ageing population. The Non-Residential Building Index has also grown above underlying inflation, driven by low productivity growth in that sector. Computing services have grown below underlying inflation, due to rapid developments in technology (for example, microprocessor performance), technology-driven productivity gains, and labour arbitrage from offshoring.

The weighted average of the indices in Exhibit 5 has grown at 2.6% pa, compared with the NFGDP-IPD, which grew at 2.4% pa from 1992 to 2007.

We note that the unique security requirements of Defence ICT means it may be unable to fully leverage price reductions available from the broader computing services sector. Current requirements prevent labour offshoring and future threats from hardware trojans means Defence may have to purchase basic hardware outside of Asia at a premium. We have therefore assumed zero real growth (rather than the negative growth implied by the relevant index) for ICT.

We then checked for second order effects by correlating Defence's expenditure on these items with capital expenditure on SME over the period 2000/01 to 2007/08.

While only a small sample, it did confirm that new equipment tends to need new facilities (such as larger hangers or appropriate storage for electronic equipment).

The effect of a small amount of ‘real growth’ in underlying inflation (that is, inflation above the NFGDP-IPD), the upward adjustment to the computing services inflator, and the second-order quantity effect on facilities combines to real growth of 0.7%.

1.4 THE LONG-TERM COST OF DEFENCE

Real growth in the long-term cost of Defence is driven by: (i) the increased capability of SME; (ii) the fact that productivity gains from combat and combat-related personnel cannot be readily realised by employing fewer personnel; and (iii) some real growth in the cost of other services, and the need for new facilities to support new military equipment.

Weighting the three elements (military equipment capital and sustainment costs; military and civilian personnel costs; and facilities and other services costs) gives a weighted average real growth rate of 1.8% above the NFGDP-IPD. As noted at the outset of this chapter, this is the cost of maintaining today’s relative capability.

The effect of the new capabilities and personnel proposed in the recommended Force Structure Option is to increase the long-run cost of Defence to 2.2% real growth above the NFGDP-IPD.

- The new and next-generation equipment in the recommended Force Structure Option raises the growth rate on military equipment capital and sustainment to 4.2% real, which would increase the long-run cost of Defence to 2.2% real growth above the NFGDP-IPD.
- The proposed increase of 4,000 military positions over the next 7 years (assuming they are all combat or combat related) would raise the growth rate on personnel to 1.1% real growth. Once the additional personnel required by the recommended Force Structure Option are employed, then personnel costs would grow at 0.5%.
- The effect of both new capabilities and increased personnel is to increase the long-term cost of Defence to 2.4% real growth above the NFGDP-IPD, while new personnel are being recruited. This would move back to 2.2% once the new personnel target is reached.

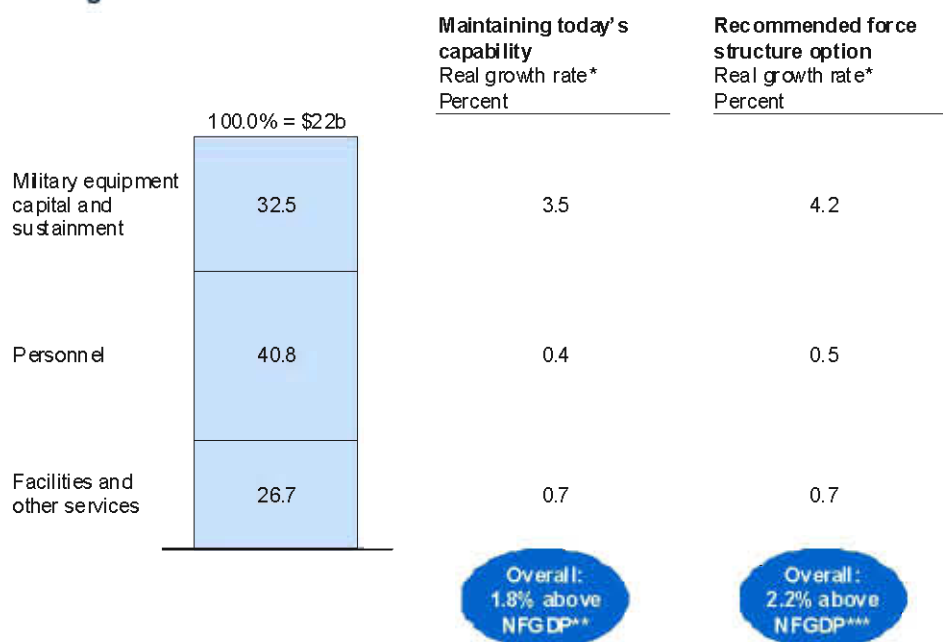
These figures (summarised in Exhibit 6) do not include the cost of remediating existing capability gaps, nor do they include a one-off rebasing for productivity gains. A change in the strategic environment, or the Government’s risk appetite,

which sets new strategic objectives, will change the extent of real cost growth required.

We note that the weightings of equipment, personnel and other costs will change over time—for example, the proportion of the budget that is capital will grow versus the proportion that is labour, due to the differential growth rates on these areas of expenditure.

Exhibit 6

The long run cost of defence



* Above Non-Farm GDP-I/PD
 ** Forecast average for the period 2019–2028, growing to 2.2% by 2039–2048
 *** Forecast average for the period 2019–2028, growing to 2.5% by 2039–2048
 Source: McKinsey analysis

Part B. Managing cost pressures through a tighter Budget process

Tight management of the entire budget process is essential for Defence to stay within the constraints created by long-term Defence cost pressures. There are many opportunities to tighten the management of each stage of the process.

- **Funding** that actually matches the underlying costs of Defence is essential to help manage long-term cost constraints. This requires a change from the current funding model, which does not reflect underlying cost drivers, and which results in cycles of over and under funding

This situation can be improved by a funding model that enables Defence to maintain current capability. This model is based on a tailored basket of inflators and different growth rates for the four main categories of expenditure (military equipment, personnel, facilities and other operating costs), followed by providing additional funding for any remediation or increases in capability, plus no-win, no-loss funding for operations.

- **Strategic planning** that tightly links strategic objectives and required capability with the actual force structure is critical—this will ensure there is no leakage of expenditure on the acquisition of capability that does not match strategic requirements. If leakage occurs, Defence’s cost pressures will grow substantially.

The current risk of this leakage can be reduced by tightening the links between strategy and capability acquisition. Measures that will achieve this include: more specific and clearly prioritised strategic guidance; focusing on the delivery of whole capabilities rather than platforms; and a new unit to manage end-to-end processes.

- **Accurately forecasting** major acquisitions, and the operating costs associated with them, is necessary for developing Defence’s long-term budget. This will allow Defence to stay within cost constraints as current systematic underestimates put substantial pressure on the budget.

Defence can improve forecast accuracy by: using a more consistently applied and systematic costing methodology; better understanding today’s Defence

costs; improving governance and oversight of cost estimates; and increasing the experience and expertise of those conducting the forecasting.

- **Effective planning and managing major equipment expenditure (programming)** is important because schedule delays (slippage) lead to: significant unplanned expenditure for maintaining often increasingly expensive legacy platform costs; increased project costs; and even the requirement for additional capability to fill gaps. The most significant reason for slippage today is the high proportion of developmental (36%) and Australianised (49%) versus Military Off The Shelf (MOTS) (19%) equipment that is being purchased.

Where feasible, the extent of slippage should be reduced by purchasing more MOTS equipment and improved management of the technical risk associated with leading edge and modified equipment. To reduce slippage, the practises of over planning and over programming, which are used to manage the project and cash management consequences of delays, will need to change. While some slippage is inevitable, management practices will need to move from a planning-based model to a time-based planning model. As slippage reduces, changes in contingency management and provision will be needed. Currently, there is sufficient slippage that contingency does not need to be called upon in any year; however, with reduced slippage, contingency will start to be required.

2 Aligning funding with the long-term cost of Defence

Managing ongoing inflationary cost pressures and long-term cost constraints requires a funding arrangement that matches the underlying costs of Defence. In this Chapter we review the origin of Defence's current funding arrangements, how these funds have been spent and some lessons from the 2000 White Paper process. We then recommend a new funding model, more clearly linked to the drivers of cost identified in Chapter 1, and note that some of the input price risks Defence faces (including fuel and indirect foreign exchange) could be better managed by the Department of Finance and Deregulation.

2.1 THE ORIGIN OF CURRENT FUNDING ARRANGEMENTS

Throughout the 1990s, Defence funding did not grow in real terms. In the 2000 White Paper, the Government estimated that Defence spending needed to grow by an average of about 3% pa in real terms over the decade. There was a four-fold rationale:

- Personnel costs had increased faster than the broader community, which was attributed to an increased average skill level as Australian Defence Force (ADF) and civilian staff were dramatically reduced in number. It was anticipated that real per capita wage costs would grow at 2% pa (excluding additional personnel costs for capability enhancements), given the constraints that the required force structure and preparedness requirements would place on increasing labour productivity.
- Investment was required for new capabilities and to maintain existing capabilities—capital expenditure of \$13.7 billion and a further \$2.3 billion to fund the additional personnel and operating costs associated with those capabilities. This spending was divided into five areas: land forces, air combat, maritime forces, strike, and information capability.
- To be prepared to meet the heightened operational tempo experienced by the ADF, the Government concluded that it was important to maintain higher levels of readiness, with associated costs to the Defence budget—the size and nature of these costs were not further specified in the public release of the White Paper.

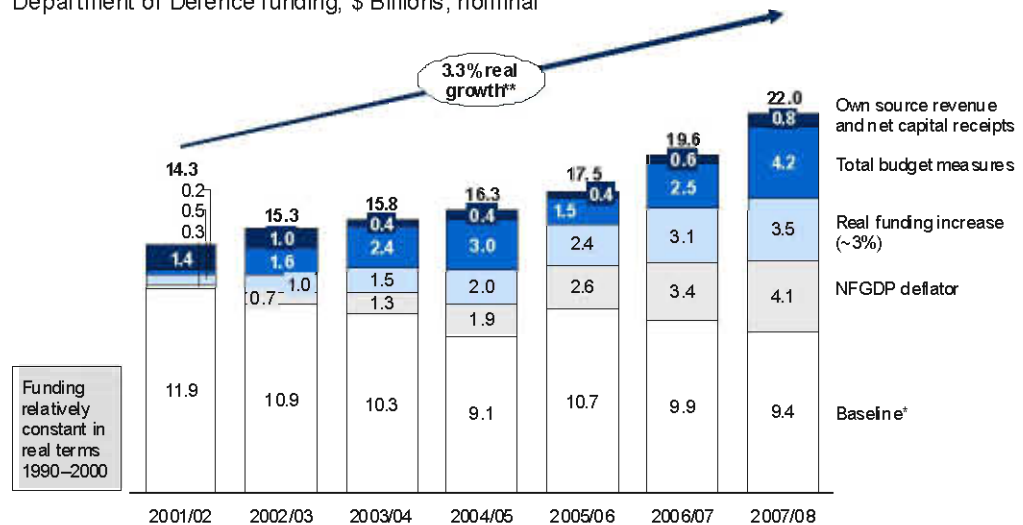
- Operating costs were not expected to grow in real terms—it was anticipated they would be offset by efficiencies and investments in new/refurbished systems.

The funding envelope of ~3% real growth was originally committed for the 2001/02 to 2010/11 period. In the 2006–07 Federal Budget, the then Government extended this commitment to 2015/16. In the 2008–09 Federal Budget, the Government extended the commitment to 2017/18. Since 2001/02, the Defence budget has increased by 3.3% pa, in real terms, when specific budget measures are included (Exhibit 7).

Exhibit 7

Defence funding has increased in real terms by more than 3% since 2000/01. This envelope has been committed until 2017/18

Department of Defence funding; \$ Billions, nominal



* Baseline includes savings measures and other adjustments (eg foreign exchange)
 ** Deflated using Non-Farm GDP Implicit Price Deflator
 Source: Defence 2000 Our Future Defence Force, Portfolio Budget Statements 2006–07 (Defence Portfolio), Portfolio Budget Statements 2008–09 (Defence Portfolio), Department of Defence Revenue Model (Ernst & Young), ABS, Econ Tech, McKinsey analysis

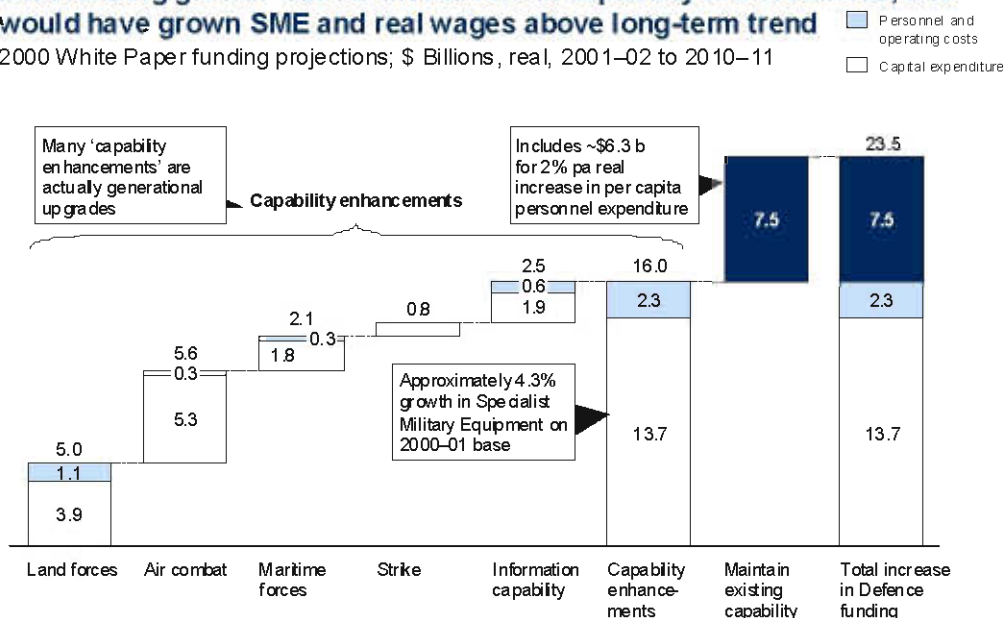
2.2 GROWTH IN EXPENDITURE SINCE THE 2000 WHITE PAPER

Comparing the 2000 White Paper’s planned areas of new expenditure against actual expenditure shows that expenditure on military equipment has been below plan. Personnel costs (but not wages) and operating costs have grown well ahead of plan. An exact decomposition is difficult due to the aggregated numbers presented in the White Paper, but three observations stand out (Exhibit 8).

Exhibit 8

Real funding growth was for investment in capability and readiness, and would have grown SME and real wages above long-term trend

2000 White Paper funding projections; \$ Billions, real, 2001–02 to 2010–11



* 2000 White Paper calls for \$16bn of capability enhancements (mostly capital expenditure). An additional \$7.5bn is allocated to 'maintain existing capabilities'. The explanation for 3% real growth in funding is premised on real per capita personnel costs of 2%, zero real growth in operating costs (due to efficiency gains including capital investments in better systems offsetting underlying cost pressures), a substantial investment in new capabilities, and increased readiness.

Source: Defence 2000 Our Future Defence Force, McKinsey analysis

- The largest component of new spending in the 2000 White Paper was \$13.7 billion for capital expenditure on land forces, air combat, maritime forces, strike and information capability. Over 10 years, this represented a 4.3% real growth relative to the 2000/01 budget for the purchase of Specialised Military Equipment (SME). During 2000/01 to 2007/08, Defence has increased expenditure on SME by ~3.3% in real terms, representing an underspend of ~\$850 million over the past 7 years.
- The second largest component of new spending in the 2000 White Paper was a 2% pa real increase in per capita personnel expenditure. Over 10 years, this would amount to a \$6.3 billion increase in per capita expenditure. During 2000/01 to 2007/08, the per capita cost of military employees has grown by 1.4% pa and the per capita cost of civilian employees has grown by 2.2%. While civilian and military wages should grow in line with each other, the large growth in civilian employees may have driven a 'mix effect'—where more senior employees are recruited, or employees are promoted more quickly, leading to this disparity. The weighted average growth of per capita wages has been ~1.6% pa, below the 2% planned in the 2000 White Paper.

The number of civilian employees has grown from ~16,000 to 20,572, a growth of 3.5% pa. At the same time, the number of funded military positions has grown from ~51,000 to 53,167.

- The biggest growth area has been in operating costs. The 2000 White Paper assumed zero real growth in operating costs (due to efficiency gains including capital investments in better systems offsetting underlying cost pressures). It did include real growth of ~0.4% pa for additional people and operating costs (totalling \$2.3 billion over the decade). From 2000/01 to 2007/08, operating costs alone have increased by 2.6% pa in real terms. Combined with Defence's view that there is a significant shortfall for the Net People and Operating Costs (NPOC) of new capabilities, this suggests that: (i) the additional people and operating cost forecast was significantly low; and (ii) that insufficient attention has been applied to driving the efficiencies expected in the White Paper.

2.3 LESSONS FROM THE 2000 WHITE PAPER

The 2000 White Paper led to several important and positive changes in Defence's planning and funding arrangements. Committing to a long-term funding envelope and creating the Defence Capability Plan (DCP) enabled a greater focus on long-term strategic decision making. In our review of Defence, three lessons from the 2000 White Paper process were most important:

- First, the basis for real funding growth has not been clearly articulated, and this may have contributed to unplanned growth in actual expenditure. For example, Chapter 1 shows that wage cost pressures could be disaggregated into six personnel types, and appropriate growth rates identified for each type. This clarity helps improve the understanding and management of future cost pressures.
- Second, while the DCP is a vitally important mechanism for planning and managing major capital projects, it will only be fully effective when the decisions and processes that support it are well developed. There are opportunities to improve the utility of the DCP, including planning and forecasting. These are detailed in Chapters 3 to 5.
- Finally, a target of zero real growth in operating expenses needs to be supported by clearly identified savings opportunities and a plan to drive productivity gains to keep costs down. Part C sets out numerous opportunities to realise productivity gains, which will complement the current White Paper's attempts to identify efficiency gains through a series of Companion Reviews.

2.4 CREATING A MORE TRANSPARENT FUNDING MODEL FOR DEFENCE

While Chapter 1 disaggregated in detail of the Defence's cost drivers, this section reviews how the organisation's funding arrangements can be more closely linked to these cost drivers. There is a pragmatic trade-off to be made. A funding model built on a basket of multiple price indices will ensure that the price effects to which Defence is exposed are closely linked to the changes it receives in funding. On the other hand, to ensure funding is calculated appropriately across multiple categories will create a significant workload for Defence and the Department of Finance and Deregulation (to track the portion of expenditure by category with sufficient accuracy upon which to base price inflation calculations), and on Treasury to forecast these indices. Further, it risks distorting management incentives (to move spend to a category with a higher growth rate).

On balance, we believe a model comprising five specific elements will deliver a closer linkage between Defence cost drivers (including capability choices) and funding, provide greater transparency for Government and provide greater certainty for Defence. This will in turn enable better planning and budgeting:

- Funding to offset underlying inflation based on a composite of four price indices (rather than just the Australian Non-Farm GDP Implicit Price Deflator (NFGDP-IPD)).
- Funding for real cost increases disaggregated into military equipment capital and sustainment, personnel, construction and other operating costs (rather than a headline real growth number).
- Funding for new capabilities, or for equipment that is more than a like-for-like replacement one generation on.
- Funding for remediation of capability gaps.
- Funding for operations.

We do not propose a specific quantum of funding for Defence, in line with our terms of reference (it being solely a choice for Government). We note there is an obvious gap between the '3% real growth', which is currently committed until 2017/18, and the '1.8%' or '2.2%' real growth figure, which results from our decomposition in Chapter 1. As previously emphasised, this is because the 1.8% does not include the cost of strategic choices to increase capability (which many White Paper options contain, including the recommended Force Structure Option), and neither 1.8% nor 2.2% includes the cost of remediation or the benefits of a one-off step change in efficiency.

The White Paper process will generate and cost options for additional capabilities and remediation, along with potential efficiency gains. These should be prioritised and agreed by Government, to help inform the quantum of funding Defence receives.

Funding to offset inflation

Our approach was to create and test manageable baskets of indices that met two criteria:

- Forecasts for the indices exist, or are relatively easy to create
- The indices align to areas of expenditure that Defence already reports against, or can do relatively easily. This is to avoid creating an additional reporting and auditing burden for Defence to prove exactly what proportion of its budget is spent in different categories.

The year-on-year movements in these manageable baskets were tested against the detailed basket of inflators from Chapter 1, for the period 1992 to 2007. We analysed both the ‘manageable baskets’ and the NFGDP-IPD (as the default option) to assess correlation and volatility compared with the detailed basket.¹⁰

The manageable basket is preferable if it removes enough of the inevitable ‘overs and unders’ associated with a broad index, such as the NFGDP-IPD, to justify the increased complexity of its use.

Our recommended baskets, which are summarised in Exhibit 9, are:

¹⁰ The measure of correlation (R2) shows whether the two options move together. The measure of volatility, which is the slope of the line of best fit, shows whether a movement in the detailed basket is accompanied by a smaller, larger, or similar movement in the manageable basket or NFGDP-IPD.

Exhibit 9

Proposed baskets to offset funding against inflation

 Share of budget

Funding component	Forecast index	Weight in Basket* Percent	Growth required above/ below inflation index** Percent	
Defence 100%	Military equipment capital and sustainment 40%	US DoD procurement index	40	3.2
		Wage Price Index	39	
		PPI Manufacturing	21	
	Personnel 31%	Wage Price Index	100	0.7
Facilities 5%	Gross fixed capital non-dwelling construction index	100	3.0	
Other operating expenses 24%	Non-farm GDP implicit price deflator	100	0.0	

* These basket weights will shift progressively over time due to different relative growth rates between the forecast index

** Forecast average for the period 2019–2028

Source: PBS, DMD, ABS, Department of Treasury and Finance, McKinsey analysis

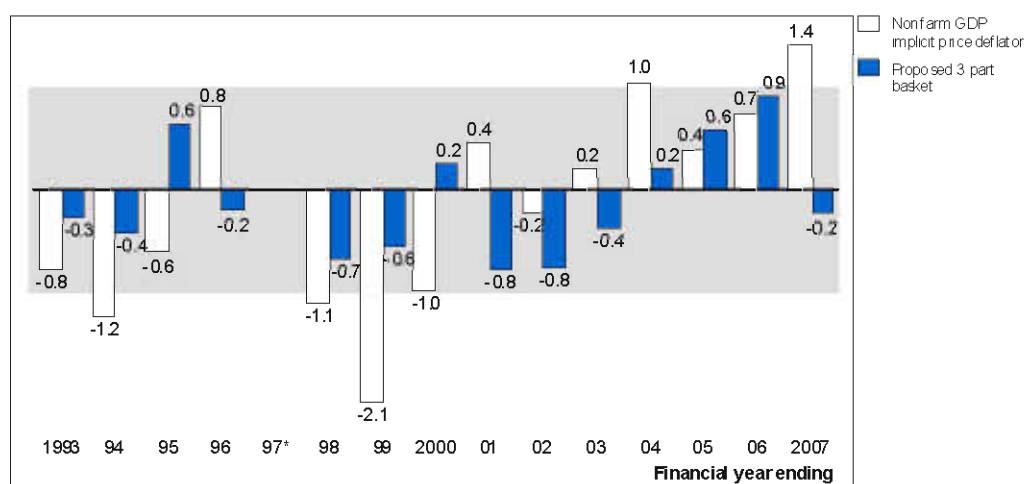
- **Military equipment capital and sustainment.** This is a combination of: (i) the US Department of Defense procurement index for equipment procured from any foreign nation; (ii) the Producer Price Index (PPI) (manufacturing) for equipment procured in Australia; and (iii) the Wage Price Index (WPI) for the contract labour component of sustainment, and the relatively labour-intensive nature of Defence equipment manufacture (relative to the PPI indices).
- To align with Defence's approach to budgeting, we have allocated the labour component of sustainment into this area (in contrast with our analysis in Chapter 1).
- These indices are, or could be, forecast:
 - Forecasts of the US Department of Defense procurement index are published regularly
 - The Commonwealth Treasury already forecasts the WPI and believes it possible to forecast an index similar to the PPI (manufacturing); however, this would require further investigation to ascertain its statistical robustness.
- The underlying spend is already tracked and reported:

- As the Defence Materiel Organisation (DMO) is a prescribed agency, there is already clear reporting of expenditure on military equipment capital and sustainment
- The foreign nation procurement component is already tracked carefully by the DMO, due to the no-win, no-loss funding arrangements on foreign exchange movements
- An analysis we examined showed the labour proportion of domestic equipment acquisition and sustainment was ~67%.¹¹ This ratio should be agreed by Defence and the Department of Finance and Deregulation, and to minimise complexity, only updated if there is a significant change.
- This basket has a higher correlation with the detailed basket, and is much less volatile than NFGDP-IPD (Exhibit 10).

Exhibit 10

Accuracy of non-farm GDP and the proposed basket of inflators to underlying military equipment capital and sustainment inflation

Percentage point difference between yearly growth rates relative to detailed basket of indices



The proposed 3 part basket (consisting of US DoD procurement index, WPI and PPI manufacturing) more accurately estimates underlying inflation of military capital acquisition and sustainment than the non-farm GDP deflator

* 1997 data included an anomalous 50% drop in PPI284 computing and electronics. This year was excluded from the analysis
Source: PBS, ABS, McKinsey analysis

¹¹ Based on a review of the indices in DMO contracts for domestic supply, assessing the proportion based on labour indices and ABS manufacturing producer price indices, by Ernst and Young, July 2008.

- Over the past 15 years, there were 3 years when NFGDP-IPD would have resulted in a significant ‘under’, and 2 years with a significant ‘over’.¹² The largest of these was in 1999, where (in 2008 dollars) NFGDP-IPD would have created a \$190 million ‘under’ on a budget of ~\$9 billion—effectively 2.1% of the budget.
 - The manageable basket did not result in any significant ‘overs’ or ‘unders’.
- **Personnel costs.** The WPI is the appropriate deflator for personnel costs:
- We have included wages, superannuation, and allowances and bonuses in personnel costs. Unlike Defence, we have not included health and housing in personnel costs.
 - The WPI is forecast by the Commonwealth Treasury¹³
 - The expenditure on salary, allowances, superannuation and leave is already reported in the Portfolio Budget Statements (PBS)
 - Personnel costs should be assessed using economy-wide, wage-cost pressures for two reasons:
 - Defence competes for personnel in the Australian labour market and, in the long term, to remain competitive wages need to grow in line with the rest of the economy.
 - Using a Defence-specific wage inflator creates an element of moral hazard—there is less incentive to manage wage growth carefully if it is automatically reimbursed.
 - In Chapter 1 we noted it is difficult to realise productivity gains as financial savings from some portions of the Defence workforce. To recognise this, we propose that personnel costs be linked to the WPI, but a portion of ‘real growth’ is added to allow for constraints on capturing productivity (discussed below).¹⁴

¹² We defined a significant ‘over/under’ as a year where the year-on-year growth in the manageable basket or the NFGDP-IPD index is at least a percentage point above/below the year-on-year growth in the detailed basket. For example, if NFGDP-IPD went up by 2 percentage points, but the detailed basket went up by only 0.9 percentage points, this would qualify as significant.

¹³ We note that current Treasury forecasts of WPI beyond the budget year could be systemically high (relative to the historical data series we have used). We recommend Defence works with Treasury to ensure appropriate WPI forecasts are used in setting budget estimates.

¹⁴ The estimate of the long-run cost of personnel assumes productivity gains are realised from portions of the workforce, but does not include the impact of any incremental productivity dividend the government imposes.

- We considered an alternative model of linking parts of the workforce to: (i) take-home pay; and (ii) the WPI. This could require an annual assessment of the proportion of the workforce from which productivity can be realised, a debate which could consume disproportionate time and resource.
- **Facilities costs.** The gross fixed capital formation non-dwelling construction index is the appropriate deflator for capital facilities costs.
 - The Commonwealth Treasury forecasts the gross fixed capital formation Non-Dwelling Construction Index (which is similar to the published Non-Residential Construction Index)
 - Capital expenditure on facilities is reported separately in the PBS (as the Major Capital Facilities Program and Medium Capital Facilities Program).
- **Other operating expenses.** We reviewed several options for other operating expenses, but were not persuaded that they met either of our two criteria. As such, we recommend that the NFGDP-IPD is the deflator used for this area of expenditure.
 - To align with Defence's approach to budgeting, we have included the cost of Professional Service Providers (PSPs) in this category. We have (contrary to Defence's usual practice) included health and housing in this category.
 - Operational expenditure is fragmented. The largest single item is consultants, PSPs and contractors, which accounts for only 10% of the total.
 - Many of the most relevant deflators for individual components of the diverse range of costs in this section are part of the PPI Divisions I and Division L series—these have only been published since 1998. As such, comparisons of manageable baskets against the more detailed basket of inflators are compromised by limited time series data.
 - The Commonwealth Treasury does not currently forecast an inflator comparable to the PPI Divisions I or Division L series.
 - We reviewed several manageable baskets for facilities and other operating expenses, but were not persuaded that any of these were, on balance, superior to the NFGDP-IPD.

Funding for real cost increases

As identified in Chapter 1, there are multiple drivers of real cost growth in Defence. Real increases in funding for Defence should be apportioned to specific areas of expenditure, rather than provided as an overall number.

- Funding for military equipment capital and sustainment should increase at 3.2% above the basket combining: (i) the US Department of Defense procurement index; (ii) the PPI (manufacturing); and (iii) the WPI. (Note that because a different deflator is being used, which has historically tracked below the NFGDP-IPD, the amount of real growth above that deflator differs from that reported in Chapter 1.)¹⁵
- Funding for personnel costs (wages, superannuation, and allowances and bonuses) should increase at 0.7% above the WPI, to allow for constraints on capturing productivity from combat and combat-related military staff and intelligence staff.
- Funding for construction should increase at 3.0% above the Non-Dwelling Construction Index—due to the second order effect whereby new military equipment requires new facilities.
- Funding for operating expenses should grow in line with NFGDP-IPD—the detailed basket we were able to construct grew in line with NFGDP-IPD between 1998 and 2007.¹⁶

Funding for new capabilities and remediation

As we have stressed, our analysis of the long-run cost of Defence is based on maintaining today's relative capability. If there are changes in the external environment or Government's risk appetite, then this could require new capabilities, or the replacement of existing equipment with more than a like-for-like replacement one generation on (as the F-111 was at the time of purchase). This would require additional funding, as would remediating any 'hollowness' or gaps in existing capabilities.

Defence should make the case for this additional funding by explicitly explaining the rationale for and benefits of any additional capabilities.

¹⁵ In addition, the definitions of Military Equipment Capital and Sustainment, Personnel and Other Operating Costs differ between Chapter 1 (a more 'academic' definition) and Chapter 2 (a more pragmatic definition which aligns with existing reporting).

¹⁶ The detailed basket grew below NFGDP-IPD by 0.1% between 1998 and 2007. The lack of available data prevents the use of a more robust time series. As per Chapter 1, we have adjusted the growth rate on Computing Services.

Funding for operations

Defence typically receives funding for operations on a no-win, no-loss basis. This funding covers work-up, deployment and remediation. Our work on sustainment revealed that high operational tempo is significantly affecting sustainment costs, through increased wear on platforms and reducing the remaining platform life. If the operational tempo remains high, then this will create demand for supplementing sustainment and early platform replacements.

We recommend a future funding model for Defence that:

- **Updates Defence funding for movements in inflation using a tailored basket of inflators.**
- **Disaggregates and allocates real funding increases into military equipment and capital, personnel, facilities and operating expenses.**
- **Requires a clear articulation of the cost of new capabilities or remediation.**
- **Requires a clear articulation of sustained efficiencies.**
- **Provides no-win, no-loss funding for operations.**

Cash delivery model

The Defence budget is price updated at each budget milestone to reflect movements in the NFGDP-IPD. For example, in the 2006/07 Defence Portfolio Additional Estimates Statements, Defence received \$205.2 million in addition to its original budget when the NFGDP-IPD estimate was revised up by 1.1 percentage points to 3.5%. In 2007/08, Defence received an additional \$62.7 million following the in-year revision.

Similar to the discussion above, there is a trade-off between providing more accurate funding and creating a pragmatic model. The effect of in-year updates is to reduce management certainty about the size of the budget to manage to. In recent years, in-year updates have delivered some windfall gains, which can reduce the level of focus on driving productivity. In future years, it may lead to an in-year downward revision of the budget, which, if the focus on productivity is matched with stretching targets, may be difficult to achieve. We believe that Defence needs to move to a more ‘outputs-driven budget management model’ (Chapter 14), which would include greater authority for groups and services to negotiate Service Level Agreements and Materiel Sustainment Agreements. This will help drive greater cost consciousness and productivity across Defence. In-year budget updates will make it harder to embed this type of budget management model.

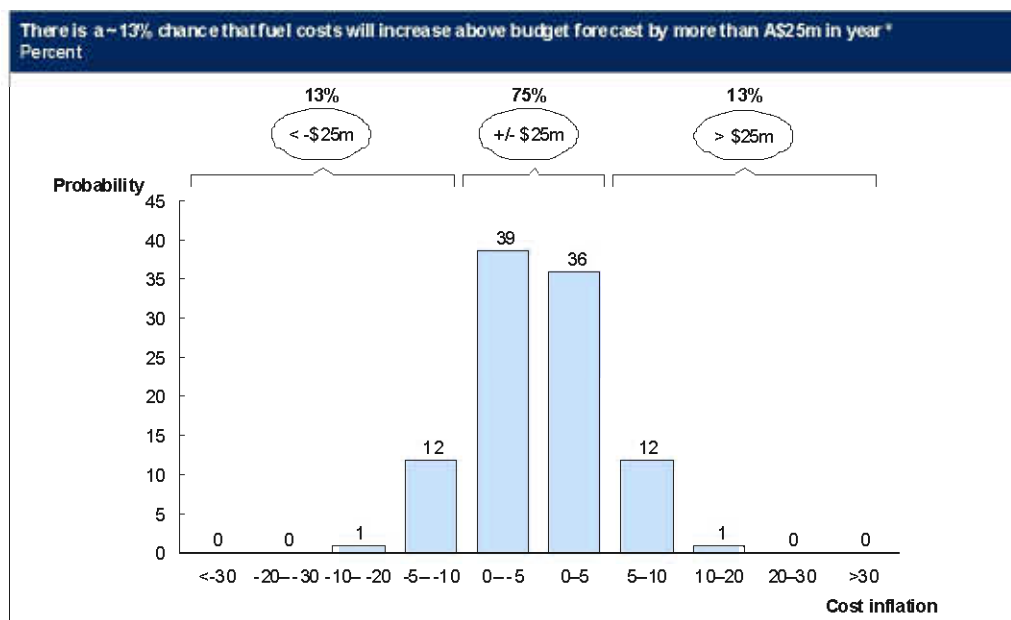
On balance, the benefits of providing greater budget certainty outweigh the benefits of the tightest possible link between funding and underlying inflation. **We recommend that updates to Defence funding for movements in inflation be determined in the annual appropriations and detailed in the Portfolio Budget Statements, and not be price updated at other budget milestones.**

2.5 INPUT PRICE VOLATILITY

There are minor risks to the Defence budget from movements in input prices. Defence spends ~\$500 million pa on fuel, the cost of which is highly volatile. To assess this volatility, we ran 5,000 Monte Carlo simulations, based on the types and quantities of fuel Defence uses, using historic exchange rate and fuel price data. There is a 13% chance that fuel costs will increase by more than \$25 million above budget in any given year—and a similar probability that they would be more than \$25 million below budget in any given year (Exhibit 11). This price volatility could be managed through hedging or self insurance. Defence does not currently have the appropriate resources to do this, and the Department of Finance and Deregulation would be the appropriate Government agency to do so.

Exhibit 11

Defence exposure to fuel price volatility



* Based on an \$500 million budget and 5000 Monte Carlo simulations
Source: Platts, Global Insight, WMM, McKinsey analysis

We recommend that Defence receive funding for a volume of fuel agreed annually on a no-win, no-loss basis.

In line with our recommendations in Chapter 14, we recommend that the Services should be able to retain and reinvest at least a portion of any savings from reduced fuel consumption to provide an incentive to monitor and reduce consumption.

Government currently manages foreign exchange fluctuations centrally, and Defence receives funding for purchases in foreign currency on a no-win, no-loss basis. This model is appropriate because it: (i) puts foreign exchange risk with the department that has the best resources to manage it; and (ii) it creates greater certainty which enables better planning of major capital equipment acquisitions.

Defence is also exposed to some ‘indirect’ foreign exchange risk. Indirect foreign exchange has impacted the cost of acquisition projects due to the appreciation of the value of European inputs into American built systems. Determining the extent of this exposure would require significant work to review existing contractual arrangements.

We recommend that Defence continue to be funded for purchases in foreign currency on a no-win, no-loss basis. Further, the DMO should review a representative sample of contracts to determine the extent of exposure to indirect foreign exchange movements. If this exposure is significant, then a mechanism to enable no-win, no-loss funding should be developed.

3 Translating strategic requirements into procurement priorities and specifications

The budget process begins with the translation of strategic requirements into procurement priorities and specifications. Views on the effectiveness of this first stage of the process vary within Defence from complete satisfaction to very pointed criticism.

We have reviewed this part of the process because these decisions shape the future cost profile of the organisation.¹⁷ We examined whether there are any risks of misalignment between strategic requirements and procurement specifications and priorities. We considered the process itself, the documents created at each stage, an audit of the documentation of select projects and interviews with people who are involved at various levels.

In conducting this analysis, we note that strategy is not the only input into capability decisions. We also note that short-term operational requirements and bottom-up gap analysis within the services may lead to the earlier acquisition of capabilities that are not a long-term strategic priority. On this we make the following observations:

- While strategy by definition takes a longer term perspective, acquisitions to address all but the most emergent situations should align with it. If not, then either the acquisition or the strategy itself needs review.
- Strategic objectives should be the primary driver of determining capability. Capability decisions derived from short-term considerations that have long-term implications for force structure and funding need to align with long-term strategic objectives.

¹⁷ In this report, and Chapters 3, 4, 5, and 10 in particular, we overlap with some of the work of the Mortimer Review. The terms of reference for the Mortimer Review focused on governance and process, while the terms of reference for this review focused on effectiveness, efficiency and arrangements for managing the Defence budget. Not surprisingly, there are many similar themes in the recommendations of both reviews.

Our examination did reveal two major classes of risk:

- The risk that strategic requirements and procurement priorities and specifications are not aligned. This risk arises because the strategic requirements used to guide the acquisition process are broadly framed and the processes used to interpret these requirements are not, in practise, particularly robust.
- The risk that the delays in delivery of Government's strategic priority capabilities will be caused at the planning stage of the acquisition cycle. The risk arises due to the limited role played by Government in the priority setting process and because of the need for broader focus not just on platforms but also on all the enablers needed to deliver them.

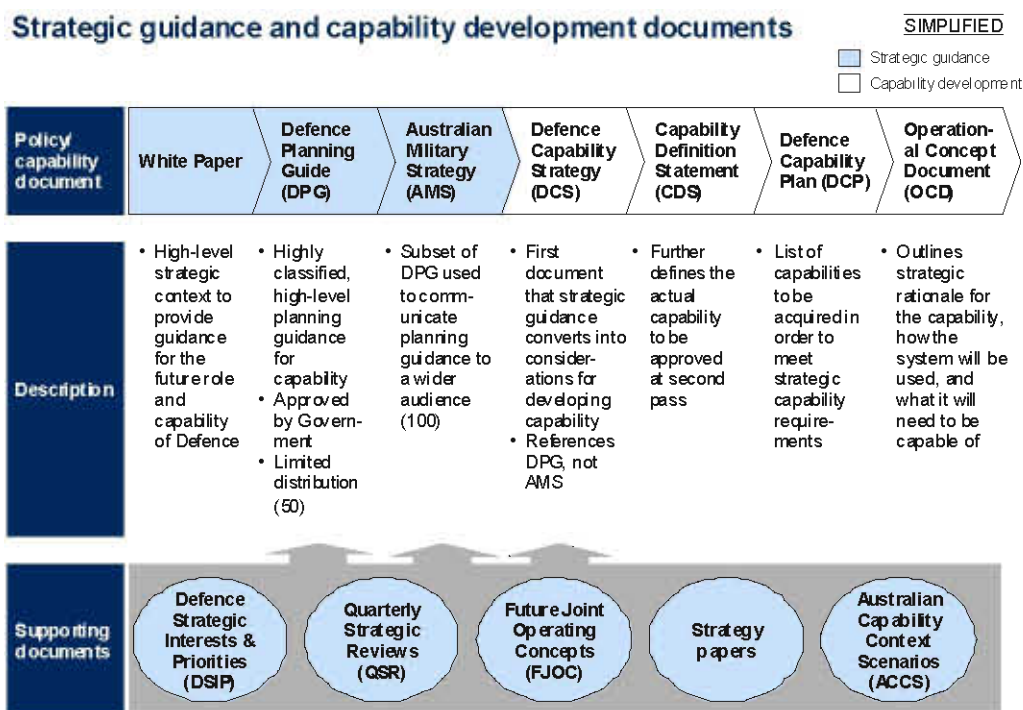
3.1 THE RISK OF MISALIGNMENT BETWEEN STRATEGIC GUIDANCE AND PROCUREMENT PRIORITIES AND SPECIFICATIONS

The first class of risk we found was the risk that strategic requirements could be mistranslated. The chief form of this risk is that the specifications of a particular platform will either not deliver or over deliver on what is required to meet strategic objectives. The cost of excess capability can be considerable and a capability shortfall will prevent Defence fulfilling its prescribed mission.

The emergence of this risk effectively begins with the strategic planning documents. These documents possess two features that create the risk:

- **Too many documents.** There is a range of documents rather than a single clear source of strategic direction (Exhibit 12 has a simplified depiction of these documents, to help the reader follow this section).

Exhibit 12



Source: DPG 2007, AMS 2007, DCS 2007, DCP 01-11 to 07-17, OCDs and CDSs for JP 2008, JP 2048, Air 7000, Air 9000

Those involved in the strategic planning process make varying cases as to why it is important to have a range of documents from the Defence Planning Guidance (DPG), the Australian Military Strategy (AMS) and the Defence Capability Strategy (DCS), down to a range of internal strategy documents within the individual services and the Capability Development Group (CDG). When we examined the justifications for acquisitions they did not consistently refer to any of these documents. While there may be justifications for having such a range of documents, the misalignment risk increases with each additional strategy document. To reduce the number of documents **we recommend the AMS be discontinued**. It essentially quotes from the DPG, and only the AMS annexes provide any real additional content. Additionally, while the DCS should be an important document that links strategic direction to capability determination, in its current form it does not provide additional content for the DPG (the majority of the DCS is excerpts from the DPG) other than the outcomes of force option testing.

- **Too little specificity.** The ‘master strategy documents’—the DPG, AMS and DCS—have limited specificity. For example, the concurrency requirements in the DPG leave extensive scope for interpretation. The consequence is that when we examined documents later in the process that sought to justify particular acquisitions, they needed to reference a wide range of other

documents to obtain sufficient information to formulate a plan for that particular capability. Specifically, there is minimal, if any, direction on capability enablers such as Air Traffic Control (ATC) radars and supply-chain capabilities.

There are strong advocates for the current form of strategy documents. They argue that those who manage later stages of the process are best placed to convert strategic direction into specific acquisitions. They also argue that the openness of the guidance provides the flexibility the system requires to deal with a changing environment. This position is highly dependent on accurate interpretations of the original strategic intent, which is not an easy task given the very broad nature of the original requirements. As we observed the process, making accurate interpretations did not appear easy. Four observations caused us particular concern: (i) the forum centred process; (ii) the overall capability development process; (iii) the profile of CDG desk officers; and (iv) the lack of an end-to-end strategy to procurement process owner.

- **The forum centred process.** It was unclear whether the forums, both formal and informal, which are heavily relied upon in the interpretive process, were sufficiently rigorous to give confidence that the strategic and procurement specifications were tightly aligned. Without having direct access to the committee meetings, we utilised a series of interviews and committee agenda, and noted the findings of a staff paper on the Defence Capability and Investment Committee (DCIC) process. Areas for potential improvement included:

- **The operation of the various capability committees.** According to internal CDG analysis, the “DCIC does not require agreement to the supporting information prior to the meeting, (for example, that supporting costs are properly representative and accurate, or that significant matters have been considered).” This has in the past led to issues subsequent to DCIC consideration. Additionally, information required for Cabinet submissions is often not received in a timely manner, and its final form may not reflect stakeholder intent. For example, we discovered that wording in the Defence Science and Technology Organisation’s (DSTO) technical risk analyses is sometimes adjusted to conform to Cabinet submission writing conventions. Although the Chief Defence Scientist agrees to the final version of the cabinet submission prior to sign-off by the Secretary of Defence and the Chief of the Defence Force (Sec/CDF), and the final Technical Risk Certification is unchanged, there is a risk that key messages and an independent perspective may be lost.

Internal CDG analysis of the committee process, although contested by some within the group, provides an additional critique of the DCIC

process. For example, that there was often little critical analysis presented with the sponsor's paper. Other findings from the internal analysis included: agendas that tended to be ad hoc; no formal accountability in the minutes; and that DCIC information requirements are significantly lower in quality and quantity than the Chiefs of Service Committee (COSC) or Defence Capability Committee (DCC). While several interviews supported these findings, they were vigorously defended by others. The important issue with committee documentation is that it is sufficient for the committee to make high quality decisions. It is unclear whether this condition exists.

- **The quality of documentation.** It took a long time for Defence to provide documentation that supported the platform choice rationale for several of the major acquisitions that we chose to examine. For example, it took several weeks to find the studies supporting the rationale for the Landing Helicopter Dock (LHD) Amphibious Ships. While we note that some of the projects we looked at were approved nearly 5 years ago, it should be easier to audit the decision trail for major projects. In the quest to discover this evidence, and noting the favourable Australian National Audit Office (ANAO) report on project documentation in CDG,¹⁸ we also discovered variable quality in project documentation—with a number not having a Capability Definition Statement; varying formats for Operational Concept Documents; and varying levels of detail regarding strategic direction. While we understand that some documentation may not exist for pre-Kinnaird projects, we were unable to find evidence of the Capability Definition Statement's function being fulfilled by any other document. This makes the process of confirming capability delivered against the capability required more difficult. It also makes deviation from strategic direction more difficult to confirm.
- **The proposed capability development process.** This process does not have clear criteria for the referral of projects to DCIC. Expensive, complex (for example, Acquisition Category (ACAT) 1&2) and strategically important projects should be reviewed by the Defence hierarchy in the DCIC prior to Government approval. The review should confirm that these projects align with the future force structure and that the business case is sufficiently robust to proceed. While some thought that clear criteria was not necessary, and that Sec/CDF should decide on which projects they review, there is a risk that insufficient time is spent on projects that should be elevated.

¹⁸ The ANAO report did not assess the presence of a Capability Definition Statement

- **The overall CDG process.** We observed that the CDG processes were not systematically designed to ensure a tight link to strategy. For example, when we analysed the Capability Development Manual we found that it set out three bottom-up processes and one top-down process (from the Defence Capability Update) to get a project into the Defence Capability Plan (DCP). It did not, however, describe in detail an end-to-end process where projects flow from strategic policy decisions or objectives. This view was contested as not being appropriate for the Capability Development Manual, and is covered in the Strategy Planning Handbook. While the handbook describes a framework whereby strategy flows into capability development, we could not, however, find an end-to-end process that describes how this occurs. The separation of strategy and capability development manuals and handbooks is indicative of the lack of an overarching view of the capability development process.

Additionally, while Force Option Testing (FOT) is an important method of testing the number and specification of capabilities required to achieve strategic objectives, the Australian Capability-Context Scenarios are still generic, and there is a risk they can be captured by special interests.

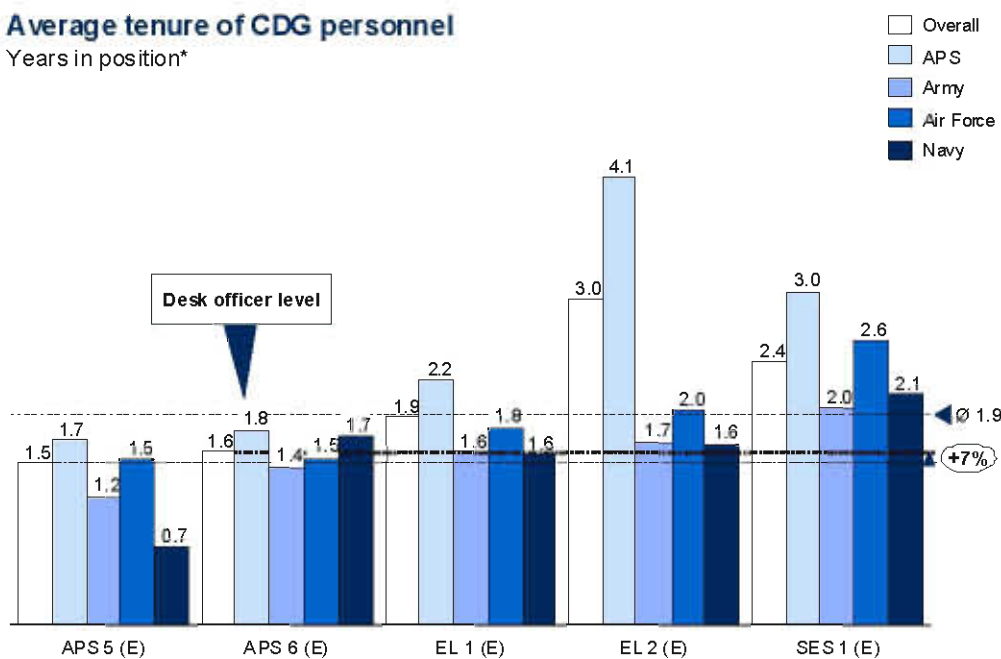
- **The profile of CDG desk officers.** The majority of CDG personnel, particularly desk officers, are not experienced in constructing robust business cases for capability acquisitions. The average tenure¹⁹ of a CDG desk officer is only 1.6 years, and this is consistent across the Australian Public Service (APS) employees and the three Services (Exhibit 13). While uniformed desk officers are experts in the military context, on average their short CDG tenures mean they do not necessarily develop expertise in the complex technical task of specifying the requirements for equipment acquisition. This risk can only be partially mitigated by training and having an experienced chain of command. These short assignments also create continuity problems in acquisition program management because multiple desk officers may be responsible for the evolution of the specifications for a single platform. Additionally, while the training available for desk officers is increasing, the actual amount of training given varies in both sufficiency and timing. Finally, although service personnel are best placed to understand capability requirements, there is agency risk in having them specify capability requirements, particularly in the presence of vague guidance and an interpretive process.

¹⁹ The average tenure calculation includes prior CDG experience at another level (for example, someone with 2 years in one role and 1 year in another role would be counted as a 3-year tenure). We have excluded current personnel, many of which have recently rotated in and would drag the average down.

Exhibit 13

Average tenure of CDG personnel

Years in position*



* Excludes incumbent personnel and aggregates multiple postings/positions into a net tenure figure. This ensures that prior experience in CDG is included in the experience of personnel currently in CDG.

Note: Similar chart appears in Mortimer Report. Methodology before calculation is slightly different.

Source: CDG personnel data, McKinsey analysis.

- **No end-to-end integrator of the planning process:** There is a hand-off of the interpretive task from Strategy to CDG at the DCS stage, but there is no single point of accountability for the long-term strategic development of capability.

3.2 REDUCING THE RISK OF MISALIGNMENT BETWEEN STRATEGIC REQUIREMENTS AND PROCUREMENT PRIORITIES AND SPECIFICATIONS

There are a number of measures that we recommend be taken to reduce the risk of the misalignment between strategic requirements and procurement priorities and specifications.

Our analysis revealed the need for greater end-to-end management of this process to reduce the risk of any mistranslation of guidance into acquisition specifications. Therefore, we recommend the formation of an independent and highly capable Force Structure Development (FSD) cell. This cell should be given the role of integrating the end-to-end process of capability development and a mandate to ensure tight alignment between strategy and capability.

The FSD would formalise the existing role of the Force Structure Review in place for the 2008 White Paper process. It would also require the FSD to have extensive involvement throughout the strategy to acquisition process, including representation on the various capability committees. While Strategy currently has a seat at all capability committees, they do not have the overarching role that FSD would have—ensuring the alignment of capabilities with the long-term direction of the force structure. Importantly, the FSD would not have a role of independent cost checkers, but should maintain a strategic focus. The CDG will retain responsibility for determining and developing the options to be presented for Government for consideration, but there must be ongoing involvement of the FSD in the process, not just on committees.

To decrease the risk of misinterpretation of the strategic guidance documents by planners we recommend that Defence:

- **Increase specificity and rationalise the number of strategic guidance documents by:**
 - **Rolling AMS annexes into DPG and removing the AMS.**
 - **Making the DCS the linkage between strategic guidance and capability development—the DCS should be jointly owned by CDG and Strategy, and used to clearly articulate strategic options, and priority capabilities and themes, for DCP development.**
 - **Developing a single document that describes the end-to-end capability planning process, and removing the Capability Development Manual and the Strategy Planning Handbook as separate documents.**
- **Implementing an ongoing feedback loop between capability development and strategy.**

To reduce the risk from insufficient governance through the decision-making forums we recommend that Defence:

- **Formalise an end-to-end capability development process from the White Paper/Defence Update through to Government approval.**
- **Develop a robust process for analysing the cost/benefit trade-offs of capability decisions and document the outcomes of capability discussions.**
- **Ensure that capability decisions are traceable and linkage to strategic guidance is clearly articulated.**
- **Record in detail the decision rationale at applicable committee meetings.**

- **Create a single repository for project information and standardise, to the greatest extent possible, the documents and status information that need to be contained in project files.**
- **Improve the effectiveness of the capability committee process through:**
 - **Increasing the accountability of committee members to adhere to the business rules for the committee process (for example, reading and agreeing on supporting documentation prior to capability committee meetings and following through on decisions made)**
 - **Improving the quality of documentation provided for committee consideration by:**
 - **Moving from groups providing input to Cabinet submissions, to making them accountable for writing specific sections of the Cabinet Submissions. In particular:**
 - **The capability definition is jointly written by the CDG and Capability Managers.**
 - **The Defence Science and Technology Organisation (DSTO) writes the section relating to technical risk.**
 - **The Defence Materiel Organisation (DMO) writes the section relating to the acquisition strategy.**
 - **Setting clear format guidelines, especially regarding the length of documents, to ensure they are appropriately concise, the facts and key assumptions are clearly set out, and there is a consistent style for all contributors that can be easily understood by Government.**
 - **Allowing time to analyse materials prior to committee meetings**

To reduce the risk associated with the profile of the CDG desk officers we recommend:

- **Increasing the level of expertise and experience in CDG by:**
 - **Increasing the project management training given to desk officers.**
 - **Developing a capability management career stream to facilitate re-use of skills in subsequent postings to CDG, DMO and other capability related positions.**
 - **Developing a career management process for the APS in Defence.**

3.3 THE RISK OF DELAYED DELIVERY OF STRATEGIC PRIORITY CAPABILITIES

The second type of risk we identified was the risk that delays in delivering the Government's strategic capabilities will be caused at the planning stage of the acquisition cycle. There are three primary causes of risk:

- **The strategy setting process does not systematically provide Government with the basis to establish clear strategic priorities for capability acquisition.** Government is not, for example, presented with a set of clear scenarios showing what the current force can and cannot undertake. Further, Government is not given options as to what scenarios additional capability will enable Defence to undertake and at what cost. Nor is Government then given the opportunity to prioritise the scenarios that it wants to be able to meet first. Without this type of process, which now occurs when White Papers are prepared every 8 to 10 years, Government cannot be certain that acquisitions will give it the capability to meet the practical priorities for which it envisages using the Australian Defence Force (ADF). We also note that a process such as this is important because it enables Government to be clear about what it currently can and cannot do with its military force.

- **The lack of explicit prioritisation.** The second cause of a risk of delay at this early stage is that while the DCS tests force structure against DPG contingencies, there is no prioritisation of capability 'themes' (such as anti-submarine warfare versus air defence versus amphibious capability) around which strategic priorities can be established.

More broadly, thematic prioritisation aside, there is no rigorous, strategy linked prioritisation process. There was some attempt to establish a more rigorous basis for prioritisation with Annex D to the DCS, but it was removed. Practically, of course, prioritisation does occur by changing the timing of projects in the DCP. The lack of rigour in this prioritisation was suggested to us by the rescheduling of capabilities without auditable rationale commensurate with the strategic significance of such a change of acquisition priorities.

- **A disjointed view on the links between the Fundamental Inputs to Capability (FIC).** Despite changes to improve the holistic view of the various elements of capability, there appears to be insufficient linkage between the acquisition process for platforms and the delivery of their enablers (such as wharfs, refuelling facilities and communications equipment). The result is that platforms have arrived without the enablers they need to create a fully functioning capability, either due to poor

programming or insufficient consideration of the requirements. This is exacerbated by a lack of clarity as to who is responsible for delivering each of the FICs, and appears to be more severe for enablers that are separate projects (such as communication architecture), implying that interdependencies between projects are not as well understood as they could be.

- **Organisational structure.** The CDG is not structured around capabilities; it is structured around environments (Land, Maritime and Aerospace). Our interviews and prior experience suggest that this structure does not foster a holistic view of capability, and that an alternative structure based around capabilities, as is the case in the UK, should be investigated to determine the potential to provide improved capability outcomes.

3.4 REDUCING THE RISK OF DELAYED DELIVERY OF STRATEGIC PRIORITY CAPABILITIES

There are a number of measures we recommend that could be used to reduce the risk of poor planning causing a delay of strategic priority capabilities.

The first step is to increase the Government's involvement in setting and prioritising strategic capability requirements. To do this we **recommend Defence:**

- **Make clear to Government how capability acquisitions fit into the desired future force.**
- **Provide Government with a list of strategic scenarios from which capabilities and planning assumptions can be prioritised, such as has occurred during the White Paper process but which should occur on a yearly basis.**
- **Consider alternative organisational structures based around capability.**

Second, to increase the rigour of prioritisation within the acquisition process, we **recommend:**

- **Introducing a process to prioritise capability goals and themes, and determine what gaps Government does not want remediated.**
- **Changing the capability development process to improve linkages between all elements of the FIC, and increasing the understanding of the interdependencies between projects.**
- **Prioritising DCP projects according to capability priority.**
- **Making programming trade-offs based primarily on capability priority, with size of potential saving or ease of offset being subsequent considerations.**

- **Introducing of a process to ensure programming changes and trade-offs are agreed to by the Force Structure Development function, to ensure that they remain consistent with strategic requirements.**

4 Improving the quality of long-term forecasts

Following decisions about what will be acquired, the next area of risk faced by the Defence budget is the accuracy of the forecast costs upon which these acquisition decisions are made. The forecasts cover the actual acquisition and the ongoing Personnel and Operating Costs (POC) required to sustain and operate the capabilities.

Our review of how costs are calculated found substantial problems with the Defence Capability Plan (DCP) and Net Personnel and Operating Cost (NPOC) estimates—the costing methodologies, the governance and oversight of cost estimates, and the capabilities of those performing the work all need improvement.

4.1 IMPROVING THE ACCURACY OF DCP FORECASTS

At the time many projects are first entered into the DCP, there is commonly uncertainty about the exact form the project will take; for example: what level of capability is required; whether there are existing options that would meet Australia's requirements; and which of those projects provides a capability that represents the best tradeoff between strategic objectives and cost. The level of uncertainty ranges from highly uncertain, in the cases where the technology for the project has not yet been invented, to a more normal level of uncertainty associated with Military Off The Shelf (MOTS) acquisitions. To address this uncertainty, the current system aims to refine cost estimates through three major stages of the DCP:

- When first entered into the DCP, costs will be a rough order of magnitude.
- As a project goes to first pass approval, cost estimates should be refined, as the scope of the project and range of options are narrowed, but estimates will still be indicative and ranged.
- At second pass approval, costs are tender quality after technical specifications are confirmed and the market is engaged to provide specific costs, including a defined contingency range.

There are problems, however, with the implementation of this process because:

- There is no mandated approach or official guidance on the methodology that should be used to develop and refine cost estimates.
- There are no consistent business processes in place to guide the collection of cost information from across the organisation.
- There is insufficient oversight of cost estimates as they progress through the process.

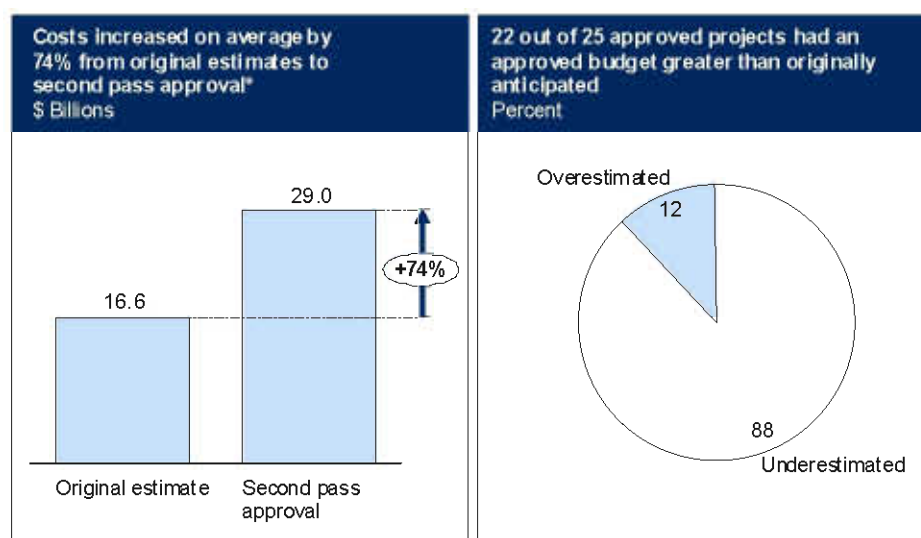
It is important to emphasise that early cost estimates cannot and will not be accurate. Requirements, costs and schedules cannot be known until the early phases of a project are conducted to understand the options available.

Acquisition cost forecasts for legacy projects have, however, been systematically underestimated by a significant amount. Analysis of 25 approved projects, from 2000 to 2008, showed costs increased by an average of 74% between the initial estimates and second pass approval. There appears to be a systemic underestimation of acquisition costs—22 of 25 projects had an approved budget greater than initially anticipated (Exhibit 14). We note that the cost escalation is a combination of Government-approved scope changes and incorrect cost estimation.

Exhibit 14

Comparison of cost estimates between DCP entry and second pass approval

Percent

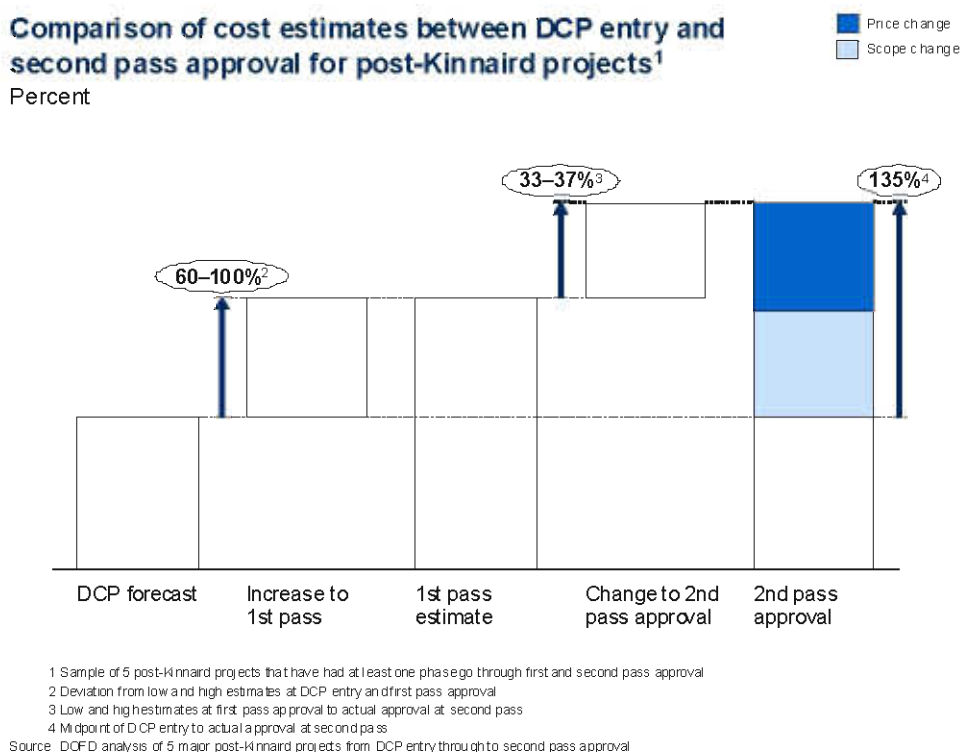


* 25 approved projects approved post 2000
Source: 'The Cost of Defence—Defence Budget Brief 2008-09', ASPI, p. 155

This systematic underestimation creates pressure on the timing and affordability of subsequent acquisitions, causing significant problems for the whole planning, budgeting and funding system.

Post-Kinnaird acquisition projects are still underestimated prior to second pass approval, but a small sample size makes it unclear whether performance has improved over legacy projects. On the small sample available, Government-approved scope changes and changes to cost estimates caused project costs to increase by an average of ~135% from the original estimate to second pass approval (Exhibit 15). Government-approved scope and price changes are (approximately) equally responsible for real cost variations from DCP entry through to the current state, including post-second pass approval changes. The majority of scope changes occur between DCP entry and first pass approval, which is the most appropriate time for these to occur.

Exhibit 15



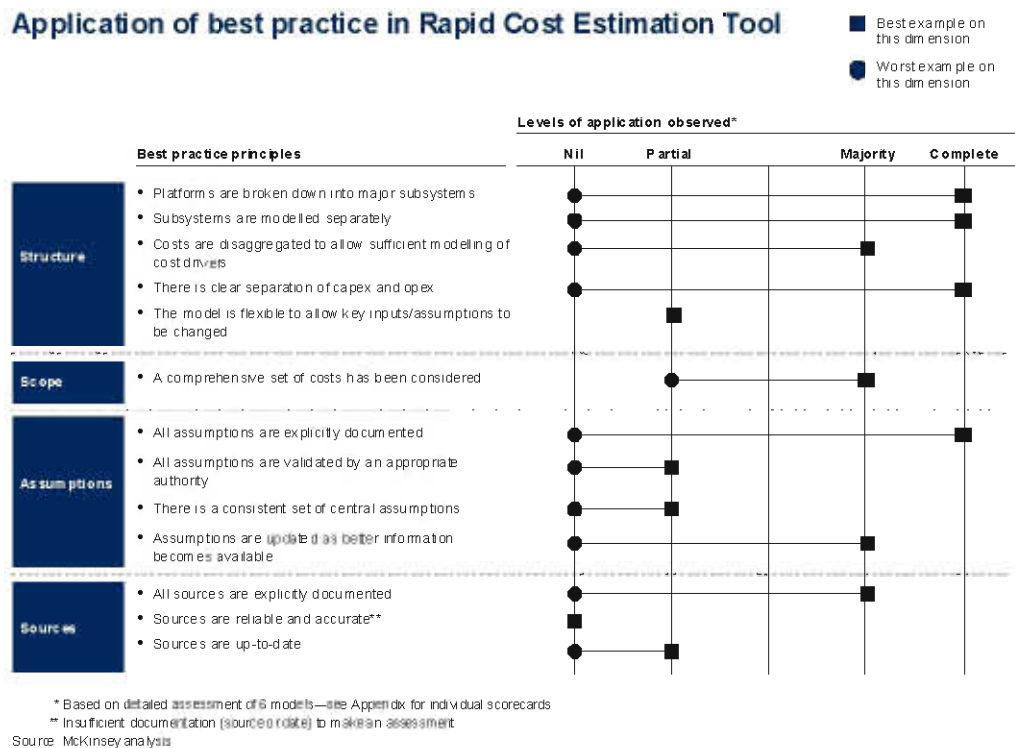
Developing a standard methodology

While the Kinnaird reforms recommend a staged process to refine costs, this does not consistently occur and there is no mandated approach or official guidance on

which, and when, methodology should be applied.²⁰ The Rapid Cost Estimating Tool, designed to facilitate quick cost estimates based on a default set of assumptions, has some best practice features. There are, however, clear areas for improvement and the tool has not been applied consistently in project cost estimates (Exhibit 16).

Exhibit 16

Application of best practice in Rapid Cost Estimation Tool



A standard costing methodology needs to be developed and implemented. Numerous methodologies are currently used including: the primary methodology of extrapolating costs from exemplars (similar or comparable technologies); parametric estimates based on historical costs per unit (for example, cost per tonne); bottom-up engineering estimates; and tools such as FACET (a database of historic prices for military equipment). Any of these methodologies can be appropriate if applied consistently to projects in a similar phase of maturity.

²⁰ A 'Defence Cost and Schedule Estimation Methodology Handbook' was prepared for the DMO in 2005; however, it is more a policy document than a detailed 'how to' guide for inexperienced estimators. It has not been officially mandated or updated since then and its existence is not widely known. The head of the Capability Development Group (CDG) Cost Analysis Branch did not have access to it.

Part of the difficulty in achieving a consistent approach is the lack of cost estimators in Capability Systems. Desk Officers are required to seek out costing expertise from Investment Analysis, the Defence Materiel Organisation (DMO) and the Department of Finance and Deregulation.

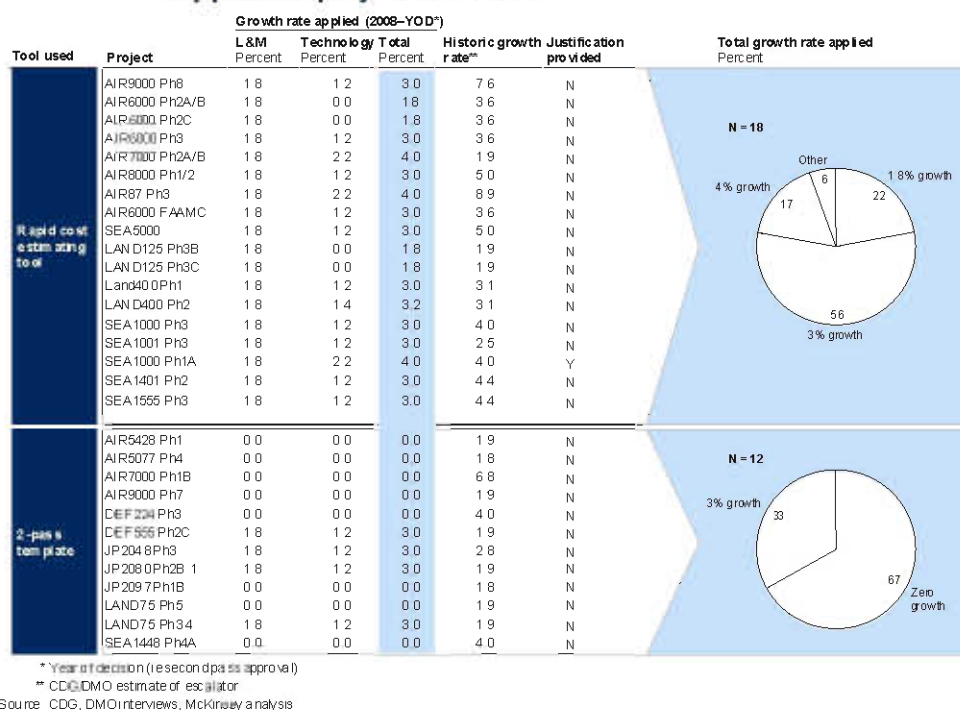
We recommend that Defence:

- **Develop and mandate a framework clearly stating the appropriate costing methodology for projects of different maturity and type. Project estimates should document which methodology has been applied.**
- **Document and adhere to official guidance on how to use each costing methodology, and train cost estimators in the use of each methodology.**
- **Conduct further work to develop cost estimation tools that conform to best practice.**
- **Place additional cost estimators in Capability Systems to Support Desk officers.**

Inconsistent cost growth assumptions are applied to different projects, with limited explanation of the rationale for each choice. Standard cost growth rates of 3% and 4% are applied to most projects, rather than using analysis of specific historic growth rates for different types of equipment. Other growth rates (not consistent with the 3% or 4% approach) have been applied to some projects, but with no documented rationale for the choice (Exhibit 17).

Exhibit 17

Growth rates applied to project estimates



We recommend that Defence develop and document a set of cost growth rate assumptions for specific sectors/platforms to inform cost estimates used in the DCP.²¹ Cost estimates should default to the standard assumptions relevant to the particular platform type. Estimators can use a different assumption, but should document the reasons for change along with evidence and sources.

When input is received from different groups (for example, from Defence Support Group (DSG) on facilities costs), there is no clear process to manage this information:

- There is little documentation about whether input has been received and used, and little tracking of changes to this input.

²¹ These should go beyond a single number for the platform type. For example, there should be assumptions about the cost of facilities for aircraft or ships, as well as assumptions about the cost of the platform and systems. The long-term cost model we have developed contains a set of input cost growth estimates that should inform this exercise.

- Desk Officers are not required to accept and apply stakeholder input into business cases. Stakeholders providing the input also receive little visibility of whether the information is actually used, and the reason for not using it.
- When conflicting information is received, there is no process to manage which source/s take priority in different situations.²²

We recommend that Defence implement a standard set of business rules for obtaining and using input from DSG, the Chief Information Officer Group (CIOG) and the Defence Science and Technology Organisation (DSTO) to inform cost estimations. The source of input should be clearly documented²³ and any changes to this input should be recorded, along with the rationale for the change.

Further, when input is received the cost estimations are not always suitable for the stage of the processes. Commonly, the ranges are too wide, being up to plus or minus 50%, and the basis of the estimations is insufficiently robust.

Finally, a cost-growth wedge has been built into the DCP, but without a clear policy of how it is to be used. For many projects, a 2008 price for an exemplar capability/technology is identified (based on the cost to buy that platform today). Cost growth of 3% or 4%²⁴ is applied to this amount within the project cost model until the expected year of decision (that is, second pass approval). Part of this cost growth (the component for technology growth) is then removed from individual project estimates when they are aggregated as a program, and held separately at the program level. For the period between the expected year of decision and the Initial Operating Capability (IOC),²⁵ the labour and materials rate of 1.8% is applied to each project at this program level (rather than within its actual cost model) (Exhibit 18). In essence, this means:

- The estimated project cost for a 2008 second pass project is assumed to grow at 1.8% between 2008 until its entry into service.
- An amount equal to the technology growth rate assumption (1.2% or 2.2%) over the period between 2008 and the IOC is held as a program-level ‘wedge’

²² For example, input assumptions from the DMO are often included in cost estimates, but are sometimes not incorporated within the CDG or even at the committee stage.

²³ Including the name and role of the person providing the information, the date the information was received, and any supporting evidence.

²⁴ Based on technology cost growth of 1.2% or 2.2%, and labour and materials growth of 1.8%.

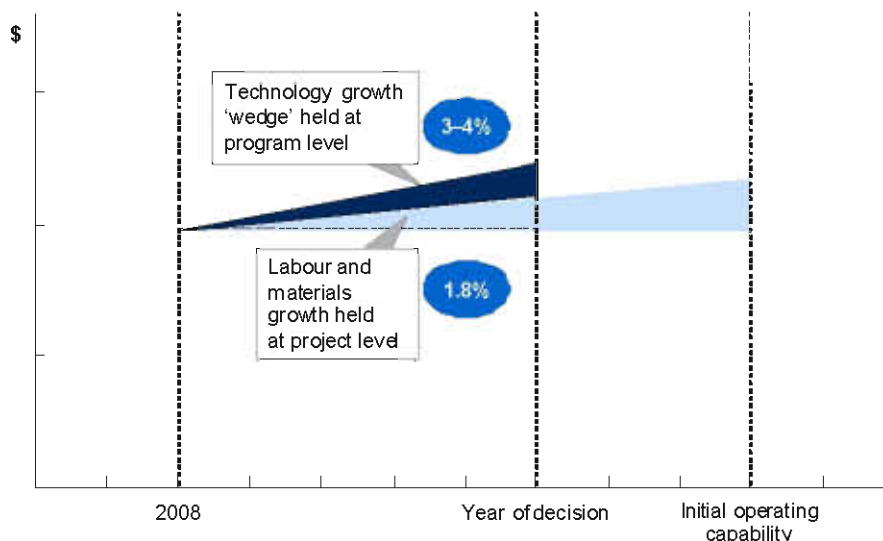
²⁵ “The point in time at which the first subset of a capability system that can be operationally employed is realised. IOC is a capability state endorsed by Government at Second Pass and reported as having been reached by the capability manager,” Defence Capability Development Manual, 2006.

to be applied to any project that requires it. This is effectively a contingency provision to be used for cost growth in any project.

Exhibit 18

Growth-rate methodology for individual project estimates

ILLUSTRATIVE



Source: CDG interviews; McKinsey analysis

We understand the aim is to reduce the funding expectation of individual project estimators so that cost growth is used for actual growth in costs, rather than seen as funding which can be used to increase the specifications of the individual project.

We have several concerns with this approach. First, the 1.8% figure was provided to the Capability Development Group (CDG) by the DMO; however, CDG cost estimators appear to have limited understanding of the rationale for this estimate. Second, there is a risk that if 'cost wedge' funding is not required in a given year the funding will be used elsewhere, despite being based on a cost estimate for a specific project. [REDACTED]

We recommend that Defence remove the cost-growth wedge, and manage the project scope and cost inflation by tightening the link between strategy and

capability requirements. This can be achieved by making and adhering to a much clearer statement of requirements from the point of entry to the DCP.

We also recommend that Defence escalate project cost estimates using a rate appropriate to the type of capability being purchased.

Governance and oversight of DCP cost estimates

Individual accountabilities for the development of cost estimates are not clear. Desk Officers are traditionally responsible for developing estimates; however, they are often developed by specialist cost estimators/contractors. Input is received from numerous sources; for example, the DMO, DSG and CIOG. Obtaining this input is important, but at present it reduces the accountability of the Desk Officer. The ultimate integrity of the cost estimates remains the accountability of the Desk Officers, who should be satisfied that the input received from other groups is sound, and based on appropriate evidence and assumptions. This is challenging given the asymmetric knowledge of cost estimation between the Desk Officers and the contributing cost estimators.

There is insufficient independent oversight of cost estimates. CDG Investment Analysts have traditionally had an ‘auditing’ role. In the current DCP, however, the Investment Analysts have developed 60 to 70% of the estimates themselves. This means no-one is bringing an independent perspective to check that an appropriate methodology has been followed, and to challenge approaches and assumptions.

We recommend that responsibility for quality assurance (within Defence) of cost estimates remains separate from the development of those estimates.

Capabilities of cost estimators

Cost estimation is a technical discipline and requires specialist skills. As noted above, CDG personnel (both cost estimators and Desk Officers) have low average tenure (Exhibit 13) and experience. High levels of skill are critical to delivering capability—accurate cost estimates allow informed capability/cost decisions to be made.

To help build skills and professionalism, **we recommend that the CDG changes the current employment model to build an experienced team of cost estimators. Specifically, the CDG should:**

- **Employ civilians with specialised experience to develop project cost estimates.**

- **Maintain a smaller number of military positions, only where knowledge and experience of capabilities is required.**
- **Fill these military positions with personnel who will develop a specialisation within the CDG, and will return to capability-related positions in the CDG, DMO or the Services in subsequent posting cycles.**
- **Rotate CDG staff through the DMO to enhance their understanding of the costs and risks that emerge in the course of managing projects.**
- **Resource Capability Systems with dedicated cost estimators to support Desk Officers.**

We note that this recommendation relies on Defence being able to increase the experience levels of APS employees in the CDG, who currently have low levels of experience similar to military personnel.

4.2 IMPROVING THE ACCURACY OF NPOC FORECASTS

There is also significant concern about the quality of NPOC forecasts. Defence records an unfunded NPOC liability of ~\$6 billion over the Defence Management and Finance Plan (DMFP) period.

Methodology

Numerous methodological approaches are evident in NPOC calculations. Approaches used to calculate NPOC include: detailed estimates of future costs less detailed estimates of current costs; metric assumptions (standard ratios) of operating costs relative to acquisition costs (for example, contractor support costs as a percentage of acquisition cost); and costing tables (such as FINMAN 4) to estimate likely future costs. There is no official guidance or documentation of how NPOC should be calculated and the *Defence Cost and Schedule Estimation Methodology Handbook* contains no mention of operating costs.

We recommend that Defence develops and adheres to a standard methodology for estimating the NPOC of future capabilities, including: (i) a comprehensive list of costs to be considered; (ii) guidance on how costs should be estimated; and (iii) consistent documentation of assumptions and sources. The methodology should be documented and applied to all project estimates.

Inconsistent assumptions are applied across different projects. For example, estimates of fuel price were observed at \$0.89 and \$1.60 per litre.

Input price assumptions do not factor in real growth above the general level of inflation. This means real growth is not applied to costs that have historically grown faster than inflation, including personnel costs and fuel. Real growth is applied to acquisition estimates, but not to NPOC, and this contributes to the systematic underestimation of NPOC.

We recommend that NPOC calculations should be based on a documented, central set of assumptions for all input price estimates and metric assumptions. Cost estimates should have the ability to apply real growth above and below the general level of inflation prior to nominal out-turning.

Cost information on current capabilities

As well as methodological problems, accurate NPOC calculations are compromised because the full direct operating costs of current capabilities are not well understood. Defence measurement systems cannot readily provide consistent, reliable or complete information of the operating cost of current capabilities. Different groups across Defence have developed their own costing systems to assist with management decisions; however, the information from these systems is not integrated:

- The DMO has developed a product costing system that traces sustainment costs to individual fleets
- DSG operates the ‘Defence Estate Management System’ (DEMS), which allocates regional costs back to individual bases.

Secondary costs are rarely considered in operating cost estimates. For example, additional personnel not only increase wage costs, but also costs such as garrison support, housing, health and administrative costs. Additional facilities will generally require extra personnel or contractors to manage them. It is important to acknowledge that Defence’s current cost capabilities do make this a difficult exercise. The importance of the secondary costs, however, highlights the need to improve these costing capabilities.

Incomplete cost information about current capabilities prevents fact-based estimates of future operating costs. In the absence of consistent cost information, estimates of future operating costs are based on general assumptions about cost drivers—these are often inconsistently applied across different estimates. For example, facility support costs are not centrally captured outside the DSG cost-allocation system—estimates of support costs relative to the cost of new facilities range from 0 to 8%.

The accuracy of NPOC estimates cannot be consistently measured once capabilities enter service. While any variance between the cost of acquisition and project approval can be (and is) reliably measured, the same scrutiny cannot be applied to NPOC estimates.

Developing a robust and standardised methodology for estimating NPOC will not improve the quality of estimates unless consistent and reliable information is available to measure baseline operating costs.

Consistent and reliable NPOC estimates depend on the consistency and reliability of operating-cost information reported for current capabilities. **Therefore, we recommend that Defence should develop an integrated costing system to capture and report the cost of operating and supporting current capabilities.²⁶ The full operating cost of platforms/capabilities should be systematically captured. Secondary costs should be identified and rules developed for the relationship between primary/secondary costs.**

Governance and oversight of NPOC estimates

Operating and support costs are around half the total whole-life cost of military equipment. [REDACTED]

We recommend that NPOC estimates should be explicitly considered and examined by Government during the project approval process, including at second pass approval.

There is a lack of independent oversight of NPOC estimates by experienced Cost Analysts who were not involved in the formulation of the original estimates:

- **Unapproved NPOC** estimates are generally assessed by Cost Analysts within CDG; however, in the current DCP they have developed 60 to 70% of cost estimates themselves.
- **Approved NPOC** cashflow is managed by the Chief Finance Officer Group (CFOG) and is subject to annual review. However, the personnel responsible for this review have limited Defence experience—they review calculations rather than test assumptions underlying an estimate.

²⁶ The Long Term Cost Model developed for this project and the plan for its further enhancement provides a starting point to develop a more integrated costing system.

There is insufficient accountability for NPOC estimates. Once a project is approved, responsibility for its NPOC requirement is passed to CFOG, and there is limited accountability for any assumptions that are subsequently updated. Changes to NPOC estimates post-approval are not explicitly approved or tracked. This reduces the accountability of, and the ability to learn and adapt from, the personnel who make NPOC forecasts.

We recommend:

- **That quality assurance of NPOC estimates should be undertaken by independent and experienced cost analysts.**
- **That any updates to NPOC estimates post-approval should be tracked and explicitly signed-off by both the Group that updated any assumptions and the independent cost analysts responsible for quality assurance.**

Both recommendations will be difficult to implement properly without an integrated costing system to capture and report the cost of operating, and without supporting current capabilities.

Capabilities of cost estimators

The observations on the experience and expertise of cost estimators in section 4.1 apply equally here.

5 Improving the management of capital for major acquisitions

5.1 LOWERING BUDGET RISK BY REDUCING TECHNICAL RISK

This section reviews the shape of Defence's acquisition portfolio and the risks to schedule and cost that this creates. It then addresses two options to reduce these risks: increasing the proportion of off-the-shelf systems in the acquisition portfolio and improving the management of technical risk.

A significant risk to the Defence budget is major equipment procurement projects incurring schedule slippage or cost escalation, or both.

Shape of the approved acquisition portfolio

The current portfolio of approved projects is heavily weighted towards Developmental projects (equipment that has never been produced before, or which contain major systems that have never been integrated before) and Australianised projects (existing equipment modified to create a unique Australian variant). An assessment of the 69 major projects in the March 2008 Acquisition Overview Report (AOR) found 36% are Developmental and 49% Australianised. Only 15% are Military Off The Shelf (MOTS) systems.²⁷ The projects reviewed are estimated to cost a combined total of \$60 billion, and, whether assessed by value or number of projects, the proportions are similar (Exhibit 19). The proportion of MOTS is slightly higher (19%) on smaller projects (less than \$200 million).

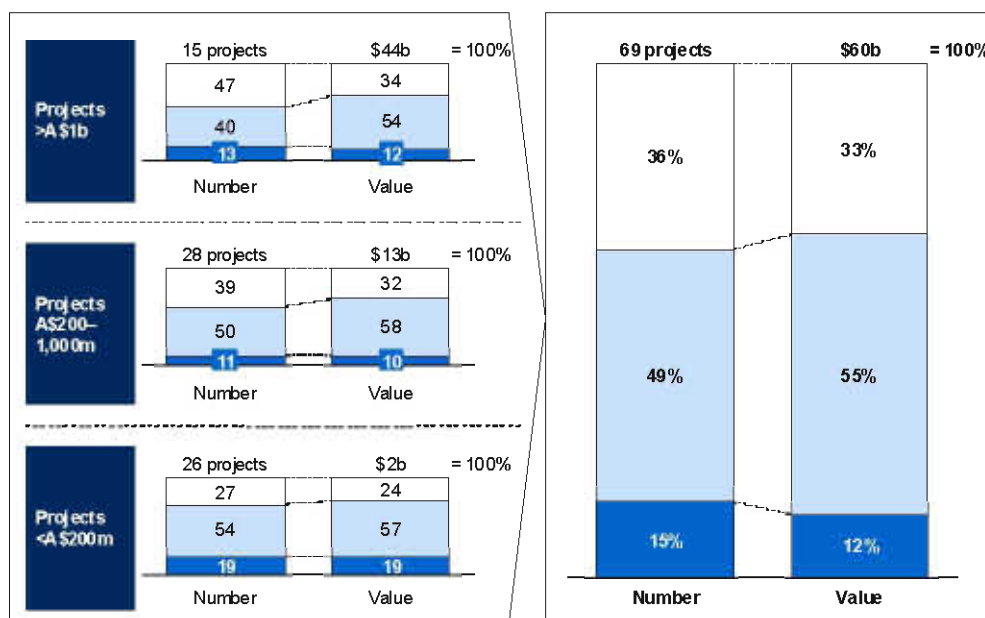
²⁷ Equipment in service elsewhere, in a similar configuration to that which Defence would be procuring (not Australianised).

Exhibit 19

Classification of current acquisition projects

Percent, A\$ Billions

□ Developmental
 ■ Australianised
 ■ MOTS



Source: Projects in Acquisition Overview Report (AOR), March 2008, DMO & McKinsey analysis

Developmental projects are commissioned to deliver additional capability not available in MOTS systems. A major driver of Australianisation is also to deliver additional capabilities (not just to meet local regulations or integrate with existing capabilities). While there may be a compelling case for purchasing the additional capability embodied in some of the Developmental/Australianised projects, this creates significant risks of cost escalation and schedule delays (discussed here) as well as being more expensive in the first place (discussed in Chapter 10). The trade-off between cost and capability is a difficult one. Nonetheless, the sheer amount of expenditure in this area (a budget of \$4.7 billion for 2008/09) demands close attention to the risks created by Developmental/Australianised projects, especially when the risk to the budget may mean additional high priority capabilities could be rendered unaffordable.

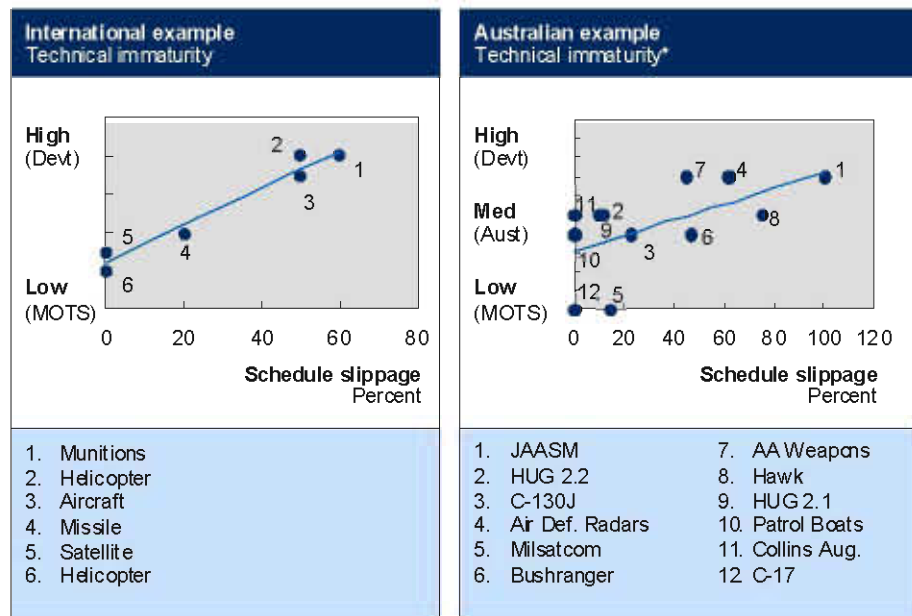
Risk of schedule delays

International and Australian experience shows a clear relationship between the degree of technical immaturity (which is, by definition, highest for developmental projects and lowest for MOTS) and schedule slippage (Exhibit 20). The reforms implemented as a result of the Kinnaird Review sought to improve this. The Mortimer Review has assessed progress in implementing these reforms and it is

clear that much progress has been made; however, there are still some grounds for concern.

Exhibit 20

Technical immaturity and schedule slippage



* Completed projects from ASPI analysis, weighted technical maturity level (including software) versus schedule delay
Source: ASPI, McKinsey analysis

Reviewing the effectiveness of the Kinnaird reforms is difficult, as few projects have been through both first and second pass approvals. Half of the eight sizeable projects which have had both first and second pass approvals under post-Kinnaird processes are suffering from schedule slippage post approval (Exhibit 21).

Further, only two of these projects are more than 50% complete.²⁸ It is clear that the degree of schedule slippage is proportional to project completion (Exhibit 22), which is expected. Young projects do better than more mature projects, because they have not had time to slip. The implication is that as other projects mature, there is a significant risk they will slip as well. The line of best fit for the post-Kinnaird projects analysed predicts that projects will incur ~40% slippage by Initial Operating Capability (IOC), which is close to the historical performance of acquisition projects. The small sample size, however, means that limited lessons can and should be drawn from this analysis.

²⁸ Project length is defined as the time from project approval to Initial Operating Capability (IOC).

Exhibit 21

Schedule slippage of post-Kinnaird projects (pre- and post-approval)

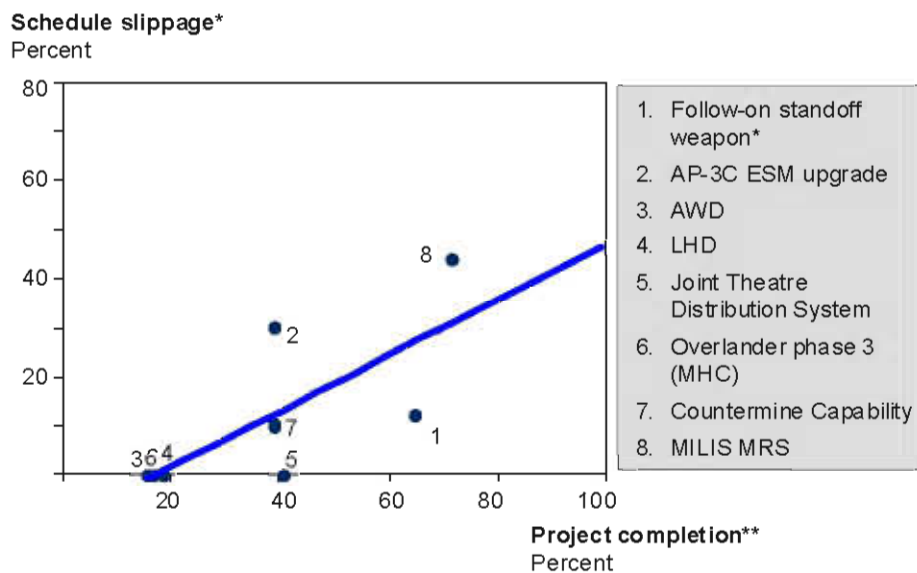
Project	Pre-approval slippage Months	Post-approval slippage* Percent of project
Follow-on standoff weapon	0	12
AP-3C ESM upgrade	8	30
MILIS MRS	7	44
AWD	6	0
LHD	6	0
Joint Theatre Distribution System	31	0
Overlander phase 3 (MHC)	0	0
Countermine Capability	10	10

Currently at 25% slippage, but forecast to reach IOC as scheduled

* Forecast: duration from project approval to IOC divided by the planned duration from approval to IOC
 Source: 8 of 10 projects that have had a first and second pass approvals under the post-Kinnaird processes. The Special Operations Vehicle was not analysed due to being a truncated Kinnaird process, and Land 58 was < \$1m

Exhibit 22

Schedule slippage of post-Kinnaird projects over time

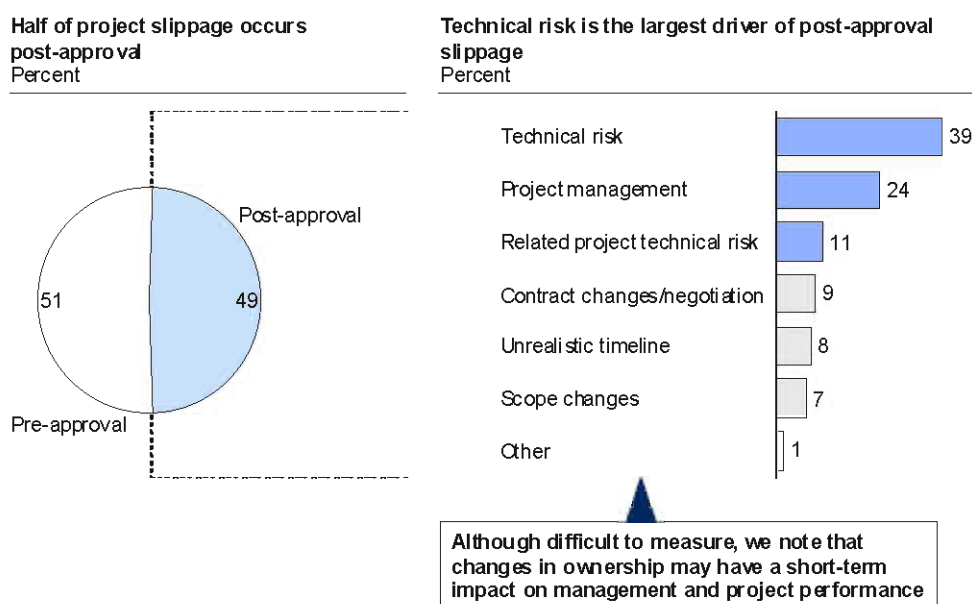


* Schedule slippage (relative to baseline IOC) is equal to the forecast days to IOC from project approval divided by the baseline days to IOC
 ** % project complete is equal to the days since project approval divided by the forecast time to IOC from project approval
 Note: The Special Operations Vehicle was not analysed due to being a truncated Kinnaird process, and Land 58 was < \$1m
 Source: 8 of 10 projects that have had a first and second pass approval under the post-Kinnaird processes. McKinsey analysis

Technical risk (in both the project itself and related projects) is the cause of more than 50% of post-approval slippage (Exhibit 23) in post-Kinnaird projects.

Exhibit 23

Causes of post-approval slippage for post-Kinnaird projects



Note: Slippage in approval date equals difference between actual approval date and 31 December of the year of decision at DCP entry.
Source: 8 of 10 projects that have had a first and second pass approval under the post-Kinnaird processes. The Special Operations Vehicle was not analysed due to being a truncated Kinnaird process, and Land 98 was < \$1m.

Based on the historic Australian slippage rates illustrated in Exhibit 20, and the proportion of Developmental, Australianised and MOTS projects illustrated in Exhibit 19, the approved project portfolio is likely to experience slippage of 20 to 40% against plan.

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

An example is Wedgetail. Schedule delays are costing ~US\$1.5 million per month, about two-thirds of which are personnel related costs. Additionally, the

project's forecast additional exposure to index inflation is estimated at A\$15 million over the next 5 years.

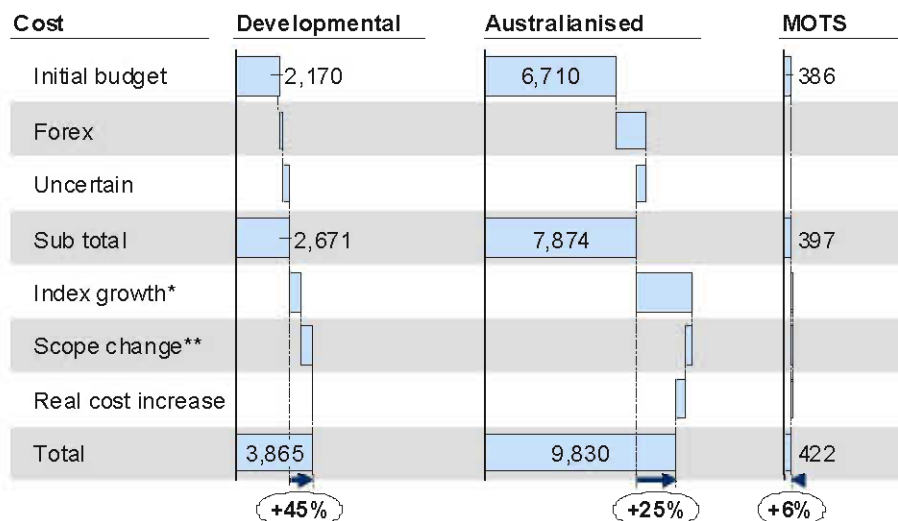
Risk of cost escalation

Developmental and Australianised projects are, by definition, less technically mature than MOTS, and are far more likely to exceed original cost estimates (through schedule slippage or unforeseen project costs). Analysis of the 100 largest projects closed between 1998 and 2008 shows cost escalation on the initial Government-approved budget (excluding foreign exchange movements) is far higher for Developmental projects (45%) compared to Australianised (25%) and MOTS (6%) (Exhibit 24). Expenditure for projects closed in a given year has exceeded planned expenditure by more than 5% only twice in the last decade—in both cases, this was almost entirely due to real cost increases in Developmental and Australianised projects (Exhibit 25).

Exhibit 24

Post-approval cost escalation of Developmental, Australianised and MOTS projects

A\$ Millions



* Index growth is caused by both scheduled delays related to whether the project is Developmental or not, and poor forecasting of indices, which is unrelated to the type of project. The proportion of index growth is significantly higher in Developmental and Australianised projects than MOTS, which implies that index growth is significantly linked to the type of project.

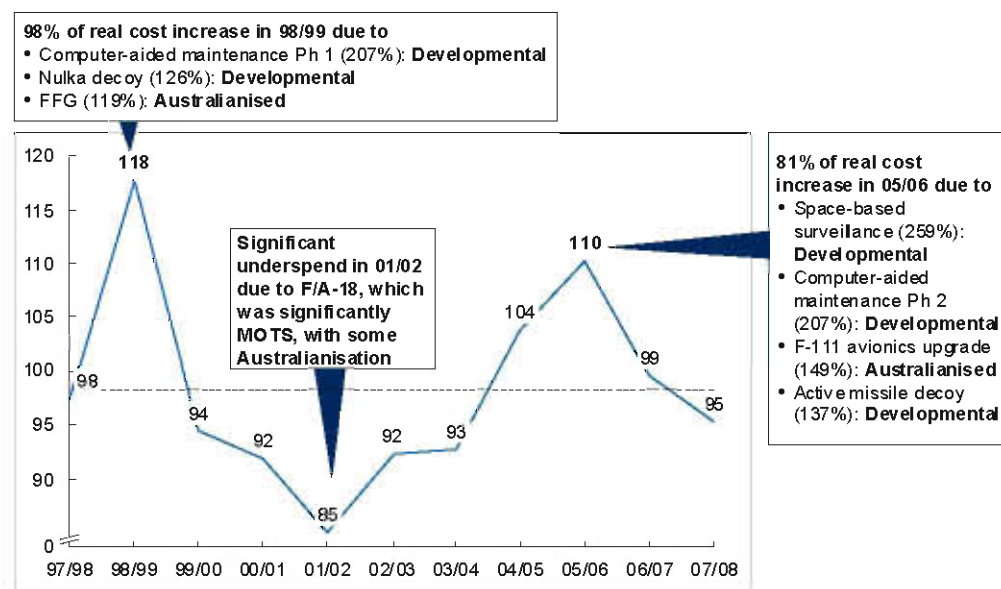
** Scope changes can be either to increase or decrease scope.

Source: DMO closed project analysis 1998–2008, McKinsey analysis

Exhibit 25

Total project expenditure as a proportion of total budget baseline*

Percent



* Total project expenditure of projects closed in that financial year. Changes are real changes to expenditure independent of foreign exchange, indexation and scope changes. Uncertain changes are treated as not for scope. Only the major cost escalations were considered in this analysis.
Source: DMO closed project analysis 1998–2008, McKinsey analysis

If the historic project performance against the initial budget illustrated in Exhibit 20 is applied to the proportion of Developmental, Australianised and MOTS projects illustrated in Exhibit 19, the current acquisition portfolio could experience cost escalation of ~30% from the original approved budget. The increased rigour applied at second pass post-Kinnaird should reduce the size of cost escalations, but as no major completed project has been through the full first and second pass process post-Kinnaird, it is too early to draw conclusions.

Increasing the proportion of MOTS

While there may be a compelling case for purchasing the additional capability embodied in some of the Developmental/Australianised projects, the overall portfolio should contain a higher proportion of MOTS. This shift will require greater consideration of genuine MOTS options; and the cost/benefits of non-MOTS options should be made explicit during first and second pass submissions.

The Kinnaird Review stated that:

“Off-the-shelf equipment is often cheaper and can usually be delivered faster. Accordingly, an off-the-shelf alternative must be part of any set of options put to government to ensure that a benchmark is established

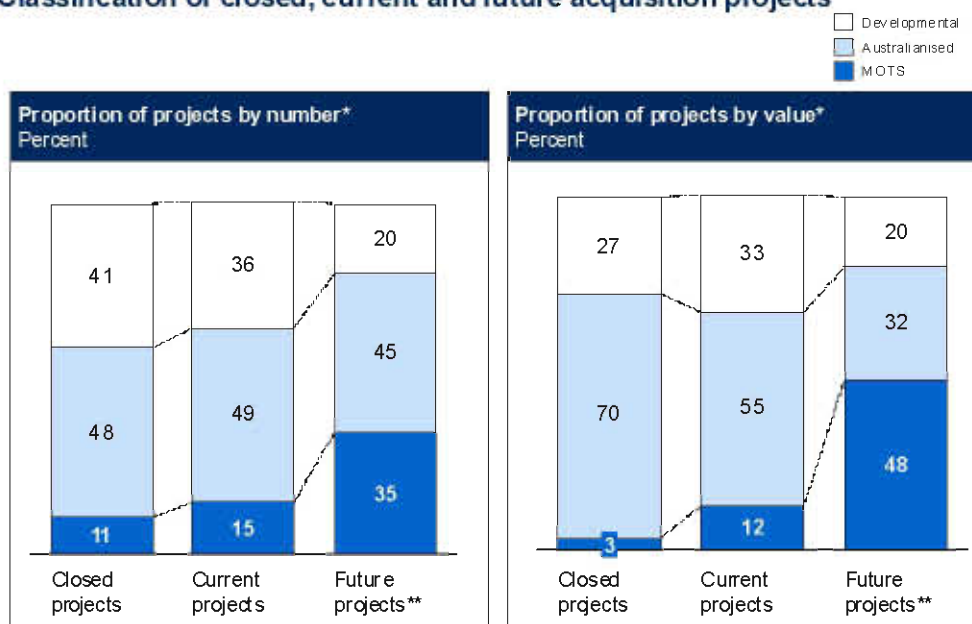
against which the costs, military effects and schedule of all proposals can be assessed.”

While MOTS options are considered, 85% of projects have a degree of Australianisation. Only 9% are wholly ‘Off The Shelf’.²⁹ There appears to be a deep cultural attachment to Developmental/Australianised projects.

The 09/19 forecast Defence Capability Plan (DCP) contains a far higher proportion of MOTS projects—35% by number and 48% by value (Exhibit 26). This would result in a project portfolio with a significantly lower level of risk. However, if the proportion that is genuinely MOTS starts to decrease, as projects move closer to approval, then the risk profile of the future portfolio will increase significantly.

Exhibit 26

Classification of closed, current and future acquisition projects



* Proportion of total project expenditure for closed projects, proportion of MAA value for current projects, proportion of DCP forecast for future projects

** Includes JSF program, which is considered Developmental

Source: Acquisition Overview Report (AOR), March 2008, DMO closed project analysis 1998–2008, 09/19 DCP, McKinsey analysis

Based on the historic Australian slippage rates illustrated in Exhibit 20, and the proportion of Developmental, Australianised and MOTS projects in the 09/19

²⁹ Defence Procurement Advisory Board COTS MOTS Consideration, 29 February 2008. In Chapter 10, we note that a large amount of Australianisation is driven by choices to increase the level of capability, rather than regulatory or integration requirements.

forecast DCP, the future portfolio is likely to experience slippage of 10 to 30% against original schedule, rather than 20 to 40%.

Similarly, based on the historic project performance against the initial budget in Exhibit 24, and the proportion of Developmental, Australianised and MOTS projects in the current DCP, the potential cost escalation in the future portfolio could be reduced from an average of 30% to an average of 20% (a difference of \$450 million pa).

The Mortimer Review notes the Kinnaird point raised above and states:

“[I]n practice, this has not always been the case. For this reason this review makes the following stronger recommendation: ‘Any decision to move beyond the requirements of an off-the-shelf solution must be based on a rigorous cost-benefit analysis of the additional capability sought against the cost and risk of doing so. This analysis must be clearly communicated to Government so that it is informed of the decision-making process.’”

We endorse this recommendation and, to increase transparency on the rationale for ‘Australianising’ a MOTS option, **we recommend that Defence should classify any modifications required to an existing platform into four categories: (i) external regulatory requirements; (ii) internal technical regulations; (iii) integration requirements; and (iv) capability enhancements. The rationale for, and the cost, benefit and risk of, each type of modification should be specified. This assessment should form part of the first pass and second pass documentation.**

Managing technical risk

Even with an increased proportion of MOTS, the acquisition project portfolio will continue to contain technically immature Developmental and Australianised projects. For these projects, improving technical risk management practices will help reduce schedule and cost escalation. Specifically, this will involve: greater investment of project expenditure in de-risking projects; not progressing projects until they reach the required level of technical maturity and separating technology development from product development; and greater involvement of technical scrutineers and better use of a risk register.

The Kinnaird Review states:

“The redirection of expenditure towards a greater emphasis on analysis and project definition before proceeding to tender should return dividends during the acquisition phase through greater certainty of costs and

schedule, and a better understanding of technology risk. This proportion may be of the order of 10% to 15% of total project funds in relation to complex projects.”

The Mortimer Review also observes that:

“While project development funds are earmarked for early analysis and project definition, Defence spending on capability development is arguably lower than that suggested by Kinnaird given the number of complex projects undertaken. Currently some 8% of total project funds are applied to analysis and project definition.”

Our analysis supports the conclusion that a greater proportion of total project expenditure should be spent between first pass and second pass for projects with large exposures to technical risk. In addition, we note there has been no increase in Project Development Funds to mitigate or retire risk prior to first pass approval. Given the extent of slippage observed even on post-Kinnaird projects (Exhibit 21 above), and that 50% is caused by technical risk, **we recommend that Defence develop a standardised methodology linking the degree of technical/technology risk with the proportion of project funds invested pre-approval. We also recommend ensuring that adequate resources are used to de-risk acquisition projects prior to second pass approval. For high-risk projects, this could exceed 15%.**

While technical maturity gates (based on technical risk levels) exist at both the first and second pass approval stages,³⁰ some pre-Kinnaird projects were approved without meeting milestones. Bushmaster and Wedgetail are examples.

- Wedgetail has a first-in-class radar system and aircraft platform, and no history of integration of the radar and platform. The Defence Science and Technology Organisation (DSTO) flagged an extreme risk with respect to radar integration.
- Bushmaster was a first-of-type Infantry Mobility Vehicle. A test of two prototypes was conducted to determine the tender outcome and neither fully met specifications. The preferred option was chosen, however, and a contract signed without residual technical risk being retired.

The end result for both projects has been a real cost increase of several hundred million dollars and 4-year schedule delays. In the case of Wedgetail, it is still uncertain whether technical obstacles can be overcome. **We recommend that**

³⁰ Out of a total score of 70, projects much reach 21 by first pass approval and 35 by second pass approval. In addition, DMO applies stage gates at five milestones leading up to second pass approval

projects do not advance to the next phase until they reach the required level of technical maturity.

Further, technology development should be separated from product development. Wedgetail and the Lightweight Torpedo are examples of projects which were launched with unproven technology. In contrast, the Air Warfare Destroyer (AWD) and Submarine RCS used some existing technology. Projects should focus first on proving key technical components will work before launching a major development program.

The DSTO is involved in pre-approval assessments of major acquisition projects, but there is scope for more constructive involvement. Some DSTO assessments are not always as helpful as they could be—a number of risks on the AWD project were unknown, but were classified as ‘High’ (when they could have been anywhere from ‘Low’ to ‘Extreme’)—which makes interpretation difficult. There is also the possibility that assessments use the ‘High’ risk category often that other parties become desensitised to risk. A clearer indication of the most critical risks would help those tasked with risk management to know where to focus. At the same time, DSTO involvement and assessments are not always paid the respect they should be; scope and specification changes make the conduct of a Technical Risk Assessment (TRA) very difficult and there does not appear to be consistent criteria that determines the degree of initial and ongoing DSTO involvement in retiring technical risk in projects. Closer cooperation will have two mutually reinforcing benefits:

- The grounds for risk assessments and potential ways to reduce/mitigate the major risks will be better communicated to and understood by the project teams responsible for the project.
- The DSTO staff performing risk assessments will develop a deeper understanding of how project teams can and do manage risk over time. This will help inform future recommendations.

We recommend technical scrutineers are involved in ongoing measurement and management of technical risk.

Finally, the manner in which projects approach the management of risk is somewhat variable. A risk register has been put in place for some³¹ post-Kinnaird projects, but there is no standardised template. The level of detail on the type/level of risk, residual risk post-treatment, and ownership of risk is also variable. Further, despite the existence of the risk register, some mitigation strategies had

³¹ Risk registers are mandated and all projects claimed to have them. Only some, however, were observed.

not been implemented and lacked a rationale or timeline indicating when the action was to be implemented and the success of the mitigation reviewed.

We recommend that technical risks should be measured and managed through a risk register with a standard format and clear action plans.

5.2 PRIORITISING PROJECTS AND REMOVING OVERPROGRAMMING

Due to the complex nature of Defence projects, some schedule delays (slippage) are inevitable. This occurs even if the portfolio has a much greater proportion of MOTS equipment and technical risk management is best practice. Currently, Defence attempts to ensure that DCP funding guidance will be met with sufficient project demand (even with schedule delays) through three mechanisms. Their names are used somewhat interchangeably.³²

- **‘Overprogramming’**. Extra projects are included in the DCP, the total expected value of which exceeds the total amount of funding available. Some of these projects will not be delivered within the 10-year DCP time horizon, but few will be removed.
- **‘Overplanning’**. The total amount of project expenditure scheduled in a given year exceeds the total amount budgeted for that year. During the year, some of these projects will have schedule delays, and therefore cashflow delays, and so the actual expenditure should more closely meet budget.
- **‘Reprogramming’**. The planned delivery date for a project, or milestones of a project, is adjusted (either earlier or later) either because of updated information of the feasibility of delivery to schedule or to smooth cashflow.

The fundamental problem with overprogramming is that the program Government reviews and approves is not the program Defence can actually deliver. This reduces transparency on the strategic outcomes Defence can deliver and the capability gaps that remain.

Consequently, both overplanning and overprogramming results in a reduced focus on the root cause of schedule delays, many of which are manageable. It is effectively ‘planning to fail’. As noted above, schedule delays increase project costs, and because new equipment is not ready on time, this leads to increased operating costs to maintain legacy platforms and can lead to capability gaps. Improving internal processes, and better identifying, reducing and managing

³² The definitions used in this report are our own.

technical risk, can reduce schedule delays, but driving sustained improvements requires ongoing and disciplined attention.

These problems are compounded by the fact there is no prioritisation of projects in the DCP. As discussed in Chapter 3, this means projects can be rescheduled without reference to strategic requirements or rigorous debate about the consequences. It also means projects that should fill the most important capability gaps could have their scope changed, be de-prioritised or not be delivered at all.³³ Additionally, the lack of prioritisation prevents personnel and resources being deployed to projects to ensure that key capabilities are delivered when required.

Much greater transparency on which projects are priorities, and when they are expected to be delivered, is required. This is important as it informs Government about the capabilities it can expect to have, and drives focus on increasing adherence to plan, rather than managing deviations from it.

As recommended above, the first step is to prioritise projects.

The second step is to cease overprogramming (that is, only include in the DCP projects that Defence plans to deliver). Projects can, and should, be added and removed over time as strategic objectives change, but the DCP should be an accurate statement of the capability Defence intends to acquire.

The third step, which should be implemented gradually, is to reduce the level of overplanning (that is, planning more expenditure than budget in the expectation it will be offset by slippage). Defence should significantly reduce the degree of overplanning, ensuring there is sufficient focus on the root causes of schedule delays and on addressing those causes. Additionally, reducing the degree of overplanning will be required if Defence does reduce schedule delays—this will occur if there is an increase in the proportion of MOTS and a greater focus on technical risk management.

The UK Defence Procurement Agency has used what they called a ‘block adjustment’—the figure subtracted from the equipment acquisition budget on an annual basis in anticipation of project delays—and this figure has been as high as 30%. The Defence Procurement Agency was set an Asset Delivery target which has steadily increased. As a result of achieving this, the ‘block adjustment’ (overprogramming) has steadily reduced to 7%.³⁴

³³ Unless funding is increased, or cost estimates were significantly underestimated creating a ‘surplus’, overprogramming means some projects must, by definition, not be delivered.

³⁴ The Defence Procurement Agency Annual Report and Accounts reports Key Target 4 (Asset Deliveries). For the years 2004/05, 2005/06 and 2006/07 this has increased from 85% to >90% to >93%. This is the equivalent of reducing overplanning from 15% to 10% to 7%.

We recommend that the projects included in the DCP (pre- and post-first pass approval) should be those projects Defence intends to deliver—there should be no ‘overprogramming’ of additional projects, which would only be implemented if other projects suffered schedule delays or could not be delivered.

We recommend that Defence, over a period of 5 years, moves to forecast current year acquisition expenditure with the assumption that no more than 5 to 10% of that expenditure will be delayed.

Some projects will always need to be rescheduled; either because strategic priorities change, or because they cannot be delivered on schedule. Following this, Defence should then reprogram its acquisition plan, making transparent those projects which will be delivered later, and, if appropriate,³⁵ bring forward projects where industry capacity and funding are available.

We recommend that when schedule delays are anticipated and cannot be prevented, projects should be reprogrammed according to their relative priority, as well as the feasibility of moving the schedule forward.

5.3 INCREASING TRANSPARENCY AND PROPERLY FUNDING CONTINGENCY FOR APPROVED CAPITAL PROJECTS

This section reviews the use of contingency funds for the Approved Major Capital Investment Program (AMCIP). It first explains the current process and then identifies two major concerns. First, there is a lack of transparency about how and why contingency is used. It is important to note that this contingency was approved by Government, but the way it is spent should be far more transparent. Second, Defence has no cash provision for contingency, a portion of which would be realised if funding slowed or slippage was reduced.

Management of project funding

Following second pass approval, Defence transfers the approved project funding (excluding contingency) to the Defence Materiel Organisation (DMO). The Project Director within the DMO allocates this funding over the 10 years of the Defence Management and Finance Plan (DMFP) in line with spend expectations. The DMO financial planning tool (CEPPLAN) also recognises funding outside

³⁵ It would not be appropriate to bring forward an acquisition where it would replace an existing capability that met strategic requirements simply to smooth funding

this 10-year period as ‘afters’. The ‘afters’ category contains four items (although the last two are not common):

- Project contingency (which is not formally transferred to the DMO)
- Exchange gains/losses to offset against future movements
- Amounts that will be spent outside of the 10-year period
- Any quarantined funding that may be waiting further Government approval.

There is no distinction in the DMO system between the different types of funding in ‘afters’—this information is held at the project level.

Project Directors manage to their budgeted spend profile each year, but will not always meet the plan. If expenditure is below budget, then unspent funding can be ‘slipped’ to subsequent years, or to ‘afters’ if the funding profile in subsequent years appears sufficient. If expenditure exceeds budget, then increased funding requirements can be brought forward from subsequent years, or from ‘afters’—in which case contingency is drawn down. In cash terms, the DMO manages this variance in-year by transferring cash between projects—cash ‘slipped’ from some projects is used to fund the increased cash required for others.

Projects are required to review their contingency provision frequently. If judged to be inadequate, DMO management will either: (i) discuss potential options with Defence for a real price increase or reduction of scope; or (ii) manage the risk internally.

Upon project completion, all cash spent is accounted for. Any unspent funding is returned to Government, via Defence.

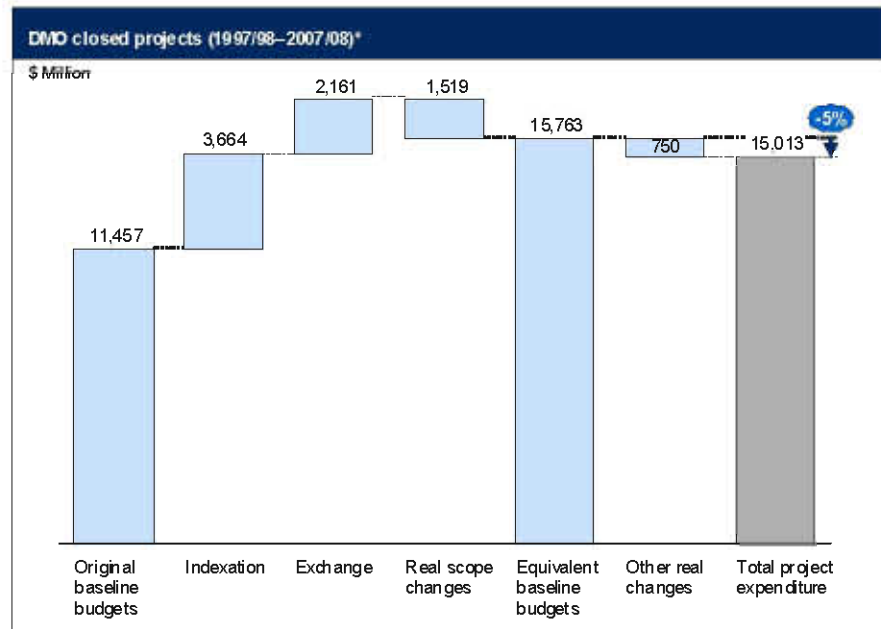
Increasing transparency on the use of contingency

On average, projects closed over the period 1997/98 to 2007/08 have spent ~95% of the total approved budget—defined as the original baseline including contingency, plus indexation, exchange rate variance and real increases in scope (Exhibit 27). While ~5% of project funding is nominally ‘returned’ to Defence, in effect, the DMO has recognised and spent part of the provision for project contingency that was never formally transferred from Defence. The amount of contingency originally assigned to these projects was not accessible, but assuming

it was, on average, 10 to 15% of the initial approved budget, the total amount of contingency spent since 1997/98 would be ~\$600 million to \$1 billion.³⁶

Exhibit 27

Project expenditure as a proportion of the total budget baseline



* 236 projects were closed over this period
Source: DMO closed projects analysis, McKinsey analysis

Contingency should be a provision for managing risk, but there is some evidence that it is viewed as part of the project funding envelope. For example, contingency has been used to pay for increased scope, including additional platforms.³⁷ Contingency should only be used for genuine risk mitigation. Projects should plan to deliver within the cost estimate, rather than systematically rely on contingency for project delivery, and the use of contingency for scope increases or other inclusions should be halted.

We recommend that Project Directors should improve the quality of annual cash budgets to reduce program slippage, and that significant variance in cash performance relative to budget should be explained in detail.

³⁶ This assumption of the range of approved contingency was used because: (a) the average approved contingency for the top 69 projects reported in the AOR is ~10%; while (b) CDG interviews indicated contingency at second pass is typically 15% of the approved project estimate.

³⁷ [REDACTED]

We recommend that the use of contingency funds should be made more visible to Defence. Projects that require access to contingency funds should notify Defence of the reason, and of any change to the future risk profile. Defence and the DMO should implement a process to allow projects to access contingency, subject to approval at specific thresholds.

Appropriately funding contingency

There are two consequences of the failure to provision for contingency (when it is being spent). First, it will drive further slippage into the unapproved program. Second, Defence no longer has a provision for contingency in the DCP, and there is a risk that an unfunded liability will ‘crystallise’ if funding or slippage is reduced.

- The approved capital program has ~\$5 billion recognised as ‘afters’ (as noted above, the reporting system does not distinguish how much of this is contingency). However, the top 69 acquisition projects do have a \$3.8 billion contingency.³⁸ Defence has no cash provision for this potential expenditure. The DCP has previously recognised \$150 to \$200 million pa to cover contingency, but the current DCP has no contingency provision.

As contingency is effectively being spent (although masked by slippage), projects are costing more than originally budgeted. Because no provision is made for contingency, the funding is effectively drawing on funding from the unapproved program. This will mean that projects which are currently unapproved will have to be slipped until sufficient funding is available. The first consequence of current arrangements is that capabilities will be delivered later than planned.

- DMO has not formally called on contingency because the amount of cash slippage in-year has been large enough to cover the funds required for contingency. Holding zero contingency is only sustainable if:
 - **The level of capital funding does not decrease.** If capital funding decreases and the percentage rate of slippage is the same, then the absolute amount of cash which is slipped will decrease.
 - **The level of slippage does not decrease.** If the percentage rate of slippage does decrease, then the absolute amount of cash which is slipped will decrease. We note our observation from Section 5.1, that if Defence does move to an acquisition portfolio with a greater proportion of ‘MOTS’, then

³⁸ Based on the Acquisition Overview Report.

we would expect slippage to decrease significantly—up to \$350 million pa.

If either of these scenarios occurs, then cash slippage will not offset the contingency being used in-year, and the DMO will have to call on Defence for additional funding—funding Defence has not provisioned for. The second consequence of current arrangements is the risk of an unfunded liability crystallising.

We recommend that Defence recognises a provision for major capital projects, which reflects the amount of contingency likely to be spent by DMO in the future.

Part C. Managing cost pressures through increased productivity

To successfully manage the cost pressures Defence faces, increased productivity in the way combat forces are supported and capability is delivered will be required. In some limited cases it will also require reducing the cost to provide the combat forces themselves. Productivity is not, and cannot be, about compromising effectiveness or capability, or the ability to attract and retain high-quality people. Rather, productivity in Defence is about more efficient ways to get work done and lower input costs.

More efficient ways to get work done in Defence can be achieved in three ways:

- **Creating a lean military support backbone.** Defence has an integrated ‘backbone’ of military support functions: maintenance of military equipment; inventory management; and supply-chain management. The opportunity exists to significantly increase the productivity of this backbone by:
 - Consolidating physical facilities and standard types of work
 - Applying the principles of lean operations to redesign the way work is done (for example, work practices and end-to-end processes)
 - Increasing cost-conscious decision making
 - Developing greater expert commercial capabilities.

These productivity improvements will save Defence between \$354 and \$615 million per year in operating costs and provide a one-off saving of \$218 to \$398 million.

In addition to cost savings, improvements in these areas will significantly enhance the effectiveness of Defence’s military capability. Specific opportunities identified within the five platforms examined include:

- [REDACTED] increase in sea days for Collins Class submarines
- [REDACTED] additional serviceable F/A-18 Hornets on the flight line
- [REDACTED] increase in availability for critical Land Rover variants.

These enhancements to capability are indicative of the improvements that could be expected across other platforms.

- **Creating efficient enterprise support functions.** There is a significant opportunity to improve the efficiency of the enterprise support functions (Human Resources, Finance, Defence Support Group, ICT, and sustainment procurement) by:
 - Completing the shift to a more centralised service provision
 - Introducing lean practices to the way work is done
 - Reducing the use of contractors
 - Shifting to a largely civilian and professionalised non-deployed workforce.

These productivity improvements will save Defence between \$363 and \$406 million per year in operating costs.

- **Capturing efficiency while reforming ICT.** A holistic ICT transformation is planned to significantly improve the quality of the ICT infrastructure provided to Defence. While the current focus on the transformation effort is primarily on quality, there should be an increased focus on capturing the significant efficiencies in the process.

These reforms could save Defence 15 to 30% per year in operating costs, dependent on the future ICT strategy. These savings are estimated at \$215 million per year, but have not been analysed in detail because the ICT strategy is beyond the scope of this review.

Reducing the cost of Defence inputs can be achieved in three ways:

- **Reducing non-equipment procurement costs.** Defence procures a wide range of commercial products and services such as building services, travel and relocation services. Clear opportunities exist to reduce these costs by:
 - Procuring more competitively priced products and services. For example, unbundling routes and removing price arbitrage on removal contracts.
 - Changing the specifications for what is required to obtain less costly products, where doing so will not compromise capability. For example, increasing the procurement requirement that military clothing is imported from low cost countries.
 - Changing patterns of use. For example, making greater use of Defence's extensive video-conference network rather than undertaking single day travel.

These improvements can save Defence between \$326 and \$518 million per year in non-equipment expenditure.

■ **Reducing the cost of major equipment procurement.** Although a long-term task, there are significant opportunities to reduce the cost of major equipment procurement through:

- Procuring a higher proportion of MOTS equipment
- Increasing the level of competition for major equipment acquisition and sustainment contracts
- Reviewing the proportion of local sourcing which is not justified by strategic requirements.

Purchasing a greater proportion of MOTS (which the most recent Defence Capability Plan (DCP) plans for) and increasing the level of competition on major contracts (which partially overlaps with savings identified in the lean backbone section) could ease cost pressures by \$345 to \$660 million, but these are not ‘banked’ as savings.

■ **Reducing the cost of combat capability through the use of Reserves.**

Beyond support functions, there is also an opportunity to deliver the same military capability at a lower cost through a flexible surge model. This model makes expanded use of Reserves and deployable contractors.

These changes could reduce the cost of combat capability by ~\$50 million per year.

The total productivity dividend from all of these measures is in the range of \$1.3 to \$1.8 billion per year, and a one-off saving of \$218 to \$398 million. The extent of reform required to capture these savings will take 3 to 5 years. The operational cost savings already identified by Defence (as part of the Defence Savings Plan, also known as ‘E2’) have been integrated with or replaced by the Audit savings, which provide analytical substance, much greater detail and show where Defence can go further to realise additional savings.

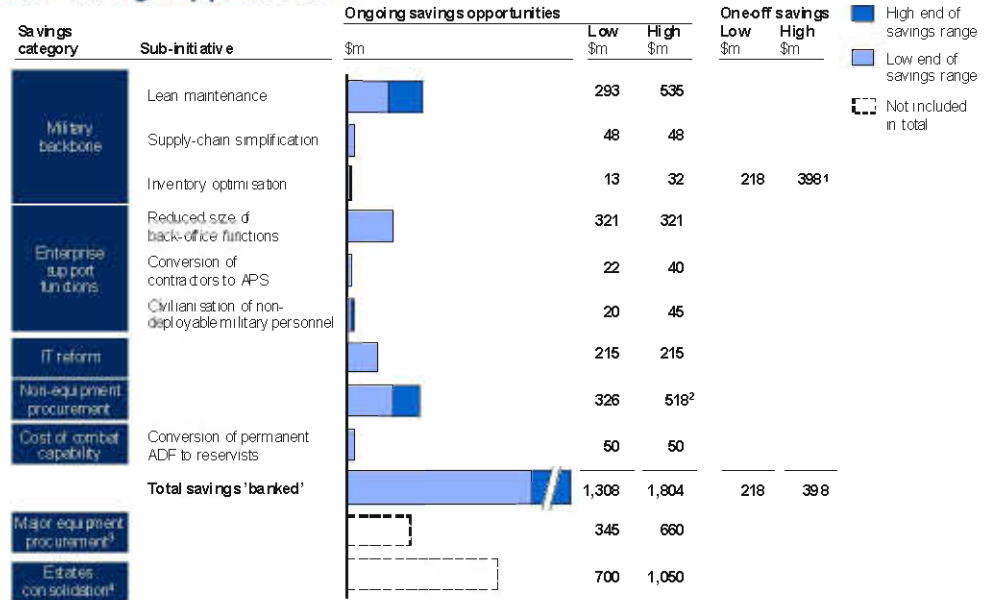
Removing the long-term structural inefficiencies of a fragmented estate. This can be achieved by starting the process of consolidating estates into an efficient superbase model, laying the foundation for the next ‘S’ curve in Defence productivity. A superbase model would dramatically reduce subscale base costs, extensive travel and relocation expenses, and the costs associated with managing a complicated supply-chain network.

The estimated yearly savings from a superbase model that would meet Australia’s strategic requirements would increase over time (assuming a staged consolidation), and could reach \$700 to \$1,050 million by 2035 (in 2008 dollars).

Exhibit 28 summarises these savings.

Exhibit 28

Total savings opportunities



1 \$90 million over the first decade, and an additional \$5 million in first year of second decade
 2 Defence has agreed to reach savings of \$518m (84% of DCA top-down estimate of \$616m), which is a reasonable position that the DBA supports
 3 Savings are not included in total because of the long lead time, dependence on capability choices, and difficulty in estimating reliably. There will also be some overlap with sustainment savings in chapter 6.
 4 Savings ramp up to this peak amount in 2035, and have not been 'barked' in total because of their long-term nature and significant policy choices that must be made to enable the savings

6 Creating a lean backbone

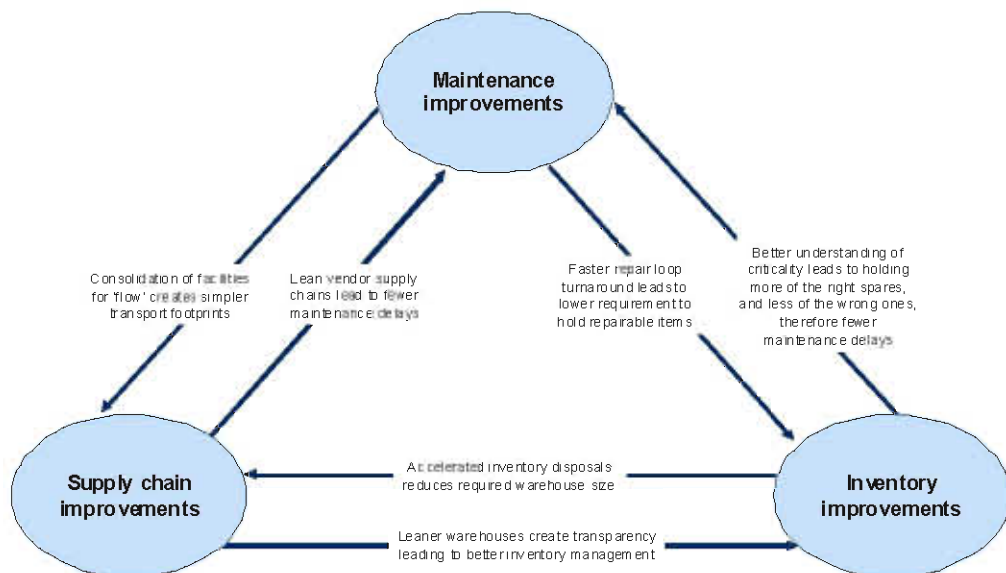
This chapter addresses opportunities for significantly increasing the productivity of the support activities that constitute the ‘backbone’ of military operations: (i) maintenance of military equipment; (ii) inventory management; and (iii) the supply-chain network.

The ‘backbone’ of Defence support is interdependent. Improvements in any one element help realise improvements in the other two (Exhibit 29). Experience in other Defence arenas and industry demonstrates that the use of a lean approach to improve productivity means that effectiveness and efficiency become mutually reinforcing not mutually exclusive objectives. For example, reducing the amount of time a Hercules spends in deep maintenance by creating a more efficient workshop will also increase the number of aircraft available to the frontline.

Exhibit 29

Improvements to the 3 components of the ‘lean backbone’ assessment are mutually reinforcing

NOT EXHAUSTIVE



Source: McKinsey analysis

Similarly, optimising inventory holdings by reducing both overstocking and understocking increases effectiveness (less time waiting for parts and equipment, which can result in better maintenance effectiveness), while increasing efficiency

by reducing costly holdings of excess inventory and unnecessary transport and handling.

In our calculations of potential productivity improvements, we started from the military capability requirement and determined what is needed to deliver it. Our philosophy has been to look for more effective ways of doing things with the expectation that these will likely turn out to be more efficient. We have not started by trying to find cheaper options. Given the unique mission of Defence and the reliance placed on effective support services by frontline commanders and personnel, the distinction is critical.

6.1 ACCELERATING LEAN OPERATIONS IN MAINTENANCE

Our assessment of maintenance covers the maintenance, repair and overhaul of major military platforms and equipment. It includes work performed by Defence personnel, contracted partners (such as BAE Systems, the Australia Submarine Corporation and Qantas Defence Services), small trade repairers (for example, elements of Land Rover maintenance), as well as the cost of repairable items (spare parts). We have reviewed the extent to which lean maintenance practices are in place, and the potential for improvements if lean practices were further implemented.

Lean is a proven methodology which delivers holistic improvements to any type of operation. (See Appendix 2 for a brief explanation of lean.) The lean methodology works particularly well in maintenance operations, given their repeatable and largely manual nature. While the Australian Defence Force (ADF) has a unique operating environment, lean techniques have proven to be very effective in other defence forces. Appendix 3 contains an extract from a UK National Audit Office report, on the use of lean techniques with fast jets. The US Air Force has also realised significant improvements through the use of lean techniques.

The use of lean techniques is not new to Defence or its contractors—the Air Force is currently developing a lean program, and a number of contractors have elements of lean practice in place. Nonetheless, there is a substantial opportunity to accelerate, improve and broaden the application of lean to increase effectiveness and efficiency.

Our analysis of the opportunity in Defence began with five lean diagnostic reviews covering the Air Force's F/A-18 Hornets and C-130 Hercules (both H and J models), the Army's Light B Vehicles (primarily Land Rovers), and the Navy's ANZAC class frigates and Collins Class submarines. Together, these platforms

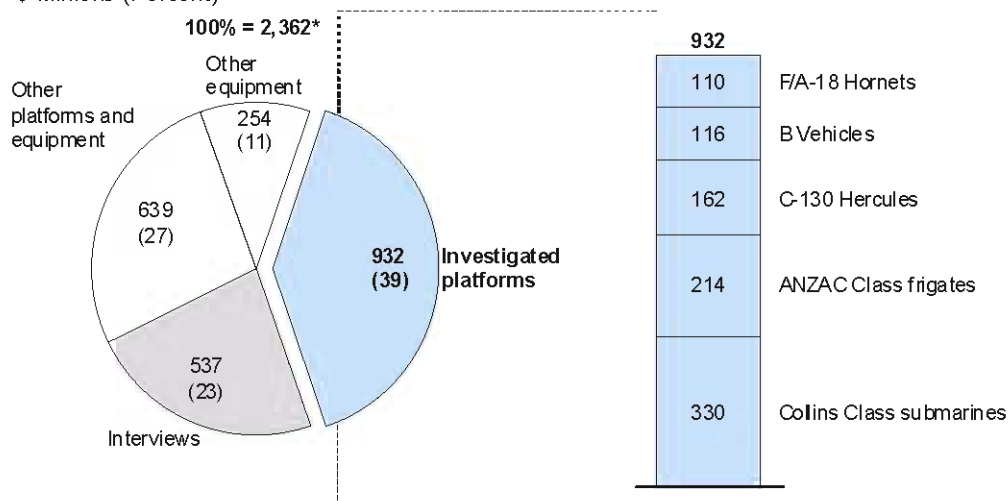
represent \$932 million, almost 40% of Defence's \$2.4 billion annual expenditure on direct, platform and other equipment maintenance (Exhibit 30).

Our standard diagnostic exercise involved 3- to 4-day visits to the maintenance facilities where we conducted shopfloor observations and/or interviews, and followed up with detailed analysis.

Exhibit 30

5 platforms were tested with lean diagnostics, collectively representing \$932m or ~39% of Defence's direct, platform and other equipment maintenance spend

\$ Millions (Percent)



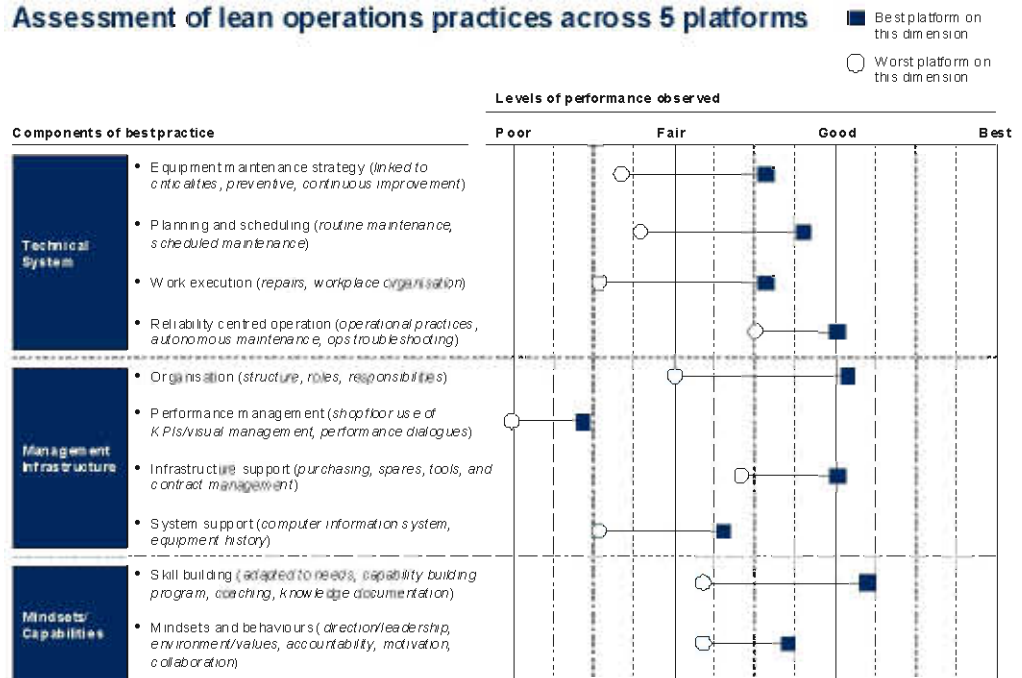
* The baseline was calculated as the total of DMO sustainment spend with various categories of cost and specific MSA's excluded as not reflective of true direct maintenance costs. APS and ADF DMO personnel, fuel, EO and AUC charges were all excluded as categories of spend to create a 'targetable cost base' of \$2,362m. From this cost base, MSA's were also excluded on four grounds: (i) they did not involve maintenance requirements (eg, Naval range MSA), (ii) involved electronics sustainment that was primarily provided by direct overseas OEM support (eg, GPS MSA), (iii) where sustainment involved a specialised service (eg, Kalkara aerial targets) with no lean maintenance opportunity, or (iv) where MSA was for 'one off' or building maintenance (eg, Naval and shore based communications system). MSA exclusions totalled \$526m.

Source: DMO DLT model

The results of the diagnostic exercise are summarised in Exhibit 31. On all dimensions, there is a range between the best and worst performance. While there are clear examples of good practice, no platform approached best practice on any dimension, let alone all 10. Equally, no platform had a consistently poor rating on all categories. Overall, the picture demonstrates that there is a real opportunity to move closer to best practice across Defence.

Exhibit 31

Assessment of lean operations practices across 5 platforms



Source: McKinsey Operations Practice, Team observations, interviews and analysis

Although detailed practices varied across the platform there were four improvement opportunities that surfaced on multiple occasions:

- **Greater maintenance facility consolidation.** Maintenance facilities are often below the scale required to set up flow lines, consolidate and standardise the most effective work practices and build expertise (critical for work within Australia and to prepare maintainers for deployed operations).
- **Contract term renegotiation.** Contracts with third party providers often contain terms that are disadvantageous to Defence, creating opportunities to selectively renegotiate or otherwise improve the contract structure—for example, greater use of effective gain-share contracts.
- **Full implementation of lean techniques in all workshops.** All five case studies showed significant opportunities for increasing the use of lean techniques in uniformed and contractor workshops, and in managing these workshops. In some settings, this will require the introduction of basic techniques such as visual management boards and the consistent use of

standard operating procedures. In others, more sophisticated practices such as analysis-driven preventive maintenance are required.³⁹

- **Improved ‘end-to-end’ management of maintenance operations.** The case studies revealed that step-changes in maintenance performance will require not only improved work practices but also the redesign of the end-to-end ‘enablers’ of maintenance operations. For example, the lack of critical spares drive long maintenance intervals, and the System Program Office (SPOs), the Force Element Group (FEGs) and contractors often do not have clearly aligned and joint accountabilities.

The following sections summarise the main observations from the five case studies. The sections not only illustrate the common themes stated above, but also highlight differences between the platforms. Following the platform-specific observations is an estimate of the size of the improvement potential and recommendations for how to implement lean.

F/A-18 Hornet diagnostic

The fleet of 71 Hornets is supported by both outsourcing contracts and uniformed activities. The Hornets are the Air Force’s second most expensive platform in terms of direct sustainment costs (after the F-111), costing \$110 million pa. The two largest components of this spend are:

- R3 (deep) maintenance, which is performed by two contractors (Boeing Australia Limited (BAL) and BAE Systems) and four Air Force squadrons
- Engine maintenance, which is performed by two contractors (Air New Zealand and Goodrich).



³⁹ Timeframes did not allow a detailed assessment of equipment strategy techniques—for example, the use of Failure Modes Effects Analysis and Reliability Centred Maintenance—involving potential failure-failure intervals. Detailed analysis of the current use and potential application of these techniques would ordinarily take place alongside the lean program.

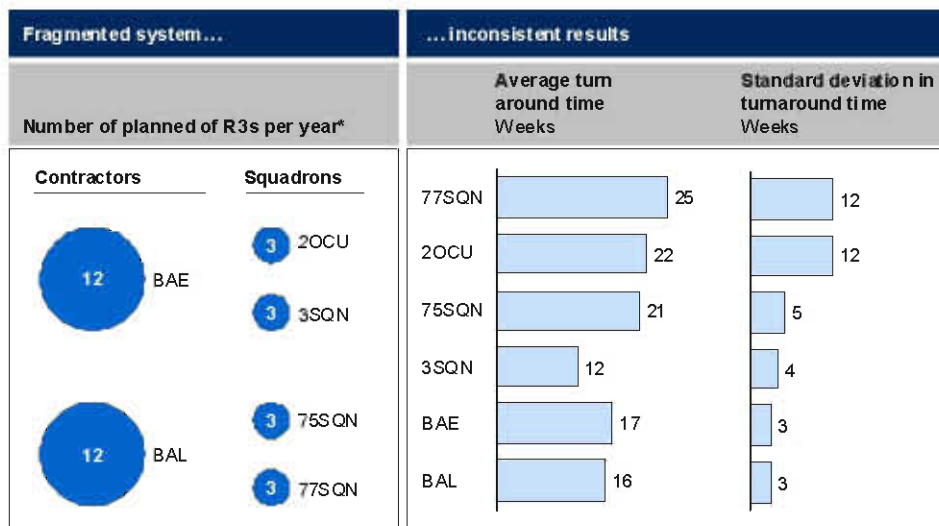
Exhibit 32**Facility configuration**

The Hornets have a fragmented support footprint, with R3 maintenance conducted by six different groups (Exhibit 33). Contractors are scheduled to do 12 R3s each, and the four squadrons are scheduled to do 12 (three each). In reality, however, the squadrons have been completing a total of eight to nine per year. This fragmentation makes it impossible to set up a true maintenance ‘flow line’, which is a core enabler of standardised and efficient maintenance. By contrast, the current system delivers average Turnaround Times (TAT) which vary from 12 to 25 weeks depending upon location, and individual TATs themselves are highly variable, with standard deviations of up to 12 weeks. The current, fragmented arrangements are designed to enable the four squadrons to maintain capabilities, but this is compromised by the lack of a consistent flow of work (some squadrons have not had an R3 for 6 months).

Exhibit 33

Performance of Hornet R3 maintenance

R3 maintenance, 2006–2008



* Based on levels of aircraft availability and recorded turnaround times, the squadrons are completing 8–9 R3s per year at present.
Source: CAMM2 data, HOSR presentation

A concentrated maintenance configuration with flow lines could deliver more consistent volumes and standards of work and therefore faster turnaround times, lower costs and greater opportunities for uniformed staff to improve their skills. Even if a consolidated facility was managed by a contractor, uniformed personnel could still be trained via secondments—which is a practice used in similar situations in other defence forces. We note the Air Force concern that centralising operational maintenance will diminish squadron ‘ownership’ (and therefore productivity of maintainers). However, current variability between squadrons (in TAT) and observations of current performance (addressed below) suggest that a centralised model, designed to ensure independent operational deployment is maintained, is preferable.

Contract structure

No detailed observations were made of the Hornet contract structure, given several key pieces (both R3 and engine maintenance for example) were being renegotiated during the course of our diagnostic. We note, however, that at the time of our diagnostic, the third party providers had indicated they could reduce the costs of their contracts. This reinforces our observations that significant efficiencies can be realised from the contractors’ operations.

Lean workshop practices

A few aspects of lean are already in place. For example:

- BAL has begun to break down work into daily modules per maintainer, which should improve flow, and use visual performance boards.
- Squadron workshops demonstrated very good tool control practices, including shadowboards and kitting for easy tool access. Some good performance management practices were observed for military maintenance staff, including quarterly periodic reviews and personnel annual reports.

There were, however, clear opportunities to improve:

- Properly-defined work packages do not exist in the squadrons and are in early development with contractors.
- There is a very high level of ‘on condition’ maintenance, which leads to high levels of unscheduled maintenance. This in turn makes planning and scheduling difficult.
- Highly variable turnaround times make it hard to smooth and match demand to capacity.
- A large amount of maintainers’ time, especially within the squadron, was spent out of the work zone—talking with or watching others (up to ~80%), with only a small portion of time spent working on core ‘value add’ tasks.

End-to-end management

End-to-end enablers which support the maintenance operation could be improved. For example, the lack of joint metrics for aircraft serviceability is contributing to a silo mentality between the SPO (availability metric) and the squadron (serviceability of available aircraft), and misses the opportunity for more integrated planning and generation of end-to-end improvement solutions. Additionally, a shortage of parts does not always delay the critical path, but cannibalisation can disrupt maintenance schedules and drive additional cost.

Improvement opportunity

Addressing the issue identified in the diagnostic could lead to significant improvements in the performance of the Hornet maintenance operation. The serviceability level could be increased [REDACTED], while at the same time delivering savings [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

C-130H and C-130J (Hercules) diagnostic

The fleet of 12 C-130H aircraft and 12 C-130J aircraft is supported by outsourcing contracts and uniformed activities. Direct sustainment costs are \$162 million (\$83 million for C-130H and \$79 million for C-130J), making it a larger spend base in combination than the F/A-18 or F-111 platforms. Maintenance takes place at Richmond (37 Squadron, Qantas Defence Services (QDS), Raytheon for C-130H; 37 Squadron, Raytheon, Standard Aero for C-130J), Canberra (QDS for C-130J) and at a variety of Original Equipment Manufacturers (OEMs) for specific subcomponents.

[REDACTED]

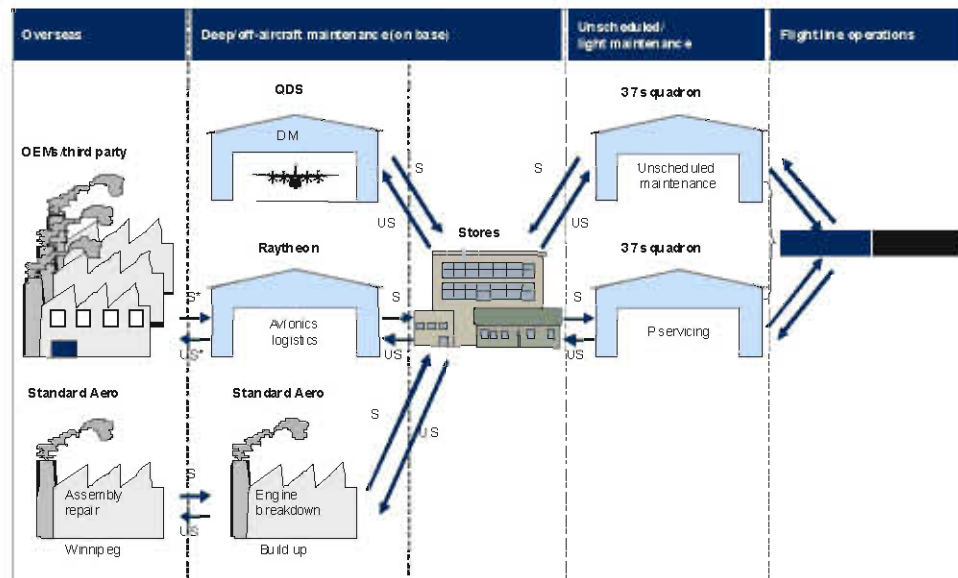
This difference in performance results in greater use of the more expensive C-130H platform, as well as increased use of more expensive chartered airlift services for operations.

Facility configuration

The fragmented maintenance footprint could be improved in three ways. First, by consolidating the strip down and rebuild of the T56 and AE2100 engines. Second, through better integration of 37 Squadron and all the on-site contractors at Richmond to manage it more like one production system (Exhibit 34). Third, by removing barriers between C-130H and C-130J maintenance at the Squadron level to smooth demand and obtain better access to scarce trades.

Exhibit 34

Hercules maintenance footprint



* S = Serviceable aircraft or parts, US = Unserviceable aircraft or parts
 Source: Stevisits 9–11 September 2008, McKinsey analysis

Contract structure

The contract terms set Defence up for low productivity gains. While there is a gainshare arrangement with QDS for example, the specific terms factor this into the new base for the following year, suppressing contractor profits, and thereby removing an incentive for improvements.

Lean workshop practices

Some implementation of basic lean techniques has already occurred. For example, there are: good tool control processes; implementation of workplace organisation techniques and rigorous inspection regimes at contractor and squadron workshops; rectification programs designed for recurring faults/failures at the contractor; and basic visual boards used to highlight the status of aircraft tasked for work that day at the squadron level.

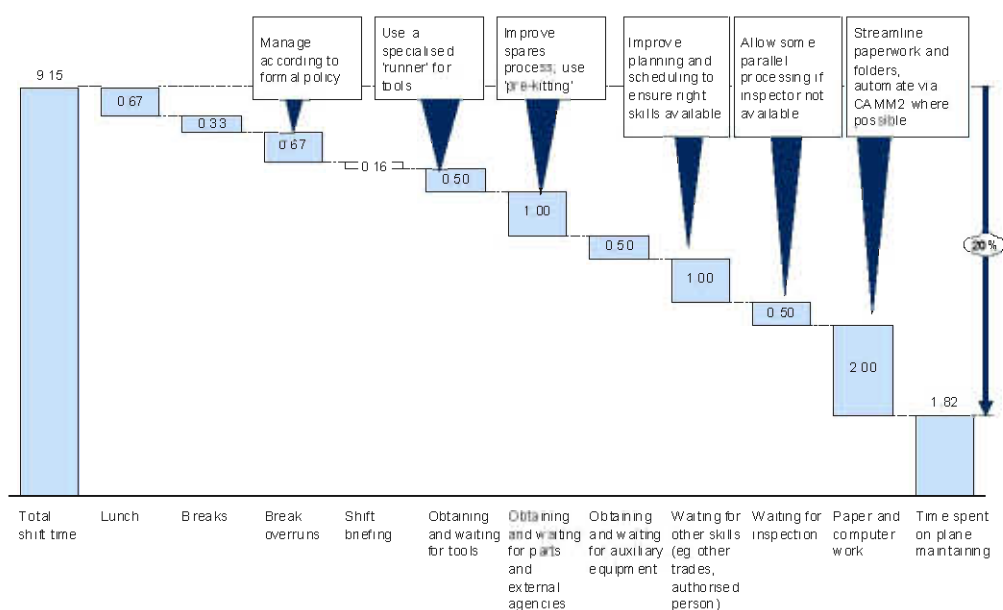
There are, however, a number of areas where the C-130 maintenance operation could further implement lean practices. The availability of uniformed personnel for major rectification maintenance was low at ~25%. While practical constraints mean there are limits to how far this can be improved, it could be slightly higher than it is today. More critical is the tool time—the proportion of time maintainers

actually spend working on the aircraft while on shift. For uniform personnel, tool time is 20% and most of the reasons why it is so low could be addressed. For example, by using ‘runners’ for tools, taking all tools needed for a particular job to the aircraft at the start of work (pre-kitting), improving planning and scheduling, and streamlining paperwork (Exhibit 35). There are also highly variable times for similar jobs (especially P1 and P2 servicing), which makes planning and scheduling difficult. This is compounded by the practice of not giving personnel clear expectations of the time to complete each task.

Exhibit 35

On-shift ‘tool time’ is ~20%

Average hours (based on standard hours for Monday–Thursday)



Source: On-site interviews and observations with maintainers and supervisors

There was also very little evidence of man hour metrics or performance dialogues/feedback at the maintainer level, or of comprehensive visual management in the workshops.

End-to-end management

Issues in the end-to-end spares process for the maintenance of C-130 cause substantial increases in turnaround time.⁴⁰ The result is, one aircraft is always unavailable so that it can be ‘cannibalised’, particularly for avionics components.

⁴⁰ This is driven, in part, by a worldwide shortage of some spares.

Potential improvements include: conducting rigorous analysis to quantify the cost of holding extra spares and/or paying a premium for priority spares compared with the benefit of increased C-130J uptime; investigating different ways of working with OEMs; or updating internal equipment strategies to the optimal mix of condition monitoring, early change-outs and run-to-failure components.

Improvement opportunity

Improvements to the Hercules maintenance operation could reduce the cost of current flying hours by between [REDACTED]. The main way to capture financial benefits would be to use the increased availability of C-130H and C-130J fleets to mothball part or all of the C-130H fleet in favour of cheaper C-130J capacity. Availability would come from reducing the turnaround time by 17 to 34%, through increasing actual work time and reducing the lead time on spares. Small savings are also assumed for C-130 overheads.

Light B Vehicles (Land Rover) diagnostic

B Vehicles are the largest platform by spend within the Land Systems Division (\$116 million, split into Light B Vehicles at ~\$64 million and Medium-Heavy B Vehicles at \$52 million). The diagnostics focused on Land Rovers, as these account for the largest share (\$46 million) of the spend. The fleet of 3918 Land Rovers is supported through first, second and fourth line workshops around Australia (and overseas, during operations) and an Extended Repair Line (ERL) at Bandiana (run by BAE Systems). Tennix Toll (through the Defence Integrated Delivery System (DIDS) contract) and various trade repairers support fourth line workshops, and provide additional support at first and second lines, as an adjunct to uniformed personnel.

These maintenance operations produce an overall low availability level of 53 to 68% across the fleet. Utilisation and demand, however, are also low for most variants. The exception is critical variants such as the 4x4 RFSV (224 vehicles) and 6x6 LRPV (24 vehicles), which see much higher demand by the Army for fast turnaround times.

Facility configuration

There are some opportunities to improve the maintenance footprint. In overall maintenance strategy, the Land Vehicle SPO is investigating options to set up repair pools to better consolidate maintenance and provide a more seamless service to the Army. Such a move would enable more effective and efficient service delivery. At the ERL, the production line is notionally in one shed. In reality, the facility is split between the North Bandiana and Wadsworth barracks,

meaning each chassis will travel at least 25 km and be receipted in and out 10 times.

Contract structure

Current DIDS remediation activities will provide some improvement to the contract structure, allowing increased labour participation by DIDS contractors (at a cheaper hourly rate than trade repair) and reduced parts costs as purchases are centralised through Defence procurement systems. For Land Rovers, the ERL has a gainshare term in the contract with BAE, which can be used to drive bottom-line savings as and when BAE make further improvements to their workshop practices.

Lean workshop practices

Workshop observations focused on the Bandiana ERL, which is recognised by fleet managers as the best facility for light vehicle maintenance. Several lean fundamentals are already in place at the contractor workshop: some standardised work instructions and timings are in place with more being developed; reassembly work is arranged into a line of consecutive stations to develop specialisation and work rhythm; each station is set to a notional 2-day block to meet required output (that is, 100 vehicles in 200 days); and there is line-side supply of basic consumables to avoid waiting time for operators.

At the Bandiana ERL and beyond, there are opportunities to extend this early lean implementation:

- At the ERL, at least 40% non value-added work was observed in the contractor workshop (Exhibit 36), driven largely by rework, transportation, waiting and inventory.

Exhibit 36

Proportion of non value-added work—up to ~45%

Number of ERL maintainers per observation

	VA*	NVA*	Total	Non value-added work observed	Potential improvements
A	2	7	9	<ul style="list-style-type: none"> Rework. 1–2 weeks spent in final inspection station, but only small portion is in spec; rest is several pieces of minor rework 	<ul style="list-style-type: none"> Conduct mini-testing at each step in process to provide immediate feedback to maintainers; shift team leaders to more of a coaching role
B	5	4	9	<ul style="list-style-type: none"> Transportation. Despite ERL being in 1 building, vehicle will cover >25km between sites (eg paint, grit) leading to hours of driving and repositioning time and disruption to flow 	<ul style="list-style-type: none"> Use buffers with third-party providers to smooth flow; de-specify paint and grit requirements wherever safe to do so; longer-term, evaluate consolidation of facilities to one site
C	8	1	9	<ul style="list-style-type: none"> Waiting. Major driver is bottleneck at paint and grit lines which blow out lead times, but also cause down time for maintainers 	<ul style="list-style-type: none"> Institute a rigorous schedule at paint and grit lines to improve flow; where a 'slot' is missed, use this to problem-solve the root cause, and fix the process
D	6	3	9	<ul style="list-style-type: none"> Inventory. High proportion of 'priority' vehicles disrupts designed flow and wastes time in stopping and restarting in-process tasks 	<ul style="list-style-type: none"> Separate parts of flow-line to accommodate priority path; work with customer (Army) on whether non-critical variants are required at all (currently low serviceability, but few Army complaints)
Average	5	4	9		

* VA = Value-added work, ie conducting maintenance, NVA = Non value-added work and incidental activities
 Note: These figures understate non value-added activity, as they exclude maintainers not on the shop floor during the observation
 Source: Process observations 10–11 September 2008

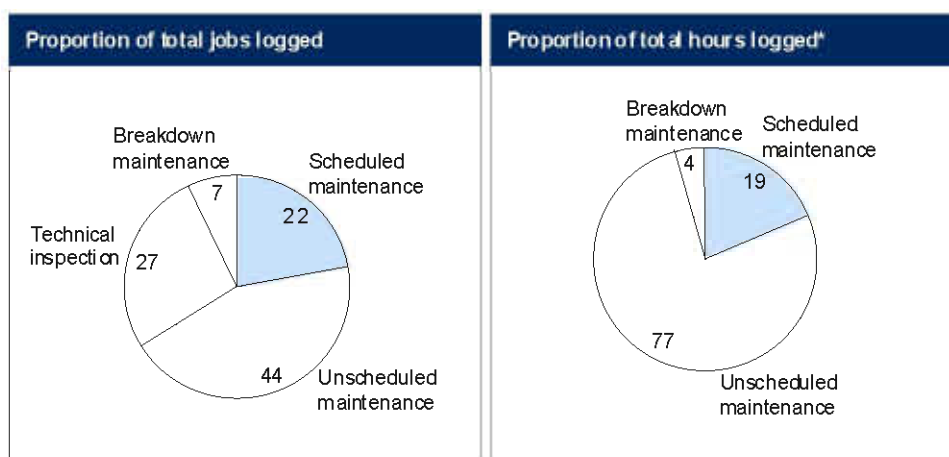
- Paint and grit lines are bottlenecks at the ERL, and there has not yet been detailed process redesign of this critical equipment,⁴¹ nor is there a tight schedule with root-cause problem solving each time the schedule is missed.
- Across the whole Land Rover maintenance operation, there is a very low proportion of schedule maintenance (19%), and even for scheduled jobs there is low adherence to schedule, suggesting a low rate of predictive/preventive maintenance (Exhibit 37).

⁴¹ Some investment (based on a sound business case) may be required.

Exhibit 37

Proportion of scheduled maintenance is ~20%

Percent



* No hours are logged for technical inspections in Minerva
 Source: LVSP0 Minerva data, McKinsey analysis

- The management infrastructure could also be improved at the ERL and across the network. For example: at the ERL, there is almost no visual management (for example, metrics, status boards); interruptions to the flow from rush jobs have made the 'Date Equipment Required' targets virtually meaningless; and performance dialogues and maintainer-specific KPIs are not used to manage performance on a daily basis. In the broader network, issues on data availability and system interoperability make decision-making difficult.

End-to-end management

End-to-end enablers also cause challenges for Land Rover maintenance. There is a very cumbersome process for site-based staff to make small modifications to facilities that would improve workflow and productivity; it can take up to 6 months for minor works (below \$20,000), and up to 17 months for medium works (\$20,000 to \$250,000) (Exhibit 38). Contractor management capabilities could be improved—for example, there is a tacit assumption Standard Repair Times are 'tight' despite not having been formally revised for 5 years. Spares are less of an issue than for the C-130, for example. On-site staff, however, assert that there are still occasional, lengthy delays caused by shortages of repairable items and

challenges with OEMs, largely caused by the Land Rovers being well beyond their scheduled ‘life of type’ (that is, retirement age).

Exhibit 38

Process to approve small facilities expenditure

Process					Interview comments	
Minor new works <20k	Minor new work request	DSG Base services reviews and responds	GSS contractor	Approved contractor	<ul style="list-style-type: none"> ‘I need to go through this procedure to install additional power outlets in the maintenance shed, even though it would take a sparky a half day to do’ 	
Activity	<ul style="list-style-type: none"> Base completes with internal approvals 	<ul style="list-style-type: none"> DSG reviews If funding may be >20k, then must complete CSIR If complications in request, ‘tech services’ review 	<ul style="list-style-type: none"> DSG contractor completes when has capacity If no capacity, another contractor can complete if approved by DSG 			
Average time	• 2 days	• 1–2 weeks	• 2 weeks–6 months (if goes to tech services)			
Process					Interview comments	
Medium new works >20k–<250k	Corporate services infrastructure request	Base facilities conference	Required facilities conference	Defence infrastructure Steering Committee	Tender and quote	<ul style="list-style-type: none"> ‘The current tendering processes for relatively small stuff is ridiculous ... it means that no mums and pops can apply, and the companies that apply gold-plate their quotes to pay for the tender, and then sub-contract to a local anyway’
Activity	<ul style="list-style-type: none"> Business case completed by base with internal approvals 	<ul style="list-style-type: none"> Units within a military area meet to determine priorities for year 	<ul style="list-style-type: none"> Bases within a region prioritise 	<ul style="list-style-type: none"> Meets annually and determines priorities 	<ul style="list-style-type: none"> Various tender processes occur depending on spend 	
Average time	• 0–6 months	• 1 month	• 3 months	• 1 month	• 1–6 months	

Source: Interviews with facilities officers at bases

Improvement opportunity

Improvements to the Land Rover (and other Light B Vehicle) maintenance operation could increase availability on critical variants by at least [REDACTED], and reduce cost by [REDACTED]. Applied to the direct maintenance spend for B Vehicles, this represents a total saving of [REDACTED]. Availability benefits would come from reducing the lead time by up to 50% through the ERL, by improving receipting, removing buffers and improving assembly scheduling. Financial benefits could be realised by improving labour productivity by 15 to 50% across repair lines, by DIDs contracted and uniformed labour,⁴² to displace more expensive trade repairs. Additional savings could be realised by implementing gain sharing improvements at the ERL to reduce work content and

⁴² Consistent with other case studies, a significant improvement in uniformed labour productivity can be delivered through increases in availability to conduct maintenance (this requires careful investigation of which non-maintenance activities are ‘compressible’ without diminishing basic soldier skill requirements), and improvements to actual ‘tool time’ during maintenance hours.

cost [REDACTED]. Conservative estimates have also been made for consumables and overhead reduction as per other platforms.

ANZAC Class frigates diagnostic

The fleet of eight ships is supported by outsourced contracts and uniformed activities. The direct sustainment cost is \$214 million, making it the largest surface fleet spend, and the second largest overall in the Navy, after Collins Class submarines. Maintenance takes place by an Integrated Material Support (IMS) Alliance of the Commonwealth, BAE and Saab, who perform defect correction and engineering changes. External Maintenance Availabilities (EMAs) (that is, deep maintenance) are performed by a panel of four contactors: Thales, BAE, Forgas and UGI.

Average availability between 2000 and 2007 was 161 sea days per ship, which is above the design basis of 125 sea days per ship. Sea days have, however, trended back towards the design basis in 5 of the 6 years since the peak in 2001.

Facility configuration

The maintenance footprint is split between Perth and Sydney, which reflects the Navy's two-ocean policy. This creates challenges for Defence—there is essentially a duopoly in each location, interstate transfers often occur, and the Navy misses the opportunity to share learnings across contractors and benefit from scale economies.

Contract structure

The Commonwealth has low leverage over EMA contractors. The agreement is essentially a fixed price contract that delivers any improvements in execution to contractors. 'Growth work' beyond these tendered packages is at a higher hourly rate, giving an incentive for low bidding on packages to access a higher proportion of growth work.

Lean workshop practices

No maintenance took place during the on-site visits, so observations were interview-based, and then followed up with more extensive data analysis. Interviews revealed strong technical skills in the SPO relating to planning the work, a strong focus on the end-customers' needs and co-operative relationships between the Commonwealth, Saab and BAE.

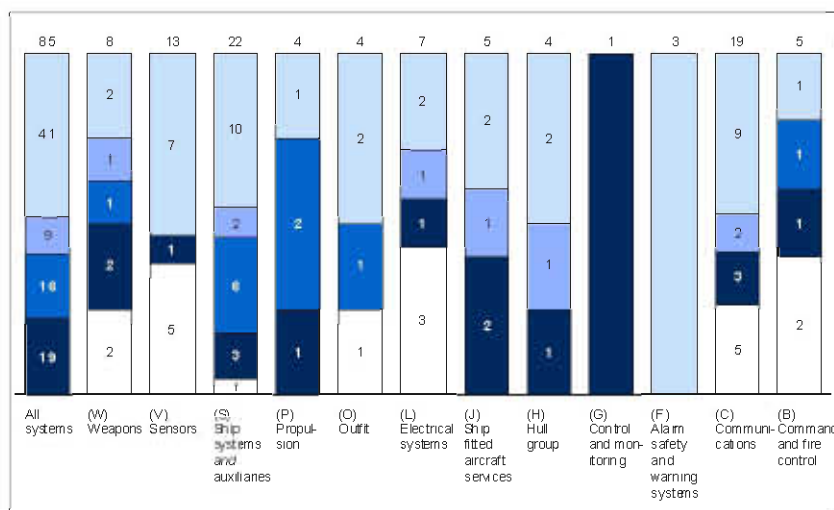
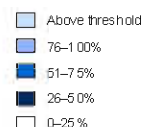
The diagnostic pointed to some classic opportunities to deploy lean techniques. The highly variable performance against expected Mean Time Between Failure (Exhibit 39) represents an opportunity to move from time-based/usage-based

maintenance strategies to predictive/condition-based strategies. Typically ~30% or more of EMA is identified close to the EMA start date and therefore cannot be properly planned, resulting in higher costs. Even when scheduled, typically less than 10% of EMA tasks start on schedule, due in part to lengthy contract change proposal processes, and clashes with other work in confined spaces. KPIs have been piloted, but could be extended across the entire SPO, and combined with the involvement of all maintainers in daily performance dialogues.

Exhibit 39

Performance against expected Mean Time Between Failure (MTBF)

Number of systems



- Only 43% of systems are exceeding MTBF threshold performance
- An additional 20% of systems range from 50-100% of threshold MTBF
- Data is generally difficult to capture due to data integrity issues

Source: ANZAC SPO / ANZAC Fingale Class case study

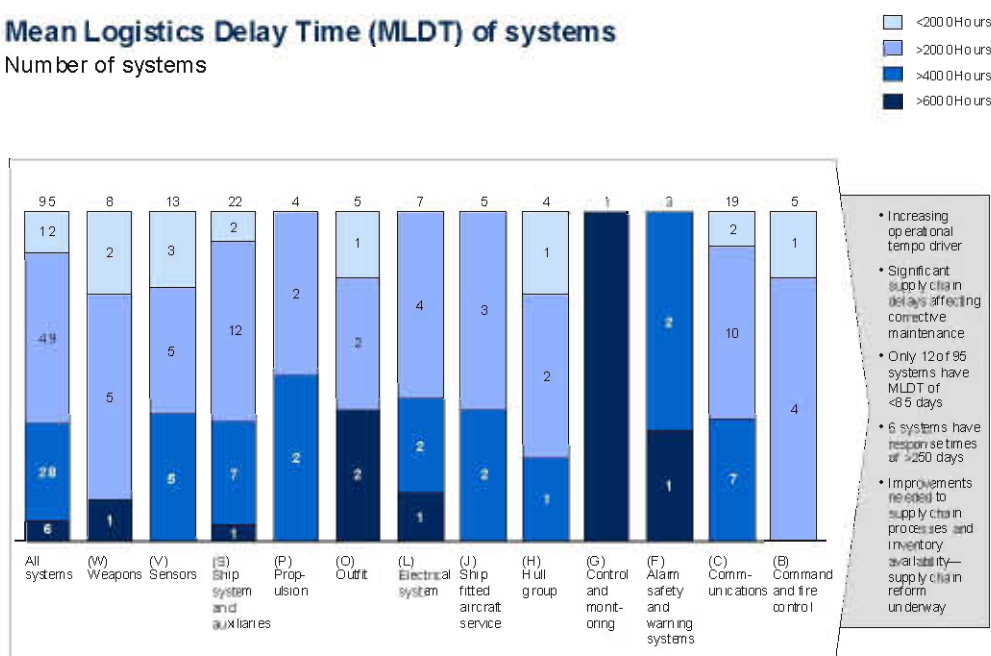
End-to-end management

The spares process (that is, repair loop) is the key end-to-end enabler for maintenance outcomes. Only 12 of 95 component systems have a Mean Logistics Delay Time (MLDT) of less than 2000 hours (~83 days); six have an MLDT of more than 6000 hours (250 days) (Exhibit 40). Root causes of the complex, slow repair loops include: paperwork and compliance delays; a lack of comprehensive measurement for turnaround times; and low levels of root-cause problem solving.

Exhibit 40

Mean Logistics Delay Time (MLDT) of systems

Number of systems



Source: ANZAC SPO; ANZAC Frigate Class case study

Improvement opportunity

Improvements to the ANZAC maintenance operation could deliver savings [REDACTED], while holding availability at least constant. Financial benefits could be realised by reducing contractor costs, by supporting them to remove non value-added work content, and implementing reliability-centred maintenance practices. Labour productivity could improve [REDACTED] from these techniques. Materials spend could improve [REDACTED], by decreasing volumes through extensions to maintenance intervals and more corrective/predictive work. Overheads could be reduced [REDACTED].

Collins Class submarines diagnostic

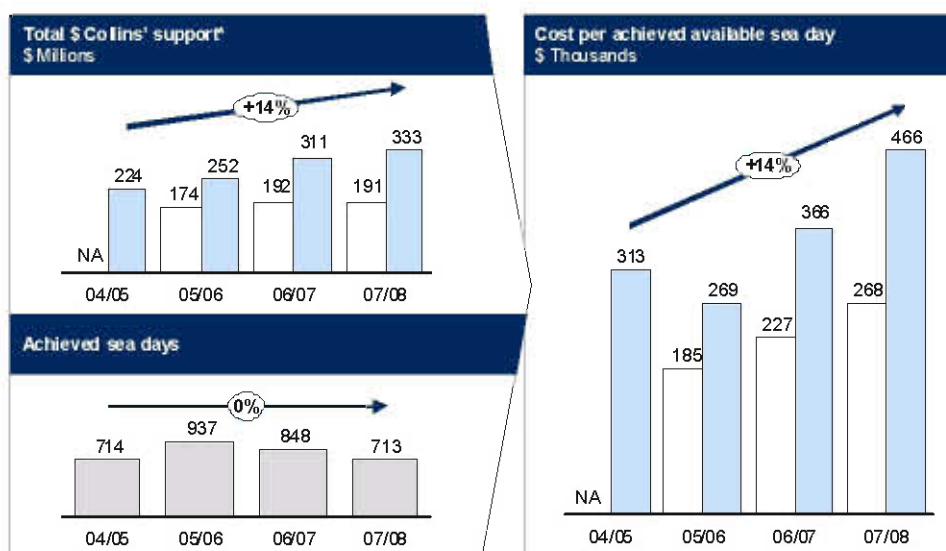
The fleet of six Collins Class submarines is supported through a sole source Through Life Support Agreement (TLSA) with the Australian Submarine Corporation (ASC). At a total of \$330 million in direct maintenance spend (\$191 million to ASC under the TLSA), Collins comprises the largest platform spend across the three Services. Full-cycle dockings take place at Osborne, South Australia, and other maintenance activity takes place in Western Australia where the submarines are based.

Total expenditure has increased by 14% pa since 2004/05, while achieved sea days are the same as they were in 2004/05 (Exhibit 41). Actual availability runs at [REDACTED] against an expected availability of 62%, largely driven by major docking periods taking more than [REDACTED] originally planned (Exhibit 42).

Exhibit 41

Sustainment costs and achieved sea days 2004/05 to 2007/08

□ ASC (under TLSA)**
 □ Total MSA (CN10)



* Collins support sustainment only

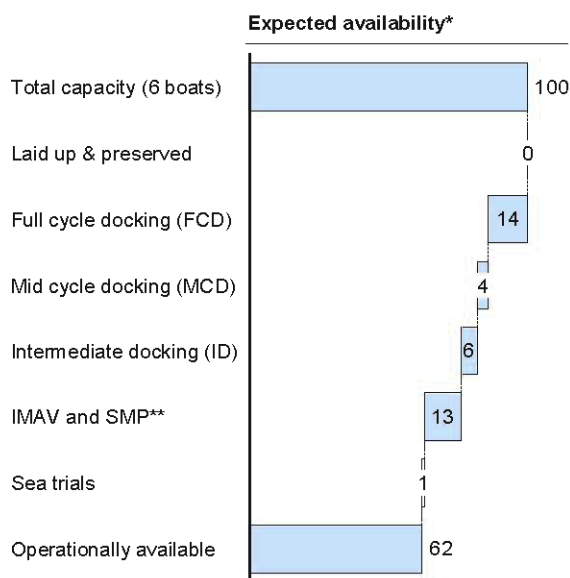
** ASC spend not available for 2004/05 – TLSA instituted mid-2004/05

Source: DMO, ASC, McKinsey analysis

Exhibit 42

Boat availability

Percent; FY06/07 and FY07/08



* Planned usage and upkeep cycle (pre-elongation)

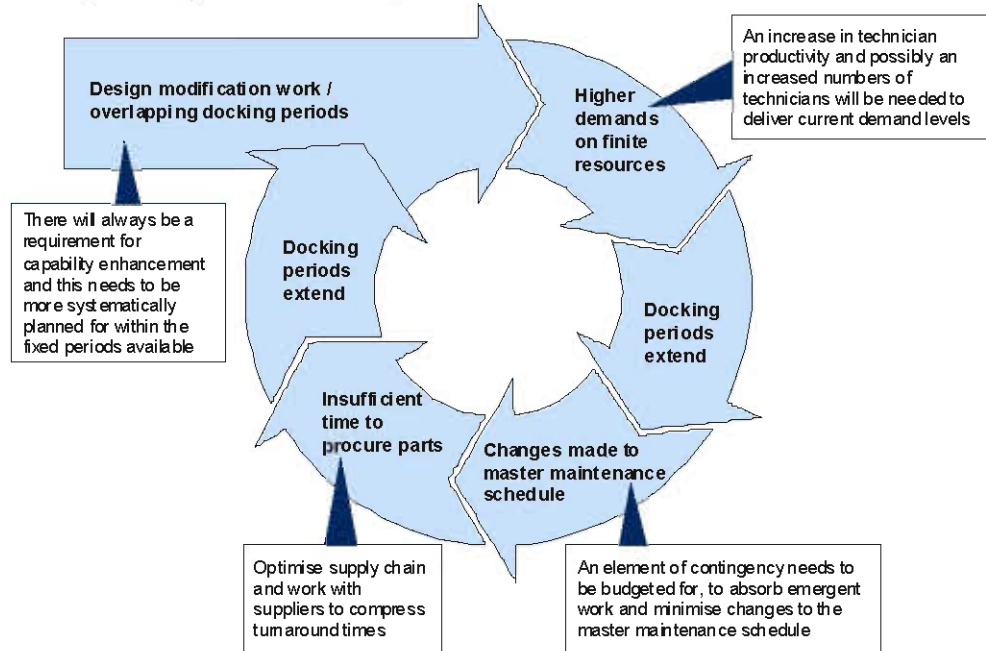
** Intermediate maintenance availability and Supported maintenance period

Source: CCSM Maintenance Schedule 2006–10, Usage and Upkeep Cycle

There are substantial systemic issues across the support landscape for the Collins Class (including Defence, ASC and its suppliers), which are interacting to drive increased observed cost and low levels of availability (Exhibit 43). Frequent design modifications and upgrades (including significant legacy issues arising from the build phase), along with overlapping docking periods, drive higher demands on finite resources. In turn, this leads to further extension in docking periods and causes further instability in the master maintenance schedule (exacerbated by the lack of contingency built into the schedules to absorb emergent work). Schedule instability makes the planning of spares provisioning inaccurate, which further exacerbates productivity issues, extends repair turnaround times and increases docking periods. This cycle is further compounded when low submarine availability compromises training of seamen, which exacerbates crew shortages. These crew shortages can lead to submarines docking early, further disrupting the schedule. It will be impossible to break this cycle without coherent action at all levels—to the commercial arrangements between Defence and ASC; in the repair facilities themselves; and in the end-to-end enabling system, including Defence.

Exhibit 43

ASC and Defence will need to work together to break the vicious cycle currently driving low availability



Facility configuration

Maintenance is split across two primary locations in Perth and Adelaide, with the deep docking facilities (used for main docking periods) located in the latter. The costs of consolidating all maintenance on one site, especially given the relatively long docking cycle times and the investments already made in infrastructure in Adelaide, are unlikely to be justified by the marginal benefits.

Contract structure

Multiple improvements can be made at the contract level. The ASC has experienced multiple learning curves—from being boat designer through to boat maintainer for a completely new class of submarine—and much has been achieved in terms of capability improvement. The TLSA and its incentives were put in place in order to improve the relationship between the ASC and Defence, and place it on a more commercial footing following the difficult build phase for the class.

[REDACTED]
[REDACTED]
[REDACTED] In addition, the systemic issues described

above (Exhibit 43) have significantly extended the duration of major dockings and led to continued difficulties in the relationship across the commercial boundary. For example, there is much finger pointing between the FEG/COLSPO (customer) and the ASC (supplier) when delivery or performance issues arise.

While the TLSA might have been appropriate in 2003, when the ASC was a Commonwealth-owned company, the lessons learned since then indicate the contract requires substantial change.

Lean workshop practices

Even within the bounds of the current contract, there are significant opportunities to deploy lean techniques at the shipyard level. For example, manpower capacity and efficiency rates are lower than required to meet the full cycle docking (FCD) schedule causing delays to the program (Exhibit 44). Even when available, ASC technicians are not achieving the productivity levels used during the planning phase [REDACTED]. The causes include: a lack of supervisory presence on the shopfloor (Exhibit 46); a lack of urgency to ‘get the boat out’ (exacerbated by the recent high numbers of boats alongside in Adelaide); and legacy work arrangements including guaranteed overtime, which reduces the incentive for a higher pace of work.

Exhibit 44



Exhibit 45

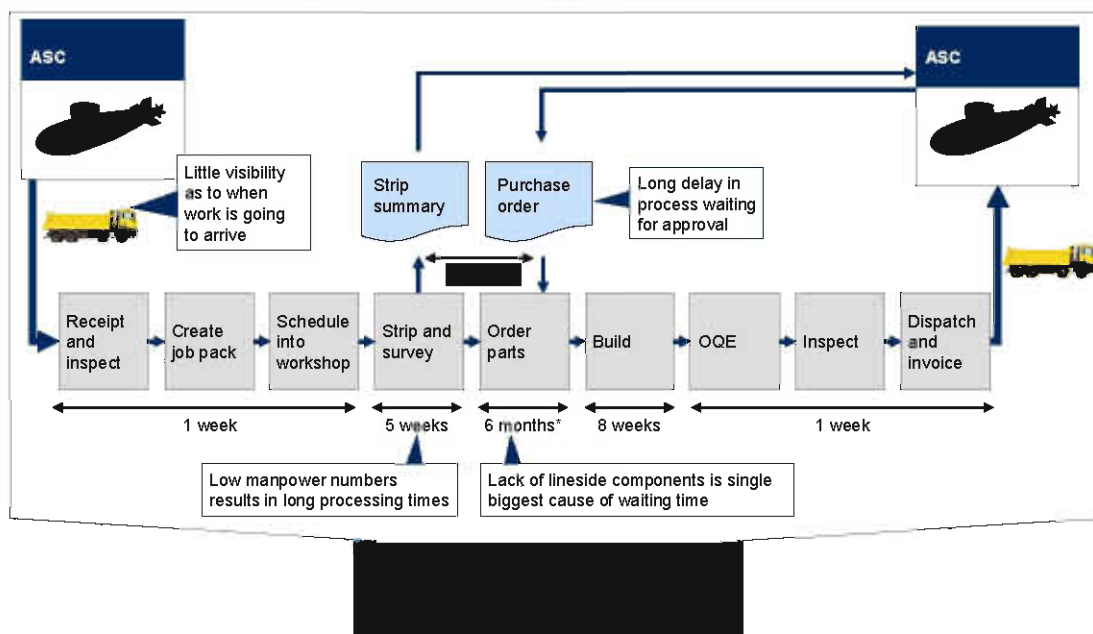


Exhibit 46

Maintenance inefficiency is exacerbated by: low spare parts availability, currently at a 66% demand satisfaction rate, mainly due to the lack of a pool of repairable items 'on the shelf'; very long turnaround times from many industry suppliers (Exhibit 47); increasing obsolescence; and schedule instability. As a result of Defence budget constraints in fulfilling the current 'bow wave' of maintenance, there are continual changes to the master maintenance schedule. This reduces the available forward planning time which, in turn, exacerbates the issues of parts availability and low labour productivity.

Exhibit 47

Lead time through typical external supplier: [REDACTED]



End-to-end management

The systemic issues identified above mean that the master schedule for boat maintenance has never been achieved. The original plan was 52 weeks for a full cycle docking, but none has taken under 2 years. As a result, management teams in both Defence and the ASC have had to devote considerable effort to ‘firefighting’, rather than putting in place a systematic program to improve the delivery of the outputs.

The schedule instability and wide variability of planning that result from it has also created significant issues for the program’s industrial suppliers. For a relatively small fleet such as the Collins, it will always be challenging to provide a stable flow of work to support domestic suppliers, many of whom operate at a relatively small scale. Schedule instability and the consequent ‘famine and feast’ nature of the demand profile exacerbates this to the point where the audit team heard from some suppliers that their survival is in question.

Improvement opportunity

Improvements to the Collins maintenance operation could increase the availability level by [REDACTED], while holding costs constant. Prudent cost control is important

and Defence should seek opportunities to remove any obvious sources of non value-added overhead cost. The criticality of submarine capability would, however, suggest most improvements would be invested back into additional sea days. Low case availability assumptions include: improving spare parts availability from 66 to 80%; and improving scheduling effectiveness by 50%. High case assumptions include: improving spare parts availability from 66 to 95%; and improving scheduling effectiveness by 100%.

Savings opportunity

This section explains the methodology used to estimate the savings opportunity from applying lean maintenance practices, and the derivation of the \$2.4 billion direct maintenance baseline. This methodology has been used in other Defence settings and found to be reliable. We believe we have been conservative.⁴³

The first step was to calculate the potential saving for the five platforms where lean diagnostics were conducted. Given our intention to ensure improvements deliver required capability first, we have assumed productivity gains are used to increase availability whenever it is short of requirements. Only when requirements are met have we estimated a financial opportunity. Indeed, in the case of the Collins Class submarines this approach means that entire performance improvement potential is directed to meeting availability requirements.

Similarly, with our focus on capability, we have not assumed increased productivity in uniformed staff translates to a reduced uniform workforce. The financial savings typically come from changing the mix of work between uniformed staff and contractors, from gain-sharing productivity improvements in contractor sites, and from lower use of consumables.

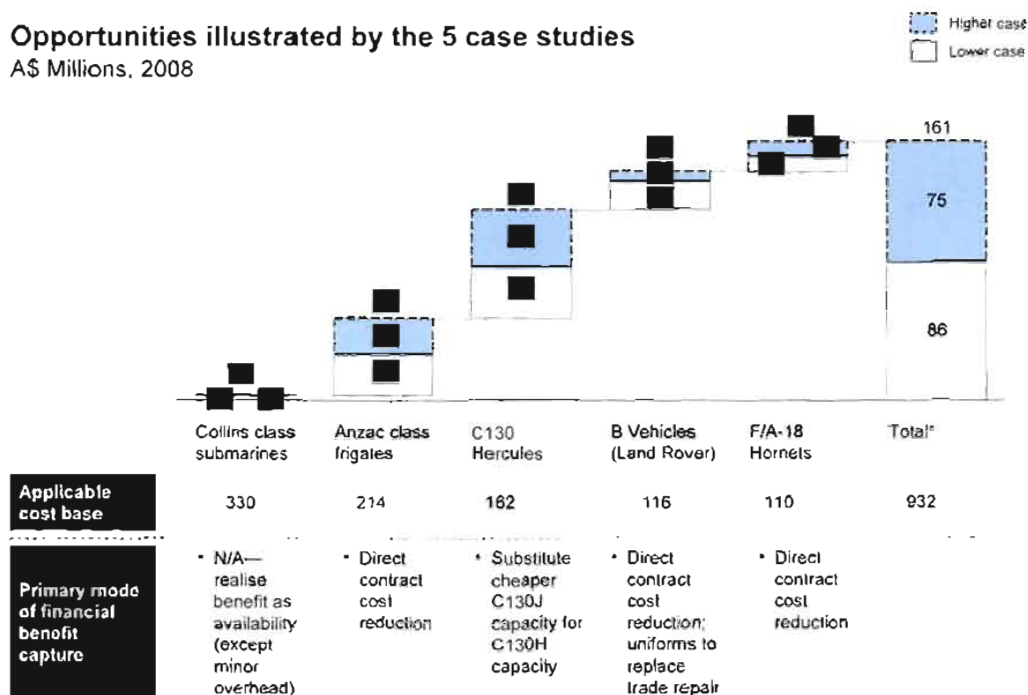
Based on this methodology, the savings opportunities for the five case studies are summarised in Exhibit 48. The saving of \$86 to \$161 million is a 9 to 17% saving on current expenditure. [REDACTED] financial savings have been assumed for Collins. The savings opportunity is 14 to 26% on the other four case studies.

⁴³ In other Defence settings, the savings identified when a lean program was actually implemented exceeded the estimates from this method.

Exhibit 48

Opportunities illustrated by the 5 case studies

A\$ Millions, 2008



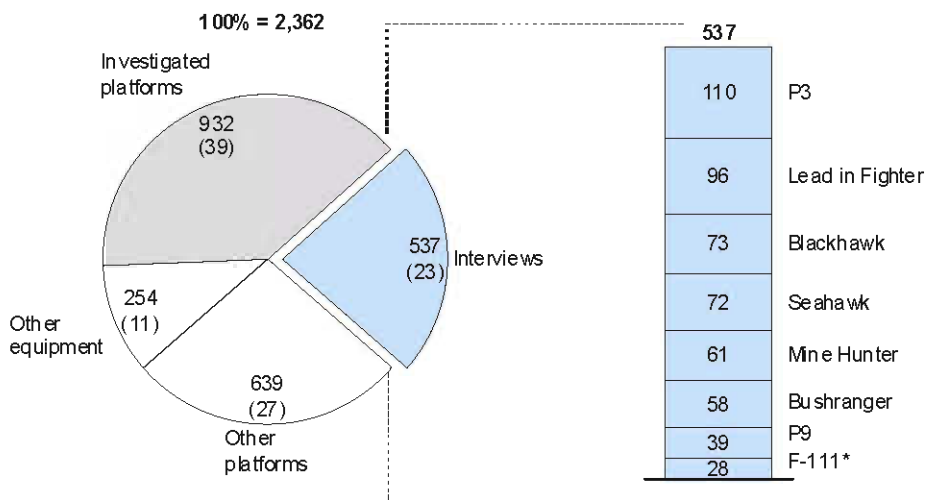
* This is inclusive of 5% already committed by Divisions as part of 2008/09 budgeting process
 Source: DMO DLT data; McKinsey observations; Interviews and analysis

The second step was to test the applicability of three of the four improvement themes identified across the five case studies (maintenance facility consolidation; increased use of lean techniques in the workshop; and end-to-end improvements) to eight of the largest remaining platforms. These account for another 23% of the baseline. Combined with the five case studies, this covers 62% of the sustainment spend (Exhibit 49).

Exhibit 49

The next 8 platforms represent \$537m or ~23% of cost base

\$ Millions (Percent)

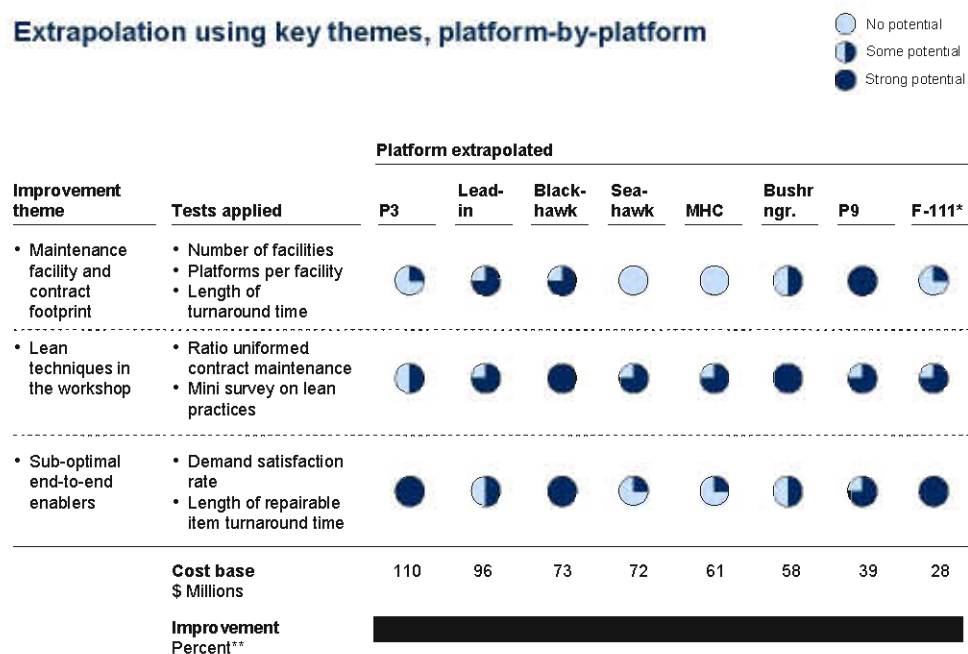


* The total MSA for F-111 was \$160m. \$18m was removed from the baseline as categories of spend (eg, DMO personnel) not in scope of this diagnostic. A further \$116m (or 80%) was removed from the 'targetable' cost base on the basis that a lean program would actually be applied against the F-111 replacement capability, the Super Hornet, that would be 80% outsourced to an overseas OEM.
 Source DMO DLT data

Interviews were conducted with the SPOs of each of these eight platforms, and data were collected to apply a series of basic tests against three of the four improvement themes. This allowed an assessment of which, if any, of the common themes applied to each of the eight platforms. The size of the improvement opportunity was calculated for each platform, based on the applicability of the three themes. Exhibit 50 shows the summary by platform and the improvement potential. In total, on a base of \$537 million, there is an opportunity of \$76 to \$136 million, a saving of 15 to 27%. A contract review was not attempted to test the fourth improvement theme, but further upside is likely given the examples of the five main diagnostics.

Exhibit 50

Extrapolation using key themes, platform-by-platform



* Medium term savings from F-111 will be delivered through replacement capability. As a result, the targetable cost base was reduced by 80% as the Super Hornet will be largely outsourced to an overseas OEM.

** This is inclusive of 5% already committed by Divisions as part of 2008/09 budgeting process.
 Source: DMO DLT data, McKinsey observations, Interviews and analysis.

The final step in calculating the overall opportunity was to extrapolate the savings to the remaining 38% of the direct maintenance baseline—involving other platforms and technical fleets. Importantly, the maintenance baseline (\$2.4 billion) is significantly lower than the total DMO budget for sustainment (\$4.5 billion). The direct maintenance budget was derived from DMO data, excluding various categories of cost—DMO, ADF and APS personnel; the cost of procuring new repairable items; the cost of explosive ordnance and fuel; and various other costs—that would not be reduced through direct lean maintenance savings. Additionally, 30 (of 104) material sustainment agreements (MSAs) were excluded from the baseline based on certain criteria: (i) they involved highly specialised electronic equipment contracted to overseas OEMs (for example, the GPS receiver fleet); (ii) they did not contain any maintenance activity (for example, Naval firing range support); (iii) they involved highly specialised services (for example, provision of towed aerial targets); or (iv) they involved one-off or facility maintenance (for example, Naval shore-based communication systems). Exhibit 51 shows the total savings opportunity for the remaining baseline, against various internal and external benchmarks. Adopting the weighted average of the case studies provides a saving range of 15 to 27%.

Exhibit 51

Conservative extrapolation to the remainder of the cost base of \$893m

■ Higher case assumption
■ Lower case assumption

	Average improvement Percent			Implied opportunity \$ Millions, FY2012	Discussion
Typical improvement in industry context	25	15	40	223–357	• Smaller range than Services, given less variability in productivity of commercial labour
Typical improvement in Defence context	20	35	55	179–447	• Lower end in platforms where effectiveness is improved and contractor heavy operations
8 additional (interviewed) platforms	15	12	27	122–237	• —
4 observed platforms (excluding Collins)	14	12	26	124–234	• Lengthier, full diagnostics could identify more opportunity in material savings and white collar overhead

Source: DMO DLT data, McKinsey analysis, McKinsey operations practice

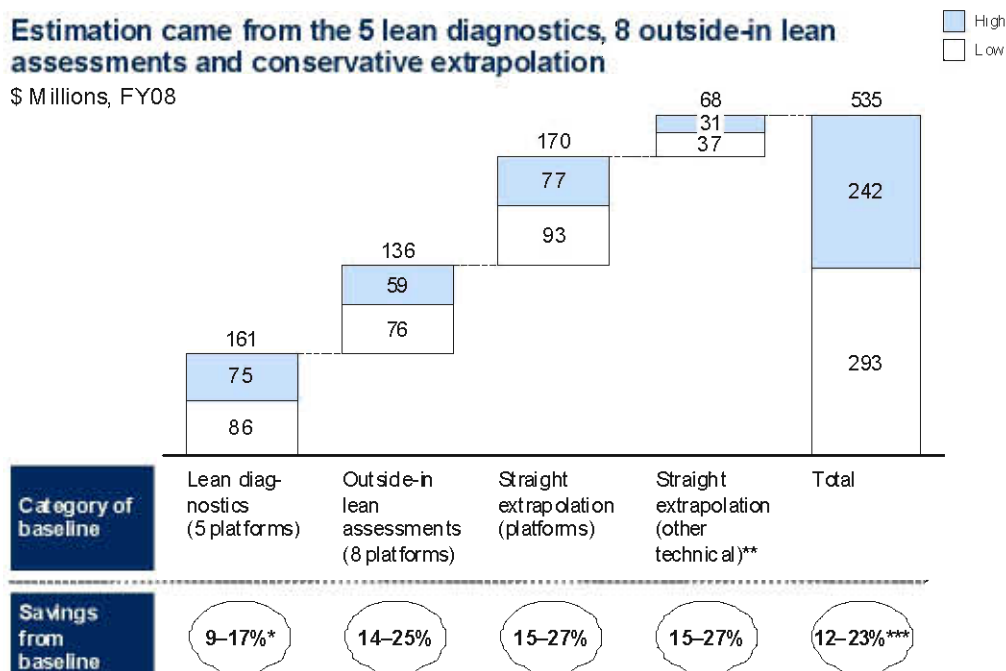
The total savings opportunity for the 2007/08 baseline⁴⁴ is estimated to be \$293 to 535 million, a saving of 12 to 23% (Exhibit 52). These numbers should be regarded as a conservative estimate; we have not included all potential savings (for example, savings from ‘white-collar’ support of contractor organisations). Similar programs in other Defence settings have delivered larger savings.

⁴⁴ The DMO Division heads have already committed to a 5% saving on the sustainment baseline as part of the 2008/09 budgeting process—a saving of \$237 million. Much of this saving will be from the same MSAs where savings from lean can be realised.

Exhibit 52

Estimation came from the 5 lean diagnostics, 8 outside-in lean assessments and conservative extrapolation

\$ Millions, FY08



* 335-161m (or 9-17%) opportunity includes Collins; opportunity is 14-26% on a baseline that excludes Collins

** As discussed previously, excludes MSAs with non-maintenance aspects, highly specialised services and technical electronics support from overseas OEMs

*** This is inclusive of 5% already committed by Divisions as part of 08/09 budgeting process

Source: DMO DLT data, McKinsey analysis

Given this savings potential, the introduction of a holistic lean program in Defence maintenance, including uniform and contractor workshops, maintenance program management and the end-to-end enablers, is one of the most promising opportunities to improve both effectiveness and efficiency.

Therefore, we recommend that Defence improve the effectiveness and efficiency of support activities based on the following principles:

- Consolidate uniformed maintenance facilities for each platform, wherever possible, on the logistics centre of gravity to achieve effective scale, allow for the most efficient processes and to deliver the most effective maintenance training to personnel.
- Consolidate selected contract maintenance facilities, where the benefits of scale outweigh any risks (for example, a reduction in the level of competition or competitive threat).
- Second uniformed staff into contractors to maintain skills where it is not otherwise optimal for maintenance to be conducted in Defence-operated workshops.

We recommend that Defence ensure the contractual conditions create the right incentives for performance improvements:

- **Structure contracts to retain competitive tension at prime, second and third tier contractor levels, and ensure contracts include incentives for annual improvements.**
- **Review contracts with problematic terms that may inhibit the adoption of lean, calculate the costs/benefits of renegotiating these contracts, and renegotiate any where it is economically rational to do so.**

We recommend that Defence further implement lean techniques in workshops and management. Specifically, Defence should:

- **Set long-term goals for implementing lean in all workshops (Defence-operated, contractors and eventually third party vendors).**
- **Implement lean for all end-to-end sustainment support activities by assessing all operations across organisational and commercial arenas, and assessing both blue-collar and white-collar activities.**
- **Prioritise the sequencing of workshop implementation using three criteria: military capability need, financial impact and ease of implementation (including contractual arrangements).**

Implementing lean

Fully implementing lean will be a multi-year (3 to 5 year) journey. It will take this amount of time for two reasons:

- The large number of platforms and workshops the program needs to cover.
- The time to truly embed new ways of working and a continuous improvement culture rather than delivering short-term (and short-lived) improvement.

While completing the implementation across Defence will take several years, tangible improvements to work practices at a given platform can be realised in 3 to 4 months. Some financial impact can be realised quickly—reducing the amount of Land Rover repairs sent to third party garages, reducing the use of charter airlifts by increasing Hercules availability, or reducing the amount of consumables used by improved kitting and tool control practices. There will be platforms where current contract arrangements make it difficult to drive productivity improvements, and contract renegotiation (or expiry and subsequent negotiation) will be required, but these should not be the first platforms targeted.

When it comes to the longer term program, however, we need to sound a note of caution because we have seen lean programs in both industry and defence settings not delivering the observed opportunity. It is critical for Defence that these pitfalls are avoided. Central to avoiding the disappointment is to ensure that the Defence effort is soundly based. In our experience successful programs have been guided by six key principles:

- **Balanced objectives, not just cost-focused.** The program needs to explicitly focus on delivering military requirements and capability first, by improving quality, time and cost. Focusing on cost alone risks compromising quality or capability and the end-to-end service commitment that is required.
- **Analyse the end-to-end process, not individual silos or problems.** A narrow analytical focus risks pushing problems on to another group, or overlooking important improvement opportunities.
- **Lead the program from the frontline, not the centre.** Coaching frontline staff to lead the improvements builds sustainable capabilities, which enable frontline staff to continually improve their operations. Leading from the centre risks limiting the extent of capability building and constrains the ability to ‘scale up’ the program.
- **Coach a simple process, don’t teach a complex toolkit.** If the approach is too complex, it risks being placed in the ‘too hard’ basket by staff, and will not have impact. Too much complexity will also limit the number of candidates able to work on an improvement team. Teaching team members upfront is helpful, but adults learn best when they are able to experiment and trial new approaches in their ordinary work environment, and receive appropriate coaching to help discover and learn new ways of working.
- **Improve the whole system, not just the technical process.** Process changes look good on paper, but driving real impact requires changes to the technical system, the management infrastructure, and to mindsets and capabilities (often referred to as ‘culture’). The failure to create a lean culture throughout the organisation is one of the common causes for lean efforts to deliver below expectations or become unsustainable.
- **Ensure each wave focuses on implementation and real outcomes, not recommendations.** If teams are not given a mandate to implement and do not feel on the hook for improvements, there is a risk they will generate detailed analysis and volumes of paper, but no real impact.

We recommend that a clear set of principles to govern the lean program are agreed to by the Service Chiefs (as the relevant capability managers), the

DMO leadership (CEO and Division heads) and the Commander Joint Logistics early in the program design.

While these principles can be applied in a number of ways, our experience of their successful application suggests that lean programs should be conducted in a series of waves, with each wave targeting a small number of platforms. This takes longer than a ‘big bang’ approach, but it allows genuine understanding, capability and lean culture to be developed in the workshop and among the relevant managers—which is where programs characterised by ‘manuals and memos’ and ‘central gurus’ typically fail. Practically, this means that a successful program should contain the following elements:

- **A design phase**, for 4 to 6 months—which will identify the platforms to focus on in waves one and two, customise the improvement methodology to the Department of Defence’s unique needs, and identify program participants.
- **‘Boot camps’** for 2 to 3 weeks prior to the launch of each wave—which will train program participants in the improvement methodology. Combined with practical training and coaching during the wave, this builds a cohort of staff, capable in lean, who will embed lean in their workplace. Many of these will then support implementing lean to other platforms, thus creating a ‘multiplier effect’ in Defence’s lean capability.
- **A series of improvement waves**, each 3 to 4 months long on a rolling basis. The first wave should focus on one to two platforms. Subsequent waves can expand until four to eight platforms are targeted in each wave. Each wave would use a standardised methodology to identify the key improvement opportunities relevant to the specific platform, develop and pilot improvements, and create a plan for sustained roll-out across the platform. Leaders of subsequent waves can be seconded to work on the preceding wave to build their understanding, capability and commitment prior to launching their own wave.
- **Cross-cutting breakthrough initiatives** should also be conducted. There will be complex problems that affect multiple platforms (for example, spares provisioning or contractor management capability). These are often identified in individual waves, but the most effective solution is to create a complimentary initiative that tackles the root causes of the problem and develops a solution that serves multiple platforms. Such initiatives are typically of longer—and more variable—duration than the improvement waves.
- **Program management** will be required to support (but not lead) the improvement program. A central team should track implementation and benefit realisation, help teams codify their work and share lessons learned,

remove program roadblocks, and communicate and celebrate successes. This program management may be part of a broader program tracking office depending on the shape of the overall deep reform program Defence adopts.

We recommend that Defence implement a holistic lean program, which is a fast-moving, but multi-year, co-ordinated, line-led program. The program should combine ‘waves’ of lean implementation with a set of breakthrough projects in parallel.

6.2 OPTIMISING INVENTORY HOLDINGS

The nature of Defence means that its inventory holdings have some unusual characteristics. A large number of stock items are rarely issued because of the need to hold reserve stock quantities to meet war-stock requirements. More than half the items of General Stores Inventory (GSI) and Guided Weapons with a balance above zero have not had any issues in more than 6 years. Further, Defence often needs to hold ‘Life of Type’ stocks, when future supply is not guaranteed (for example, due to an equipment manufacturer ceasing production) and a bulk purchase of remaining stock is necessary to guarantee long-term requirements.

Significant work has been done to improve Defence’s inventory management. Improved accounting for stock resulted in the Australian National Audit Office (ANAO) giving an unqualified review of Defence’s accounts, after years of qualified reports. Disposal of obsolete stock has made real headway in the past 2 years, although after a decade of inattention, more needs to be done. This section looks at opportunities to continue to improve inventory management, through policy reform and improved practice, and identifies opportunities to reduce excess GSI and Explosive Ordnance munitions stock.

Inventory policy reform

Three areas of inventory policy driven reform are important: (i) delineating ‘strategic or excusable overstocking’ from sub-optimal holdings; (ii) greater transparency on holding, distribution and service level costs; and (iii) separating customer and DMO roles.

The first area of policy reform is to articulate and enforce rigorous and common stocking policies to delineate ‘excusable/strategic overstocking’ from sub-optimal holdings. One example of ‘excusable overstocking’ is for ‘Life of Type’ (LOT) purchases. There are two flags commonly used in the Standard Defence Supply System (SDSS) to identify LOT purchases:

- L1: strict LOT purchases (that is, future supply is not guaranteed)

- L2: ‘justifiable overstocks’ (for example, when the minimum order quantity set by a manufacturer exceeds the optimum order quantity).

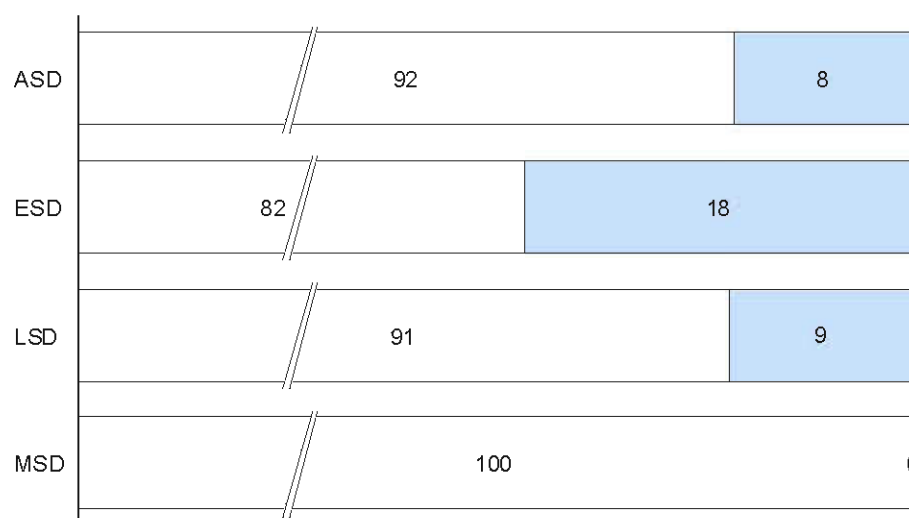
There is considerable variance in how the systems divisions have flagged LOT stocks (Exhibit 53). For example, the Maritime Systems Division (MSD) and some branches in other divisions have not completed flagging items as LOT in SDSS—MSD have recently initiated a project to define LOT categorisation and aim to complete flagging by the end of 2008.

Exhibit 53

Proportion of LOT stock codes for major divisions

Percent of active codes

■ Life of type stock
□ Operating and reserve stock



Source: JLC Dashboard, 14 July 2008, Interviews

Interviews have suggested considerable variance in the accuracy of entries between individual branches. Interviewees reported that one of the explanations for this variation was improper flagging. This occurs when an L2 flagging is used to avoid scrutiny for bulk purchases made (for example, for stock items managed within the Advanced Inventory Management System (AIMS) requirements determination tool, if they are flagged as L2 within SDSS, an action code to remediate excess stock is not generated if that item is stocked above optimum holding levels).

Consistent definitions of LOT stock should be applied across divisions to enable better management of both these stock types and ‘ordinary’ stock, to avoid sub-optimal holdings.

In addition to LOT stock, other rationale exist (and are defined to varying degrees) for ‘excusable overstocking’. Reserve stock holdings are quantities set aside as a ‘war-stock’ against which to draw down in instances of emergency (when demand might increase or the supply chain is disrupted). Similarly, other stock can be flagged as ‘slow moving’ where the historical demand pattern is so small (or non-existent) that requirements determinations tools would recommend holding very low or no stock, but there is a practical rationale to hold some parts on hand (for example, spare wing struts for aeroplanes to account for the small possibility of major wing damage).

We recommend that the DMO articulate and enforce rigorous and common stocking policies to delineate ‘excusable/strategic overstocking’ from sub-optimal holdings.

The second proposed area of policy reform is to create greater transparency on storage, distribution and service level costs.

- **Storage and transaction costs:** are not adequately considered in purchasing decisions.

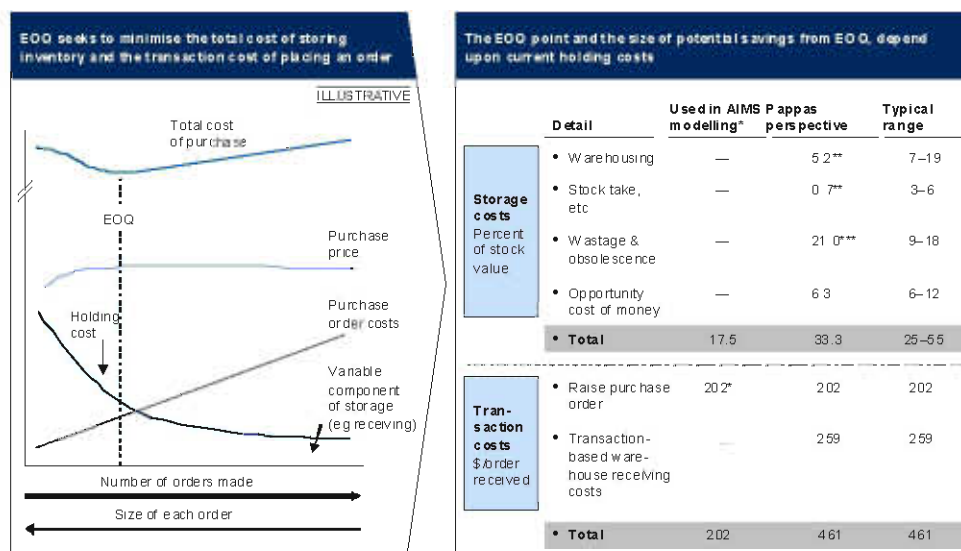
The total cost of a purchase is the sum of the purchase price (paid to the supplier), the storage costs (warehousing, stock taking, wastage, obsolescence and the opportunity cost of money) and transaction costs (raising purchase order and receiving an order into the warehouse). The purchase price typically decreases by making larger orders (for example, due to volume discounts), as do the transaction costs. The storage costs increase, however, as larger orders are made. There is an optimum point, an ‘economic order quantity’ (EOQ) that minimises the total cost of storing inventory and the transaction cost of placing an order.

For stock managed in AIMS, a recommended order quantity is made, which includes a calculation of an EOQ, based on a \$202 purchasing transaction cost⁴⁵ and a storage cost of 17.5% of stock value. Our analysis suggests these figures underestimate both the storage costs, which are ~33% of stock value, and the transaction costs, which are ~\$460 per item ordered (Exhibit 54).

⁴⁵ AIMS uses \$300 per purchase order, which is equivalent to \$202 per stock item ordered, given an average of 1.48 unique stock items ordered per purchase order placed.

Exhibit 54

Calculation of economic order quantities



* 17.5% and \$300 per purchase order (equivalent to \$202 per stock item order depending on purchase order) are the figures entered in AIMS to inform recommendations to stock item owners

** These estimates do not include the cost of other minor supply chains or warehouses (e.g. medical and dental) that are not included in the JLC DIDs contract for storage, potentially underestimating the storage costs. eg UK NAO estimates warehousing costs for slow inventory at 7%

*** Slightly higher than typical range given extreme slow moving nature of inventory in Defence

Source: REM Supply Chain Management Consultants, Logistics Companion Review, McKinsey analysis

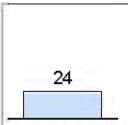
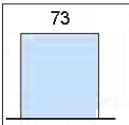
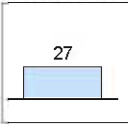
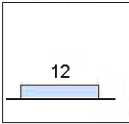
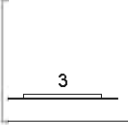
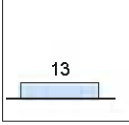
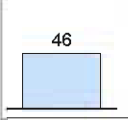
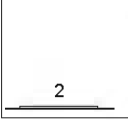
We reviewed receipting data from Moorebank, line by line, to determine alignment with the EOQ. We found that 24% of items (worth 74% of stock) were ordered too infrequently.⁴⁶ Twenty-seven percent of items (worth 12% of stock) were ordered too frequently (Exhibit 55). There are three reasons why current ordering does not align with the EOQ: (a) the use of different storage and transaction cost assumptions results means the recommended order quantity generated by the AIMS tool is wrong; (b) the AIMS recommendation is correct, but the recommendation is ignored; and (c) AIMS is not used to inform ordering decisions.⁴⁷

⁴⁶ Ordering infrequently means that on average, more stock is held than necessary and smaller orders should be made more often.

⁴⁷ The level of usage of AIMS is discussed below, under the “Improving inventory management practices:” heading.

Exhibit 55

Moorebank ordering frequency relative to optimum economic order quantities

	Proportion of stock items Percent 100% = 18,580	Proportion of stock value Percent 100% = \$373m	Explanation	Implication for EOQ calculation
Orders too infrequent			<ul style="list-style-type: none"> Inventory is being 'stockpiled'—it is ordered in large quantities above the re-order point Orders should be smaller and more frequent 	<ul style="list-style-type: none"> Will provide a storage saving relative to a transaction cost increase from ordering less, more frequently
Orders too frequent			<ul style="list-style-type: none"> Stock orders are being placed too frequently (or by too many people) for too small amounts 	<ul style="list-style-type: none"> Will provide a transaction cost decrease, relative to storage cost increase from ordering more, less frequently
Cannot increase frequency			<ul style="list-style-type: none"> Order for single items of high value, for which the storage costs significantly outweigh transaction costs; however items cannot be ordered in parts 	<ul style="list-style-type: none"> No savings possible
Cannot decrease frequency			<ul style="list-style-type: none"> Items of low value and low demand for which an order frequency of <1 a year is optimal 	<ul style="list-style-type: none"> Savings possible, but not modelled (there may be small additional savings, but one year of data insufficient to prove)

Source: McKinsey analysis, DNSDC receiving data, FY07

Conservative assumptions were made to estimate potential savings based on Moorebank data, then extrapolated across the remaining holdings.⁴⁸ The analysis suggests that cash savings of \$7 million pa could be realised (primarily by reducing wastage) as well as a \$13 million non-cash saving from reduced obsolescence. Significantly, the analysis showed that net frequency of orders would decrease (~5,500 orders per year), which would drive savings in supplier and Defence costs that have not been captured (it is assumed that at least some of the supplier savings would be absorbed by the average smaller order size required).⁴⁹

Finally, we note that while AIMS estimates the purchasing and storage costs, these are not actually passed on from the Joint Logistics Command (JLC) to the area that orders the stock—the SPO, Joint Logistic Unit (JLU) or individual Service unit. Greater transparency on and accountability for costs would

⁴⁸ We assumed that the order size could not be reduced by more than 50%, to account for a potential purchase price increase from reducing order quantities significantly. We also assumed no savings on items of low value and low demand, which should be ordered less than once per year—we assumed these items were being ordered at the optimal rate, but they may be ordered too frequently.

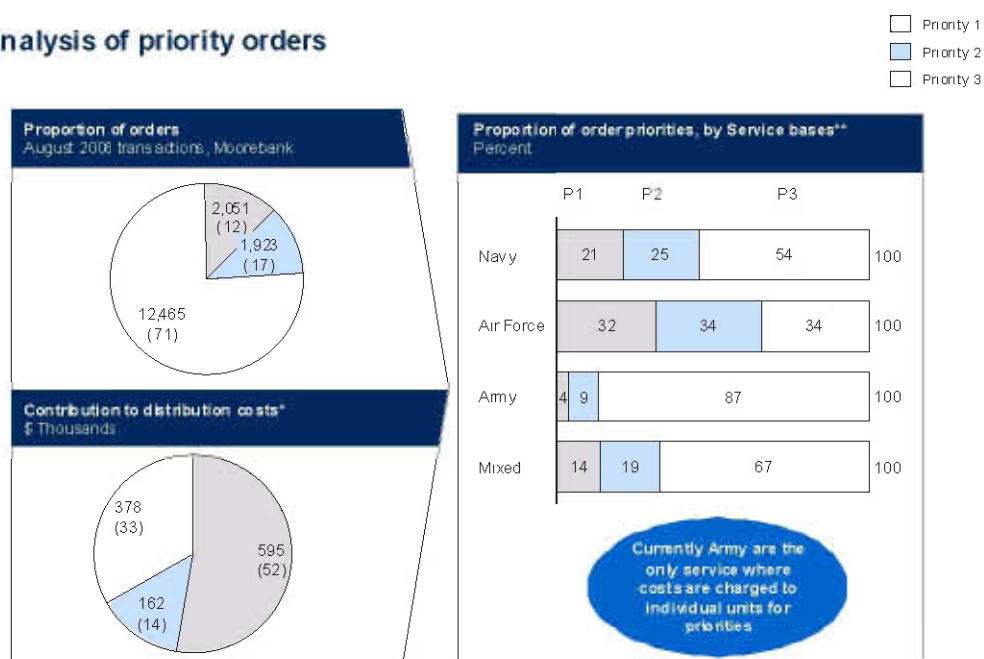
⁴⁹ Average order size fell from \$44,000 to \$28,000.

encourage more cost-conscious decision making. This is a situation that will be aided by the budget approach proposed in Chapter 14 because the costs for purchasing and storage will be in the budget of the Group ordering the inventory.

- Distribution costs:** high priority orders drive a significant proportion of distribution costs, as illustrated by a sample of transactions from Moorebank in August this year, as aligned against the distribution priority codes applied by the contractors (TTDL). Priority 1 (highest priority) orders cost around five times as much as priority 2 orders, and around 10 times as much as priority 3 orders. As a result, the 12% of orders which were priority 1 account for ~50% of distribution costs (Exhibit 56). There is a large difference in the proportion of orders prioritised as P1, P2 and P3 across the services. Thirty-two percent of orders to Air Force bases were P1, compared to 4% of orders to Army bases.

Exhibit 56

Analysis of priority orders



* The relative cost of distribution was calculated by determining the ratio between different priority costs in the current price schedule for an average sized order (24Kg), travelling a set distance (1000km)

** Appendix G, JLCR initial report (based on apportioning bases to a specific service, where base (eg DNSDC) had multiple dependencies, was apportioned as 'mixed')

Source: Transactions data from TTDL, TTDL Schedule B price schedule for distribution

The difference in priority orders is not driven entirely by different operational requirements. The Army is the only service where charges for priority orders are passed directly onto individual ordering units, whereas Air Force and Navy

orders are not directly passed onto the Service, and there is no individual unit accountability. Twenty-five percent of orders from Nowra, which houses Navy's helicopters, were P1, while only 9% of orders from Oakey, which houses Army's helicopters, were P1.

Again, incorporating these costs into the budget of the Services will help drive cost-conscious consumption.

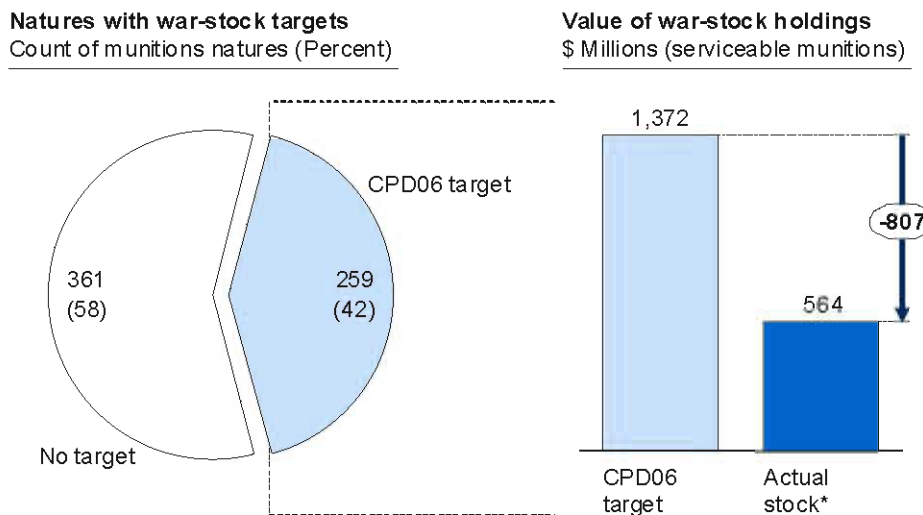
- **Service levels:** The Services and DMO should explicitly decide on the appropriate trade-off between effectiveness (service levels) and efficiency (holding levels). The introduction of MSAs provided clarity on required service levels. Current MSAs determine a 'demand satisfaction level' for Repairable Items and GSI goods (for example, 95% of goods will arrive on time). There is, however, no formal calculation or recognition of the cost of these service levels (that is, what would the cost be of moving from 95 to 90% or 97% on time fulfilment). Further, the fact that demand satisfaction levels are a 'blanket target' across all items can mask the impact of poor performance on delivery of critical items. It is possible to have a high demand satisfaction level, and fail to deliver a critical repairable item, which causes delays in maintenance (and vice versa). Our recommendation on the budget process in Chapter 14 (that holding costs be passed on to the relevant ordering Group) will make these trade offs between effectiveness and efficiency an explicit choice for the Services in defining and negotiating their MSAs.

The third proposed area of inventory policy reform is to more clearly separate the customer and DMO roles, to assist in more effective procurement and inventory management execution—this is most clearly demonstrated by current Explosive Ordnance (EO) munitions stock management.

- Services (or 'customers') need to more clearly articulate requirements on munitions holding levels, future forecasted demand and product specifications:
 - There are various 'minimum thresholds' for munitions communicated to Munitions Branch, which cover some but not all natures. There is considerable confusion generated by the inconsistency of these thresholds:
 - 'Warstocks' to satisfy the CDF Preparedness Directive (CPD06 Annex C) have been developed and applied to 259 of 620 munitions natures. Like many Defence forces, however, these holding requirements are not stocked to (Exhibit 57).

Exhibit 57

Current war-stock requirements as determined by CPD06



* Value of stock for which there is a specific determined holding level from CPD06 – ie, does not reconcile to total balance
Source: August 2008 Munitions Report

- Capability managers have set ‘interim targets’ for 210 natures, which are typically lower than CPD06. This demonstrates a good example of a pragmatic ‘risk adjustment’ to avoid dramatic costs that would be incurred in stocking against CPD06.
- In addition to interim targets, individual Services also provide their own individual minimum holding requirements for some munitions. It is not clear whether these minimum thresholds should be ‘additive’ to interim targets. Additionally, these minimum holding requirements only account for ‘raise, train, sustain’ requirements, excluding Joint Operations Command (JOC) requirements for operations.
- Inventory management is also impeded by uncertainty about future consumption requirements. This is driven by incomplete communication of the platform and nature withdrawal from service (for example, drawing down demand requirements associated with withdrawn Guided Missile Frigates (FFGs)) and future JOC requirements. This is further perpetuated by ‘freezes’ placed on the use of certain munitions caused by previous out of stocks, which then further complicate historical demand profiles. Consumption requirements cannot be forecast with extreme accuracy

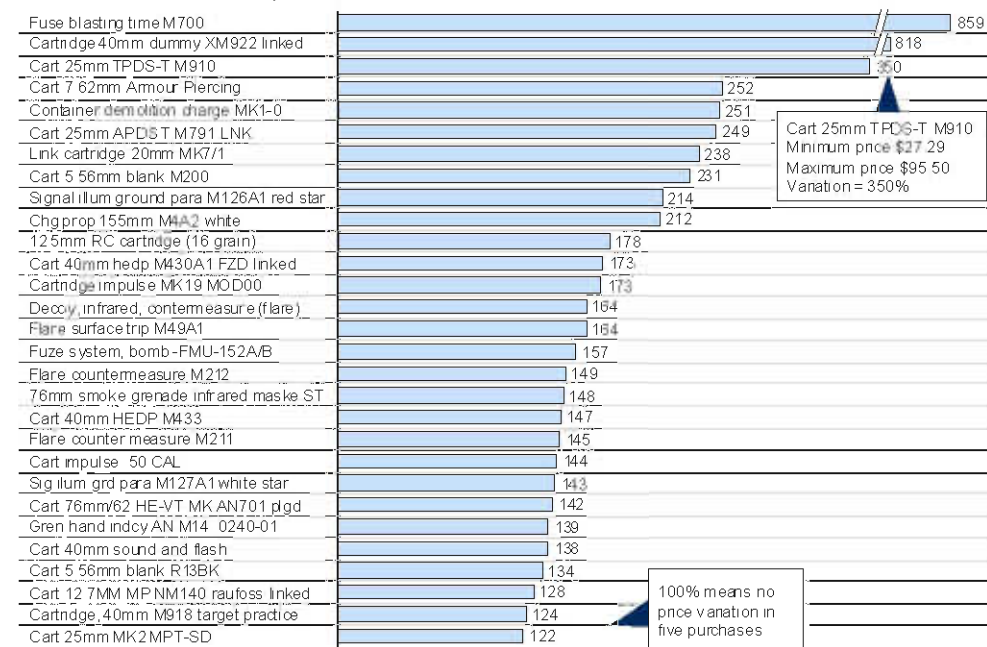
(especially for operational requirements); however, there is scope for considerable improvement and harmonisation between services.

- Finally, Service customers in some instances (particularly for specialty munitions) have specified the ‘catalogue item’ for purchase to the DMO; rather than providing a clear list of nature performance characteristics and not specifying the specific product/brand required.
- Aided by improved requirements specificity, the DMO should continue to build the skills of procurement and inventory managers:
 - Procurement needs to further develop and execute against ‘market place intelligence’ (for example, when and where large munitions runs are placed by foreign Defence forces which can dramatically lower unit prices).
 - After excluding ‘warstock reserves’ and accommodating for emergency operations driven demands, basic inventory management to demand profile (and forecast) should be executed against.
- Currently, a lack of clarity on requirements and incomplete market place intelligence means Defence is more exposed to price movements in the spot market for munitions than necessary. An assessment of the last five purchases of an individual nature, which compares the maximum and minimum unit price paid, shows variations in unit price ranging from 22% up to 759%, across 30 different natures (Exhibit 58). While these price fluctuations will remain (driven by various external factors), Defence can better ‘mitigate’ against this exposure.

Exhibit 58

Variation in unit price for individual natures—last five purchases

Percent of minimum unit price



Source: CCMSARM, McKinsey analysis

We recommend that: clear requirement thresholds for explosive ordnance are set by capability managers; demand requirements are more accurately forecast, communicated and harmonised between operational and ‘raise train sustain’ activities; and customers provide the clear performance characteristics required, but do not engage in direct product specification. Informed by these requirements, the DMO should further develop the skills necessary to minimise the impact of movements in the spot price of munitions and manage inventory more closely to demand.

Improving inventory management practices

Three areas for improvement in inventory management practices were identified: reducing controllable lead times; increasing use and understanding of requirements determination tools; and continuing to improve data integrity.

The first improvement is to reduce controllable lead times. As noted in section 6.1, spares availability is a critical enabler for lean maintenance. The average lead time for GSI and Repairable items is 223 days, made up of an average internal lead time of 41 days (driven by administrative processes and approvals required to place an order), and an average supplier lead time of 182 days (which includes

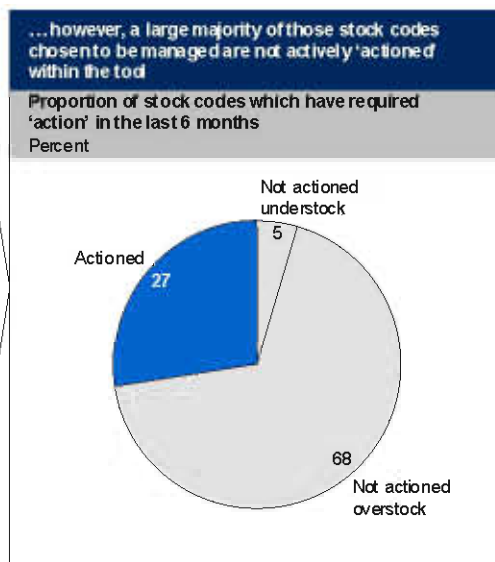
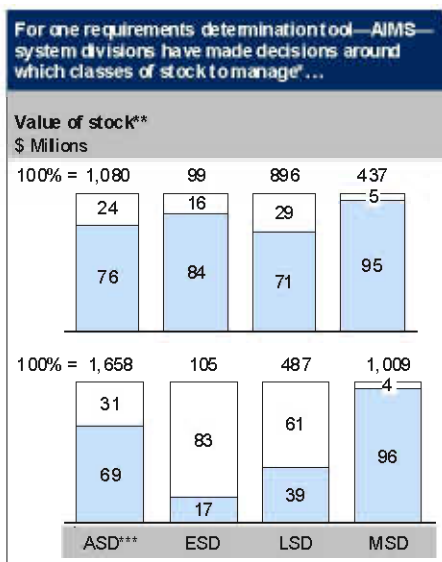
time for production and transportation). Defence needs to improve its own internal processes, and collaborate with suppliers, to reduce both elements of lead time. We have not conducted a detailed analysis of repair loops in Defence, but work with another Western defence force resulted in lead time reductions on helicopter and aircraft RIs of up to 90%. Raytheon and the Air Lift SPO managed to drive a 22% reduction for some critical avionics modules for the C-130 aircraft. **We recommend the SPOs and JLUs work with lean maintenance improvement teams to reduce inventory lead times (focusing on critical General Stores Inventory and Repairable Items which affect maintenance repair times), and work together to systematically reduce inventory lead times.**

The second improvement is to increase the use of requirements determination tools across SPOs. Different divisions have chosen to manage different types of stock with the AIMS system: over 95% of Maritime Systems Division’s stock is managed through AIMS. In contrast, Electronic Systems Division (ESD) and Land Systems Division (LSD) only manage ‘expendable’ and ‘accountable’ stock items in AIMS, excluding a large portion of stock (Exhibit 59). In addition, a large majority of stock codes managed with AIMS are not actively ‘actioned’ within the tool.

Exhibit 59

Use of AIMS requirements determination tool

□ Not managed
 ■ Managed

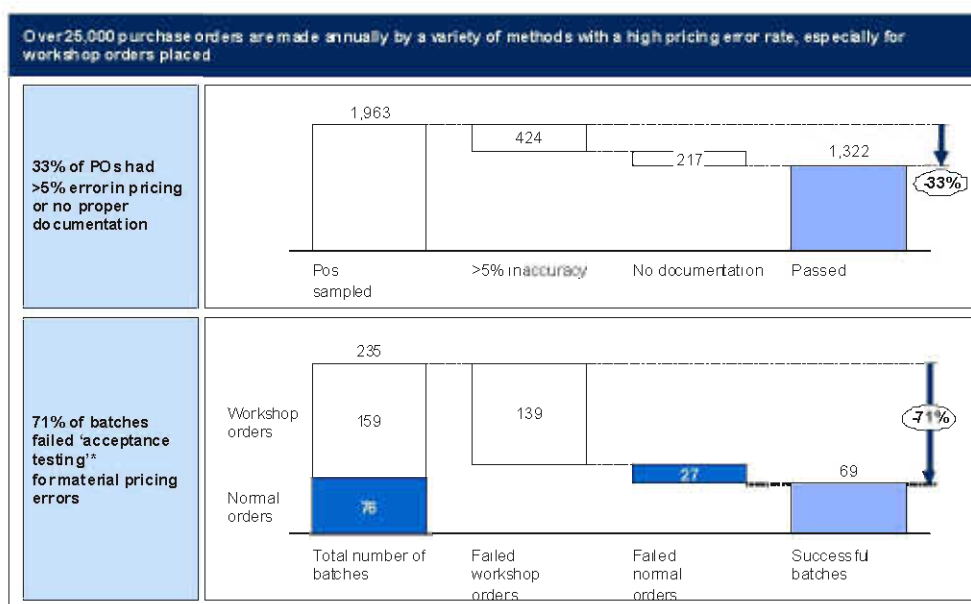


* ESD and LSD only manage ‘expendable’ and ‘accountable’ stock items in AIMS, excluding a large proportion of stock value
 ** Total value does not reconcile to value of stock included in the financial balance, this data includes stock that is provisioned as obsolete
 *** Including HSD
 Source: LOGSPO AIMS analysis

The third improvement is to continue to improve data integrity. There needs to be a continued focus on the quality of data entry, in particular pricing accuracy. Purchase orders (POs) can be made through SDSS (a ‘normal order’) or as a workshop order outside SDSS, and can be placed centrally through the SPOs or ‘regionally’ through a local JLU. Analysis conducted for Defence (by Data Analysis Australia) shows 33% of POs have either a pricing error of more than 5%, or no proper documentation. Workshop orders are more inaccurate than normal orders (Exhibit 60).

Exhibit 60

Purchase order data entry



* Based on identifying a quality level of 5% error in pricing accuracy for batch samples
 Source: Inventory pricing analysis, Data Analysis Australia, December 2007 '2006/2007 GSI Pricing Remediation'

We recommend Defence and the DMO increase the use of requirements determination tools to manage inventory, and continue to focus on improving data integrity.

Improving inventory management capability

Improved performance in inventory management practices will require an increased skill level rather than additional personnel. Interviews with personnel across the inventory management system indicated a lack of understanding of the

reason for using tools and managing inventory to optimal levels (rather than stockpiling). A high turnover of stock owners and a lack of understanding of requirements tools among middle managers may compound the problem.

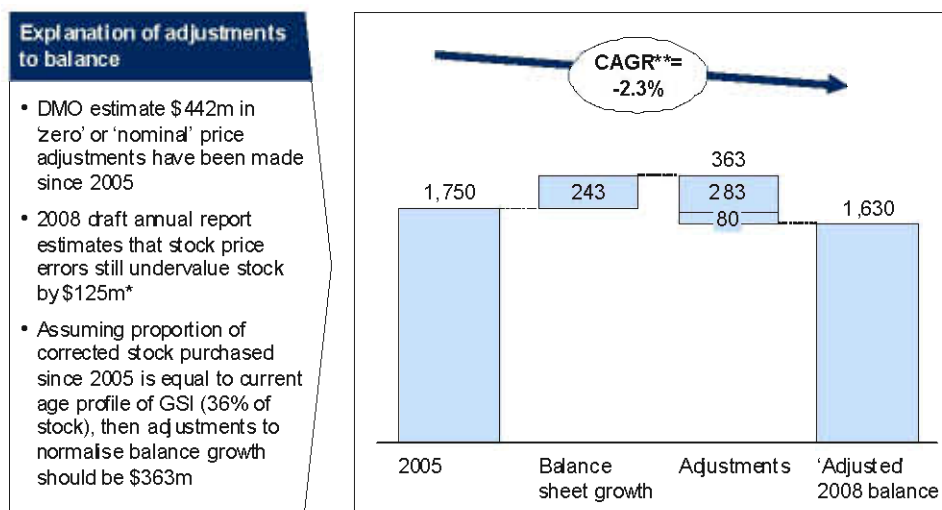
Reducing excess stocks of General Stores Inventory (GSI)

The nominal balance of GSI has risen from \$1.75 to \$1.99 billion over the past 3 years. Most of this is due to adjustments to stock that previously had 'zero' or 'nominal' prices, as Defence has remediated its financial statements as required by the ANAO. Adjusting for pricing corrections shows that the balance of GSI has decreased by ~\$120 million over the past 3 years (Exhibit 61). There is a significant and relatively stable provision for obsolescence over GSI inventory, of \$714 million in 2008.

Exhibit 61

Changes in GSI balance from 2005—2008 (adjusted)

\$ Millions



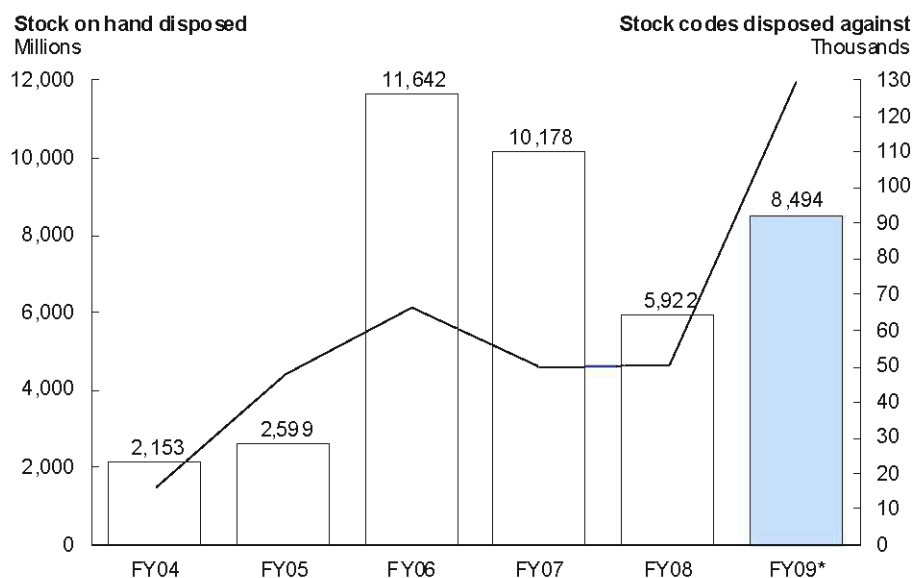
* Amount of errors tied to stock purchased since 2000
 ** Compound annual growth rate

Source: Annual reports, FY08 Draft Annual Report v2.1, DWI ADF Personnel Report, DMO estimate of price adjustments since 2005

A concerted effort has been made to reduce unnecessary stock. The inventory disposals program has disposed of 32 million units of GSI between FY04 and FY08, most in the past 3 years (Exhibit 62).

Exhibit 62

Progress of GSI disposals program



* Extrapolation based upon first 3 months data, DMO estimates of lines disposed against are slightly lower, at ~100,000–120,000 lines
 Source: JLC SD SS data extract, 10 October 2008 analysed by JLC Logistics Assurance Branch

A detailed review by the Aerospace Systems Division classified any of their stock with no demand in one of the past 2 years as ‘slow moving inventory’ (SMI). SMI is required as an insurance stocking level, for stock with an insufficient demand profile to establish a clear holding level. All stock that was not categorised as Life of Type (LOT), a Reserve Stock Quantity (RSQ) or SMI, and had more than one full lead time of expected demand on hand, was categorised as excess. This balance was adjusted down based on reviews by individual stock owners. The ASD review found \$135 million of \$525 million of their GSI stock (25%) was excess.⁵⁰

We recommend that the DMO repeats the type of analysis the ASD has done across all divisions, to identify excess stock holdings and pinpoint which of those could be disposed of.

We extrapolated the ASD results to the total GSI balance (after adjusting for expected LOT holdings in Maritime Systems Division (MSD), if flagged) using two methods:

- A ‘low case’ removed excess stock related to the F-111 to calculate a ratio of excess stock to total holdings within the ASD. This ratio was then applied to the total GSI balance, which gave an excess stock holding estimate of \$223 million above the existing provision for obsolescence.
- A ‘high case’ applied the proportion of SMI and RSQ (after removing 90% of F-111 related excess stock) identified by the ASD review to the non-LOT⁵¹ balance of all GSI, which gave an excess stock holding estimate of \$380 million above the existing provision for obsolescence.⁵²

Some of this excess stock should be disposed of, if it is truly obsolescent or the overstocking is so great that it is more economical to dispose of it than to take a ‘purchasing holiday’ as the excess is consumed. Assuming 5 to 15% of the excess stock in the provision for obsolescence, along with 40 to 50% of the additional excess stock identified by extrapolating the ASD work, is consumable, then a one-off purchasing holiday of \$96 to \$212 million could be realised.

We recommend that GSI stock holdings with excess stock that allow a purchasing holiday are identified and ordering ceased until the excess is consumed. The remaining excess should be disposed of, along with obsolete stock.

Explosive Ordnance (Guided EO)

The balance of Guided EO has grown from \$1,202 million in 2005 to \$1,919 million in 2008. \$646 million of inventory has been acquired as a result of specific projects or foreign military sales (typically involving the purchase of new equipment) between 2005 and 2008. In addition, adjustments to pricing have ‘inflated’ the balance by a further \$85 million. Removing these effects from the increased balance leaves a growth rate of 1.6% pa (Exhibit 63).

⁵⁰ ASD have now placed \$50 million of the \$135 million excess into the disposal candidate stock category. The ASD excess balance appears to be higher than other divisions, due to \$40 million of excess stock that will be disposed of when the F-111 platform is withdrawn.

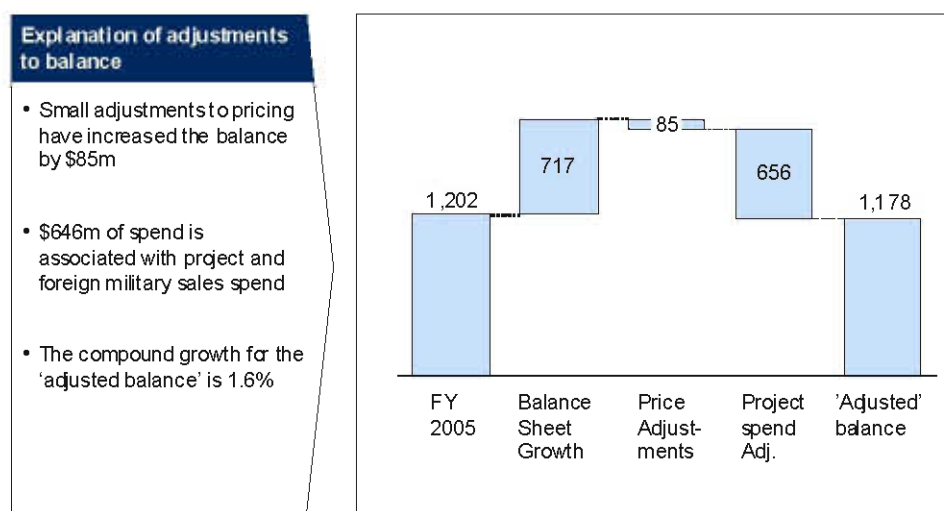
⁵¹ The Maritime Systems Division (MSD) does not flag LOT stock in SDSS (they have initiated a project to define LOT classification and aim to roll out LOT coding by end of year). We assumed the MSD LOT holding was in line with other divisions.

⁵² The Joint Logistics Companion Review also used this second method, although it arrived at a higher excess amount, based on older data from the ASD prior to an individual item owner review of ‘excess’ classifications.

Exhibit 63

Changes in the guided-weapons EO balance from 2005—2008 (adjusted)

\$ Millions



Source: Annual reports, FY08 Draft Annual Report v2 1, DWI ADF Personnel Report, DMO estimate of price adjustments since 2005

We have not reviewed optimal holding levels for guided weapons. These are typically acquired during the acquisition phase of a new platform, or as a specific capability enhancement. Less than 5% of guided weapons are acquired as replenishment stock, after the initial purchase. For three example guided weapon classes, less than 15% of stock is actually consumed during the 'raise, train, sustain' activities—the rest is disposed of at the end of its useful life. Determining the appropriate long-term stock is a necessary and complicated activity (especially when platform withdrawal dates are uncertain), but it is not an ongoing 'inventory management' issue.

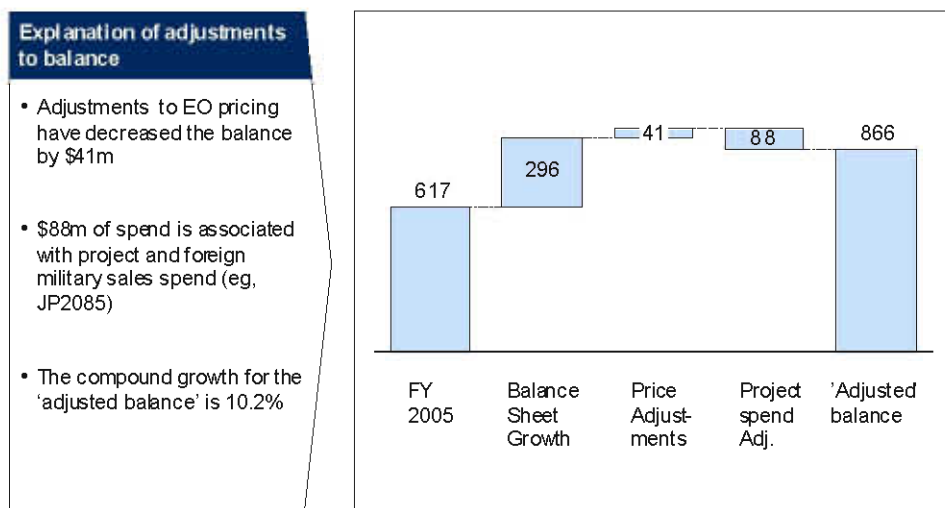
Explosive Ordnance (Munitions)

The balance of Munitions has grown from \$617 million in 2005 to \$913 million in 2008. \$88 million of inventory has been acquired as a result of a Government policy to increase war stocks (JP2085 Phase 1b) between 2005 and 2008. Additionally, prices have actually been 'deflated' by \$41 million in this period, due to adjustments driven by the ANAO. Removing this from the increased balance still leaves a growth rate of 10.2% pa (Exhibit 64).

Exhibit 64

Changes in EO munitions balance from 2005—2008 (adjusted)

\$ Millions



Source: Annual reports, FY08 Draft Annual Report v2 1, DWI ADF Personnel Report, DMO estimate of price adjustments since 2005

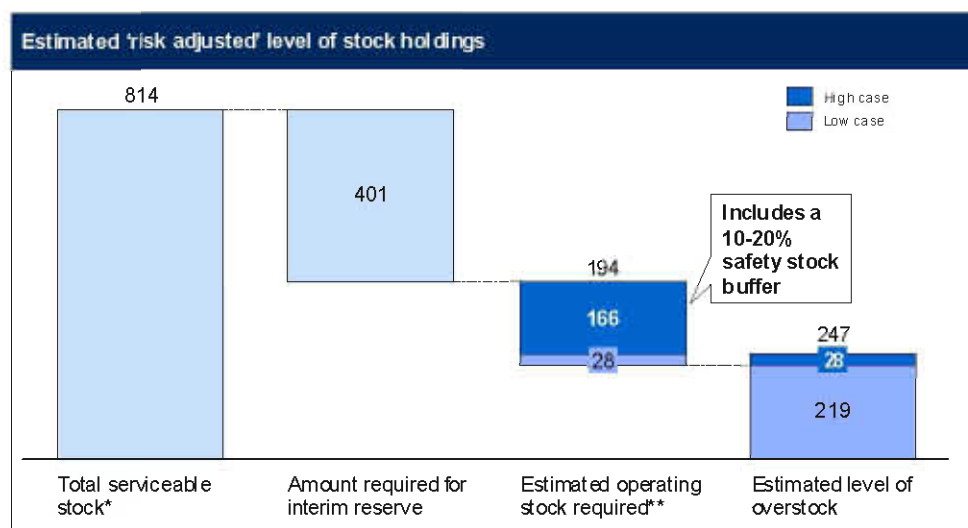
As noted above, actual stocks of EO munitions are below the formal war stock requirements of CPD06, and, like many defence forces, interim targets are used instead, although interim targets have not been set for all natures.

We estimate there is a net overstock of EO munitions natures of \$219 to \$247 million (Exhibit 65), which is the balance of \$378 to \$393 million in overstocks and \$146 to \$159 million in understocks.

Exhibit 65

EO munitions natures—current and risk adjusted requirements

\$ Millions (serviceable munitions)



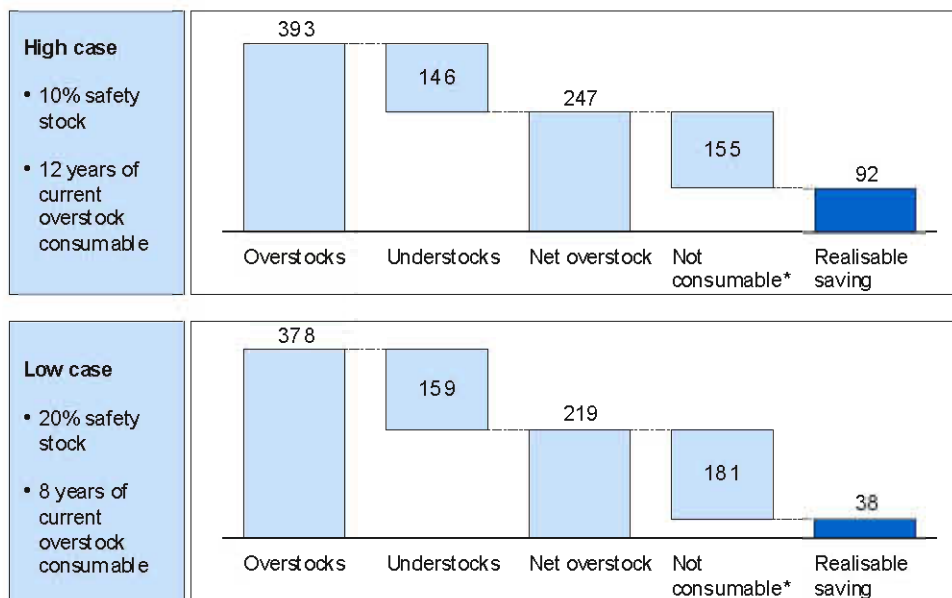
- There is \$814 million in serviceable stock, including the net of stock that is due to arrive in the next 12 months and consumption forecast for that period
- Interim targets generate \$401 million in required stockholdings
- In addition to interim targets, for all stock we applied two rules: (i) a 10 to 20% safety stock buffer was required; and (ii) individual natures also required one full lead time worth of demand (as an average, this means holding half that amount at any time) to cater for operating requirements. Lead times were calculated individually for each nature and this gave a total requirement to hold an additional \$166 to \$194 million.

We have assumed that only 8 to 12 years of EO stock in excess can be consumed before it runs out of 'life', and that any savings from a purchasing holiday on excess munitions are first used to purchase inventory to remediate understocks, before any savings can be banked. This still allows a one-off purchasing holiday of \$38 to \$92 million (Exhibit 66).

Exhibit 66

Realisable savings for EO munitions

\$ Millions (serviceable munitions)



* Assumes that only 8 (low case) or 12 (high case) years of overstock can be consumed before life expiry (including possible 're-lifing' exercises)
Source: August 2008 Munitions Report, Interviews

Once the recommendation that clear requirement thresholds for explosive ordnance are set by capability managers is implemented, then **we recommend that explosive ordnance munitions natures are reviewed to identify excess stock that allows a purchasing holiday. Ordering against these items should cease until the excess is consumed. The remaining excess should be disposed.**

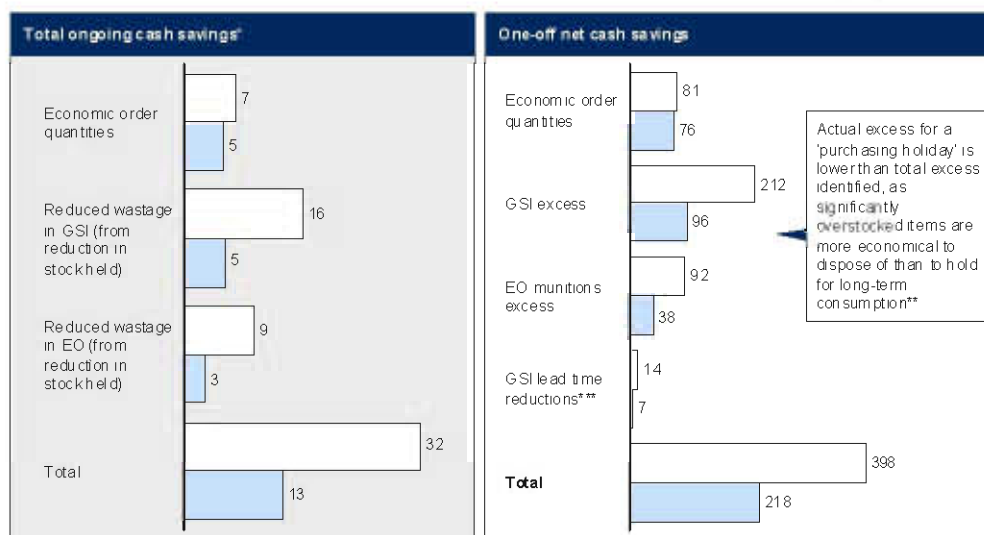
Total savings (one-off and ongoing)

The total result of these proposed reforms would be an ongoing cash saving of \$13 to \$32 million, plus a one-off net cash saving of \$218 to \$398 million (Exhibit 67).

Exhibit 67

Estimated ongoing and one-off cash savings achievable \$ Millions

□ High case
■ Lowcase



* Munitions procurement savings from improved execution on market place intelligence are not included, as they are included within the non-equipment procurement section

** GSI excess estimates that only (low case to high case) 5-15% of excess in PFO can be realised as a purchasing holiday, and 40-50% of other excess identified (based upon ASD ability to target excess for consumption post review) for EO it is assumed that excess can only be consumed for 10-12 years before life expiry, and initial purchasing holidays are used to fund shortfalls in other natures

*** No calculation on expected lead time reductions in RI was made, assuming that savings can be re-invested in areas with shortfall

Source: McKinsey analysis

The ongoing cash savings come from:

- **Adhering to economic order quantities:** discussed above.
- **Reduced wastage:** based on past write downs for obsolescence (of 5 to 7% of the annual balance for GSI and 7 to 10% for EO munitions), lower balances will lead to lower wastage.

The one-off net cash savings come from:

- **Adhering to economic order quantities:** leads to a one-off reduction in annual average total holdings.
- **Taking a purchasing holiday on GSI:** detailed above.
- **Taking a purchasing holiday on EO:** detailed above.
- **Reducing lead times on GSI:** by 15 to 30% would deliver a 15 to 30% saving in safety stock held. Lead time reductions in Repairable Items were assumed to be reinvested in critical spares.

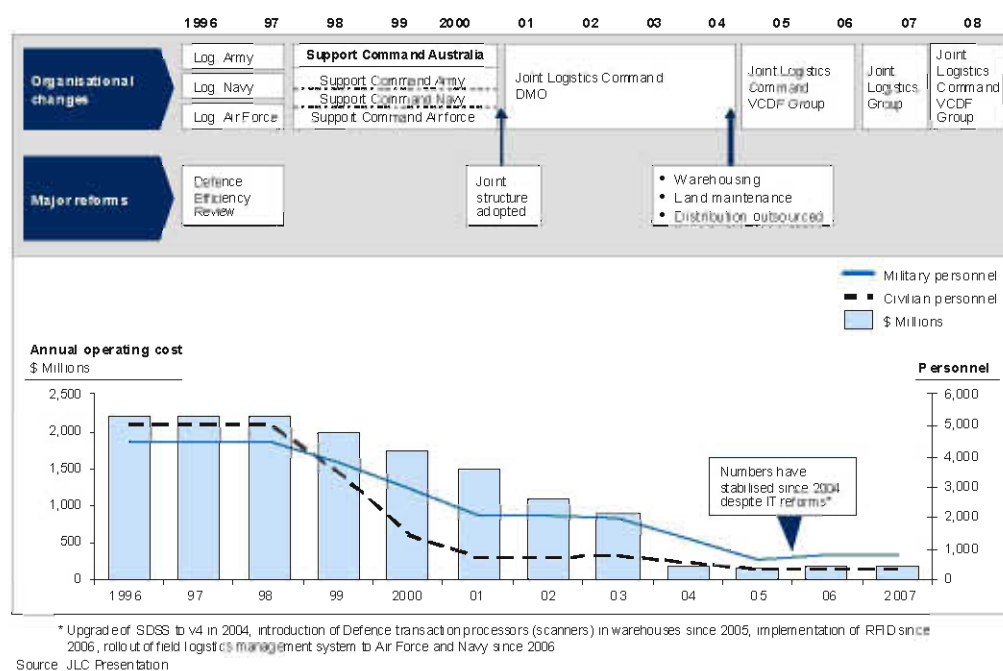
6.3 SUPPLY CHAIN

In the past decade, Defence has dramatically reformed its logistics function. The three Service's logistics divisions were consolidated into one integrated Joint Logistics Command (JLC), and personnel and costs reduced by outsourcing core warehousing, distribution and maintenance functions. The cost has decreased from over \$2 billion to under \$200 million pa, and the number of personnel employed has decreased from ~9,500 to 1,202 (Exhibit 68).

Exhibit 68

Overview of logistics function reforms in the past decade

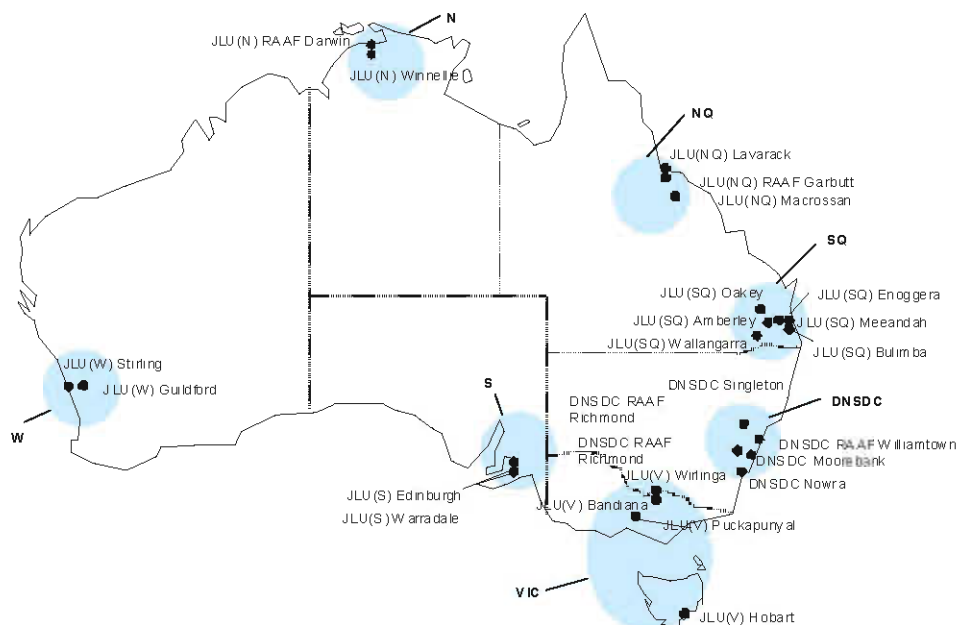
DRAFT SOURCE DATA



The current wholesale supply chain (excluding explosive ordnance) is made up of 7 JLUs, which coordinate 24 wholesale warehouses with over 200 attached storage facilities (Exhibit 69). Direct spend on warehousing and distribution is \$147 million.

Exhibit 69

The existing supply chain network is comprised of 24 distribution centres, with ~200 attached storage facilities



Source: KPMG, Logistics Companion Review

There are opportunities to drive another wave of Supply Chain reform by consolidating the network, utilising space more effectively and driving operational efficiencies.

In the next chapter of the reform agenda, Defence, through the Joint Logistics Companion Review (JLCR), aims to consolidate the footprint of warehouses, reform facilities and improve logistics processes through significant facility construction and IT implementation. The JLCR has identified potential savings of \$37 million pa. We have tested the JLCR's approach and identified an additional \$12 million in operational improvements, along with the potential to reduce capital expenditure. We have also reviewed JP2077, a series of projects which provide Military Integrated Logistics IT Solutions.

Network consolidation

There are clear opportunities to consolidate the wholesale network:

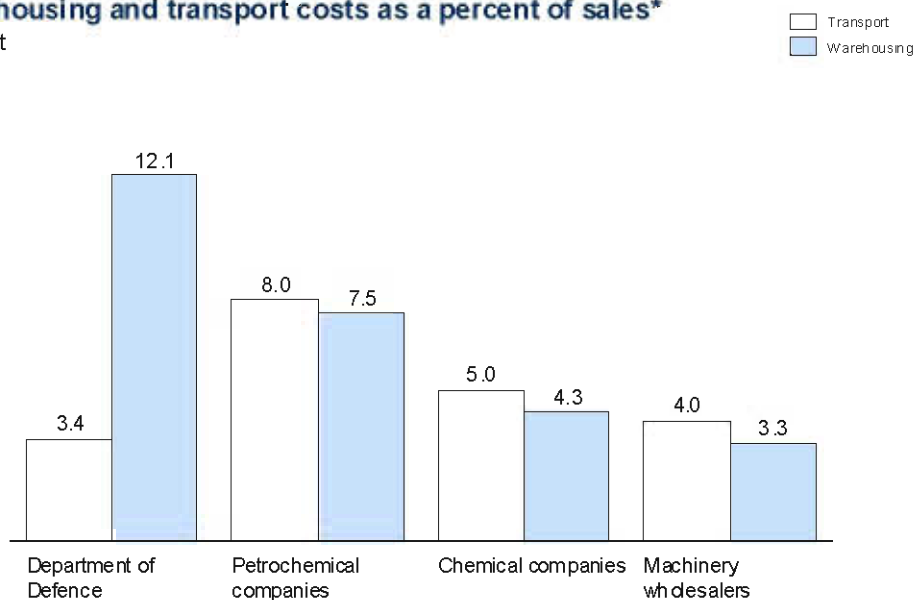
- **There is a high ratio of warehousing to transport costs.** Most commercial companies with a 'logistics heavy' operation have a warehousing:transport cost ratio of around 1:1. Defence has a ratio of 3.6:1 (Exhibit 70). This is partially explained by Defence's high storage requirements (especially for

critical stocks and life-of-type inventory), but also by the large number of warehouses.⁵³

Exhibit 70

Warehousing and transport costs as a percent of sales*

Percent



* Sales for Defence calculated as cost of procuring all GSI and repairable items—\$917m in 2007, given significant gross margins of comparator industries on sale of goods, this may overestimate their percentages relative to Defence

Source: McKinsey Operations Practice, PD 733041 'Transport Excellence', Benchmarks from construction and mining, equipment wholesale, industrial machinery and transport equipment wholesale warehouse operations collated by MPI group

- **Two warehouses account for almost half the throughput** and over half the stock on hand. This reflects Moorebank's role as the 'National Distribution Centre' and the significant maintenance activity currently centred at Bandiana. The third largest warehouse by throughput, Randwick, operates a specialty pharmaceutical distribution role, however, the remaining 21 warehouses represent a long tail of smaller warehouses. It is difficult to achieve economies of scale in such a dispersed network.
- **There are a large number of transactions between warehouses.** Some of these movements are necessary, irrespective of the network model.⁵⁴ Nonetheless, despite efforts to focus inventory in key areas (for example,

⁵³ Handling costs represent 52% of direct warehousing labour costs, despite low stock turnover rates, so storage requirements are not the sole driver of the high ratio of warehousing to transport costs

⁵⁴ Inter-district transfers also include movements of stock such as movements for operations and training activities, and movement of repairable item to centralised repair locations. Nonetheless, 32% of all transactions involve receipts or issues between wholesale warehouses, suggesting considerable avoidable movement.

MSD in DNSDC Moorebank) there is considerable avoidable movement between wholesale locations.

The JLC plans to move to a network with two Distribution Centres and 12 warehouses.⁵⁵ This will result in the closure of 11 warehouses, although the JLC plans to spend \$643 million rebuilding or relocating some of the retained sites, and building one consolidated site in Darwin. The JLCR proposal is to use DNSDC and Bandiana as the two National Distribution Centres. After sharing our work on estate consolidation, JLC have noted that an end-state of DNSDC and Amberley would better align with current force disposition and the future estates footprint (see Chapter 12).

In addition, there is considerable opportunity to consolidate the Q-store or 'retail' warehouses that operate on bases, which was not addressed in the JLCR. Across the three Services, there are a total of 991 'logical' warehouses registered in SDSS.⁵⁶ Forty-four Army bases have a warehousing function: 27 have more than one warehouse on site (with an average of 5.3 per site). This results in low levels of day-to-day logistical activity at individual Q-stores⁵⁷ and contributes to distribution cost and complexity. Consolidating Q-Stores would also allow logisticians to get 'at volume' experience, which is more reflective of operational requirements. The method and extent of consolidation must account for the operational imperative of single unit deployability (this does not apply to non-operational Q-stores for training or DSG).

We have reviewed this proposed footprint and believe there is an opportunity to move to two Distribution Centres and 10 warehouses by consolidating the Q-stores at Puckapunyal and possibly Hobart, which would eliminate the requirement for a JLC warehouse.

We recommend that Defence review the opportunity to consolidate Q-stores (in a manner that does not compromise deployable capability), in particular:

- **On bases where current facilities would allow this with minimal investment.**

⁵⁵ Five sites at mounting bases, five specialist centres (where distribution from wholesale to end-user would fail to meet service level requirements) and two 'retail centres' to provide local support to units.

⁵⁶ Some warehouses registered in SDSS pertain to the same physical site, but have separate logical identities, due to their relationship with different Services or Groups.

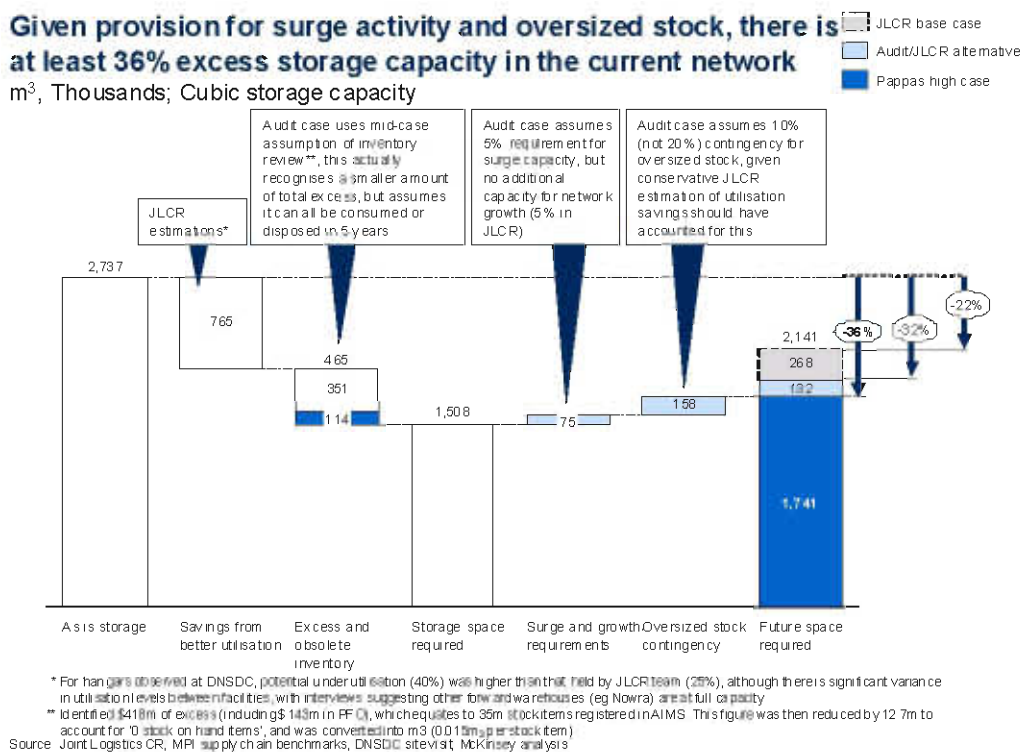
⁵⁷ A record of SDSS transactions shows that on average there are only 2.4 transactions per person per day. This does not equate to a 'pick rate', given other transactions not registered in SDSS, and the range of other roles undertaken by personnel, but does indicate the low volume of activity that dispersion of Q-stores generates.

■ Whenever capital expenditure on Q-stores is required due to ageing or changing requirements.

Utilising space more effectively

There is an opportunity to increase space utilisation. The JLCR plan is to reduce the footprint through better utilisation of existing and future space in new warehouses, and removing some excess and disposal stock. The JLCR plan builds in a 10% contingency for growth and surge requirements, and an additional 20% contingency for ‘oversized stock’, leaving a net reduction of 22% (Exhibit 71).

Exhibit 71



The JLCR plan assumes space utilisation can be improved by ~25%. Our observation of the DNSDC suggests this assumption may be conservative,⁵⁸ but it has been rigorously developed and should provide assurance that the future footprint is sufficient.

⁵⁸ Issues and receipts space accounts for 60 to 65% of DNSDC space. The benchmark mean allocation for heavy logistics warehouses is around 29%. Many fast moving warehouses keep issues and receipts space to around 40%. Reducing the proportion of space used for issues and receipts will increase available storage space.

We believe the JLCR assumptions on growth and contingency are too conservative. We accept the need for surge capacity of 5%, but Defence should not plan for overall growth in storage requirements. Excess space encourages inefficient layouts.⁵⁹ Further, we believe that only a 10% contingency should be included for ‘oversized stock’, as the assessment of current space utilisation would have included the ‘oversized stock’ already held, and there is no indication that the proportion of oversize stock will increase. These two changes would reduce space requirements by an additional of 0.268 million m³ (an additional 10%). We have discussed our alternative assumptions with the JLC, who agree these revised assumptions are reasonable.

We believe that more excess and obsolete inventory could be disposed of than in the JLCR plan, which would save another 0.132 million m³. This should be explicitly addressed as further inventory analysis is conducted by other Systems Divisions (recommended in Chapter 6.2).

Operational efficiencies

Operational efficiencies are realised by simplifying and rationalising warehousing processes and support activities. Some efficiency improvements can be enabled by consolidating infrastructure and investing in improved systems, but it is not always necessary. The JLCR proposal delivers operational savings with a significant capital investment. We reviewed the proposal and offer two alternatives: a ‘capex light’ model that does not consolidate facilities, and a model similar to the JLCR review, with greater operational savings and lower capital expenditure requirements (Exhibit 72).

⁵⁹ Top quartile utilisation in ‘heavy logistics’ commercial companies is over 90% space utilisation. The top decile (top 10%) utilisation levels are 99% utilisation

Exhibit 72

Comparison of supply chain reform models

	Explanation	Capex \$ Millions	Opex saving \$ Millions	Nominal payback* Years
Consolidate— Original JLCR proposal	<ul style="list-style-type: none"> Spend capex necessary to consolidate footprint and deliver functionality (eg WMS) for process improvements Deliver process improvements 	643	37.0	17.4
No consolidation— 'Capex light'	<ul style="list-style-type: none"> Do not spend capex on upgrading and moving facilities Invest small amounts of capex and project opex to deliver operating savings through process improvements at existing facilities 	49	20.9	2.3
Consolidate— Audit case	<ul style="list-style-type: none"> Spend capex necessary to consolidate footprint and deliver functionality (eg WMS) for process improvements, but eliminate capex associated with excess storage requirements and EIR building Deliver process improvements (as in JLCR), plus additional savings in distribution and support personnel costs 	482	48.2	10.0

* Does not account for ramp-up profile of expected savings
Source: JLCR Midway analysis

Original JLCR model. The JLCR proposed a network consolidation from 24 to 14 sites (above) through a series of facility closures, relocations and reconstructions that will cost \$643 million. This reform is estimated to deliver \$37 million in ongoing savings (a saving of 25%), which is a nominal payback period of 17.4 years.

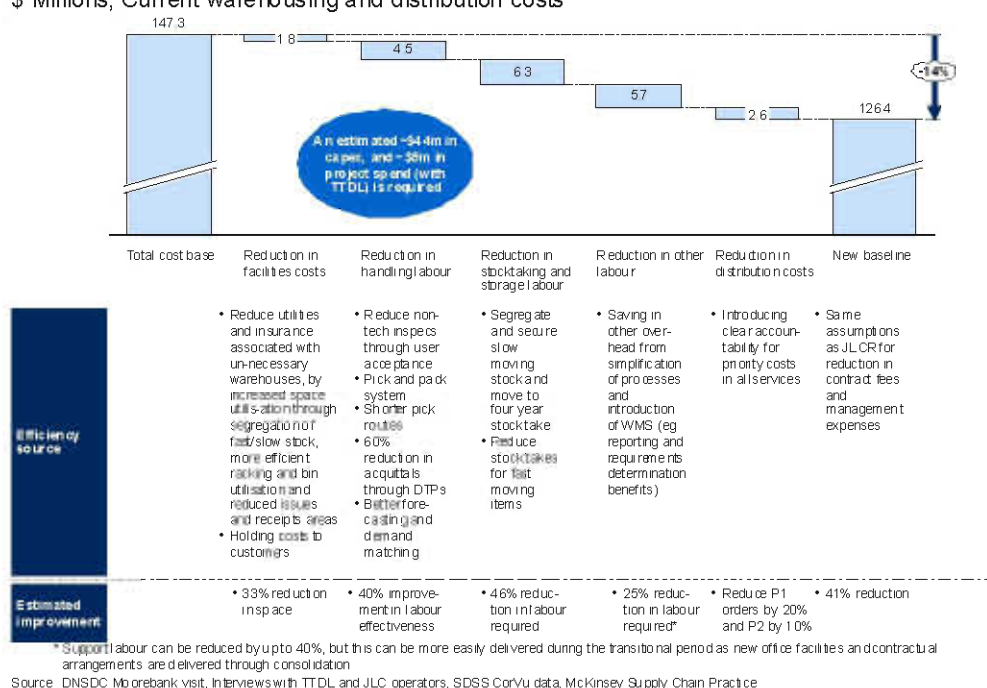
- Operational efficiencies are targeted at improved pick rates in the warehouse (premised on a leaner picking process supported by a Warehouse Management System) lower lease and DSG support costs from warehouse rationalisation. The original JLCR proposal would reduce direct labour by 38% and support personnel by 27%. This would move direct labour ratios from ~82% to ~80%, which is still above the mean benchmark of 69%. We believe the labour savings proposed are reasonable.
- This proposal also reduces exposure to the sizeable leases (\$20 million) at DNSDC Moorebank and Winnellie, which are due for renegotiation in 2012 and 2011, respectively.
- This proposal also reduces exposure to the sizeable leases (\$20 million) at DNSDC Moorebank and Winnellie, which are due for renegotiation in 2012 and 2011, respectively.

Capex light alternative. Based on our review of practices and processes at DNSDC Moorebank, we believe internal warehouse operational cost savings of ~15% are achievable without consolidating infrastructure, which would require ~\$50 million in capital to enable improvements (Exhibit 73).

Exhibit 73

Breakdown of estimated short term operating cost improvements

\$ Millions; Current warehousing and distribution costs



Source: DNSDC Moorebank visit, interviews with TTDL and JLC operators, SDSR CorVu data, McKinsey Supply Chain Practice

- Storage density can be improved by 33% by shifting facilities away from a 'handling' model of design toward a 'storage' oriented function, especially for glacial stock lines. This would involve increasing the storage to handling footprint in hangers, narrowing aisles between racking and increasing bin utilisation.
- Administrative work could be reduced by returning the non-technical inspection process to a statistical sampling or 'user acceptance testing' methodology and by reducing stocktaking requirements through segregating and securing slow moving inventory (an initiative that the JLC has explored, requiring a small one-off investment). Administrative reforms will require collaboration from contractors, the ANAO and Defence logistics authorities to 'risk assess' the benefits of process improvements against potential non-compliance or safety issues. In particular, Defence should explore how the

ANAO requirements can still be satisfied, while implementing more efficient administration.

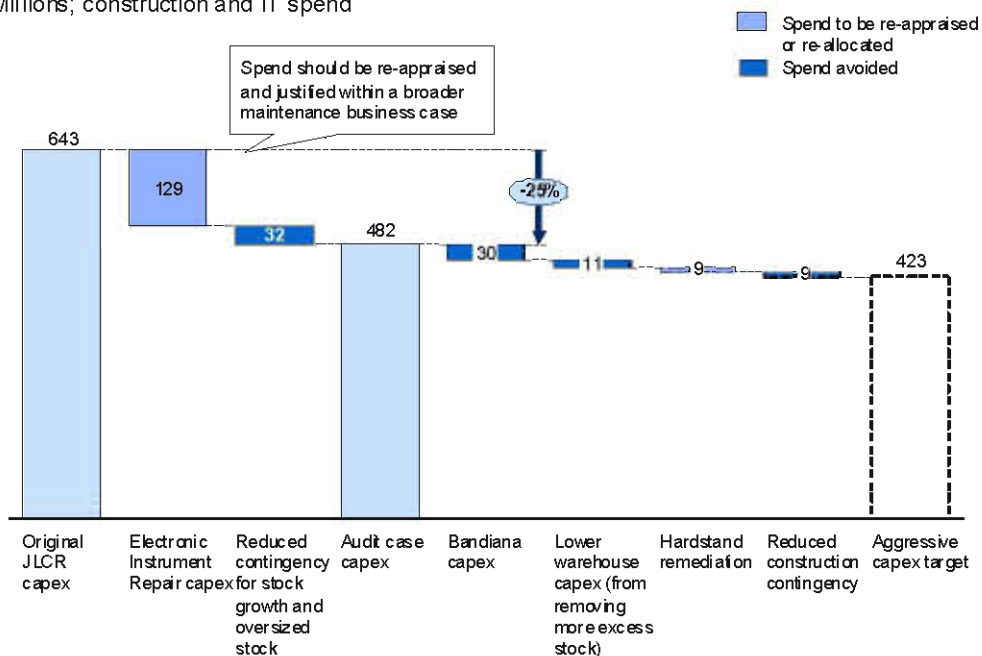
- Picking processes could be improved by moving from a separate picking and packing cycle to a pick and pack model of operation—this would be easier with a warehouse management system (WMS). Picking routes could be shortened, depending upon resources being available to dedicate to rationalise bin locations.
- Finally, distribution costs (including associated handling costs) can be lowered by ~15% through charging customers for priority orders (based on evidence of excessive use of priority ordering, discussed in Chapter 6.2), and by aligning the future distribution contract with the internal (AUSMIP) Defence priority order system.
- To deliver and embed these process improvements, ~\$50 million of capex would be required across the existing supply chain: a WMS (\$32 million including contingency), segregation of slow moving stock, fencing and security to secure it (\$12 million), and a small amount of project opex (\$5 million), potentially delivered as a ‘cost plus’ arrangement with the contractor to identify and implement process improvements.
- This model case does not remove the potential risk of lease cost increases at DNSDC Moorebank, and would not align the supply-chain footprint with proposed base footprint reforms.

Consolidation alternative. If consolidation is to occur, then we believe the savings could be larger (~\$48 million, rather than \$37 million) and the capex requirement reduced from \$643 million to ~\$482 million through \$129 million in avoided capex requirements, and \$32 million from reduced contingency associated with stock growth to meet ‘surge requirements’ (Exhibit 74), delivering a nominal payback of 10.0 years. This alternative has been syndicated with JLC, who agree to the additional savings and capex adjustments.

Exhibit 74

Only some of the capex reductions are true 'avoided costs'

\$ Millions; construction and IT spend



Source: McKinsey analysis

- Further savings to the operating model can be achieved by reducing the number of priority orders placed within the logistics system, through a more transparent 'user-pays' system of priority usage (as discussed in Chapter 6.2). Assuming 30% of Priority 1, and 15% of Priority 2 orders can be removed, 15% of total distribution would be removed, saving \$5 million a year. In addition, a further \$6m in ongoing personnel savings can be achieved through implementing the Automated Identification Technology (bar-coding and RFID) program proposed by JLC, which will lower manual data entry of stock information by 80%
- Capex can be reduced by 25% from the original JLCR case, by eliminating spend associated with Electronic Instrument Repair and contingency for stock growth and oversized stock (above).
- We note (but have not banked) additional capex savings opportunities, that should be reviewed by the JLC as the business case is further developed: eliminating new warehousing a Bandiana⁶⁰ (given it does not align with the future Defence estate footprint), reducing warehousing capex requirements

⁶⁰ We have not removed the capex for the proposed armoury at Bandiana, which would need to be built, although Amberley is likely to be a more appropriate location

through increased storage utilisation (above), deferring hardstand spend associated with maintenance activities until they can be justified in a maintenance business case, and reducing construction contingencies (a large construction contingency has been applied to a business case that has already articulated significant and detailed remediation costs).

Over 17.5 years (the nominal payback time on the original JLCR case), the two alternatives deliver a comparable net saving. The deeper efficiency gains make the consolidation alternative the most attractive long-term solution (assuming a 50% real increase in lease costs at DNSDC), with an estimated project NPV above that of the ‘capex light’ and original JLCR proposals.

We recommend the supply-chain network be consolidated and operational efficiencies targeted.

We recommend that the JLC proceed to the next design phase, but explicitly explore:

- **Two distributions centres at DNSDC and Amberley; 10 wholesale warehouses and no JLC units at Puckapunyal and Hobart.**
- **Q-store consolidation (and associated distribution benefits).**
- **Lower warehouse storage requirements based on greater space utilisation (using lower assumptions on surge and ‘oversized stock’, and the assumption that storage requirements will not grow).**

We recommend that the proposed capital expenditure on Electronic Instrument Repair facilities does not proceed until a separate business case can justify this investment with operational cost savings, and that other additional capex savings opportunities are explicitly explored.

JP2077: Military Integrated Logistics IT Solutions

We looked at the JP2077 given its broad focus on remediating logistics functionality issues and significant approved and unapproved capex. JP2077 involves estimated expenditure of ~\$600 million delivered in four main phases:

- **2.B.1: Upgrading the core standard Defence supply system for ordering and tracking stock holding levels and status (for example, serviceable or marked for disposal) across all warehouses**
- **2.B.2: Allowing the core standard Defence supply system to be deployable**
- **2.C: Tracking high value items by radio frequency**
- **2.D: Remediating the remaining high priority shortfalls, principally integrating engineering and maintenance modules.**

To date, early phases have demonstrated [REDACTED] (Exhibit 75). We note that increased scrutiny is now in place through new governance (ERP board) and greater authority of a single process owner (Commander Joint Logistics (CJLOG)).

Exhibit 75

Details on JP 2077 phases to date

Agreed specifications and outcomes (2nd Pass or 1st Pass)				Current specifications and likely outcome (latest update)			
Details on specifications	Delivery date IOC	Budget \$ Millions	NPOC \$ Millions	Changes to specifications	Delivery date IOC	Budget \$ Millions	NPOC \$ Millions
JP 2077 2B.1 <ul style="list-style-type: none"> Upgrade SDSS V4 to V6 (Ellipse) AEFRS compliance was an important component A developmental project that would deliver long-term MOTS capability 	[REDACTED]	132.2	5.0	[REDACTED]	[REDACTED]	137.9	7.3
JP 2077 2B.2 <ul style="list-style-type: none"> Extend Ellipse to deployable environment Integrated in-transit visibility system 	[REDACTED]	93.8	6.2	<ul style="list-style-type: none"> Currently under redefinition in contract negotiations 	[REDACTED]	TBD	7.4
JP 2077 2C <ul style="list-style-type: none"> Active and Passive RFID based Materiel tracking capability Interface to the core inventory system (SDSS) 	[REDACTED]	24.4	2.3	[REDACTED]	[REDACTED]	21.5	2.3
JP 2077 2D <ul style="list-style-type: none"> Address 8 highest residual logistics deficiencies remaining after delivery by 2012/2013 Priority 1 issues are maintenance and engineering modules integration, enterprise reporting, and new system architecture 	[REDACTED]	350.0	5.0				

Source: Capability Development Group

We recommend that as phase 2.D of JP2077 progresses and a more detailed business case is prepared:

- The reasons for investment are explicitly made, delineated and tracked:
 - For investments that claim to be for business improvement, there needs to be detailed, analytical identification and planning of which business improvements will occur. This should detail which processes will change to remove cost and how this will be implemented and tracked.
 - For investments that are intended to improve safety, the need for an economic return should obviously be relaxed, but there should still be a focus on how the investment can also improve efficiency.
- All spend within JP2077 (and minor logistics IT projects) should explicitly account for the impact of: (i) network footprint consolidation planned by JLCR; (ii) logistics process improvements recommended by

this report and the JLCR; and (iii) broader improvements to inventory and maintenance, before committing to investments.

- **A strong alternative proposal with a business improvement plan requiring less capital investment is prepared and taken to second pass approval, with a clear explanation of the pros and cons of either option.**

7 Creating efficient enterprise support functions

In this chapter we address opportunities to drive productivity gains through reform of the enterprise support functions.

Improving the productivity of enterprise support functions starts by taking a fresh look at what work is currently being done, engaging with customers to define what services should be delivered and at what levels, then applying lean principles to define a future state that dramatically improves both efficiency and effectiveness. Driving such a step-change in performance goes well beyond simply ‘right-sizing’ the workforce—it starts with a fundamental redesign of business processes, a willingness to challenge orthodoxies regarding how tasks have traditionally been performed, and joint ownership for driving process reform between providers of support services and their customers throughout the organisation.

In practise, this means finding ways to:

- Eliminate unnecessary work
- Reduce the number of low value-added tasks
- Define appropriate service levels and manage demand for tasks that are considered valuable (for example, create cost transparency)
- Where appropriate, use centralisation, standardisation and automation for repetitive tasks
- Only then make decisions about staffing levels required and how to fill the necessary roles (for example, whether military or civilian, full-time or part-time, employee or contractor).

7.1 SUMMARY OF POTENTIAL OPPORTUNITY

In summary, the potential productivity opportunity identified was in the range \$363 to \$406 million pa. While we believe a saving of this magnitude will be achievable over time, further work is needed to develop an implementation plan with specific targets and sequencing by area. By targeting fundamental reform as opposed to across-the-board cuts, we believe these savings can be achieved while simultaneously driving an improvement in effectiveness.

There are three primary areas of opportunity in workforce reform:

1. **Complete the move to a leaner, more effective business support model.**

We considered three broad labour pools which provide business support services across Defence. The first covers the four core processes underpinning most businesses (HR, ICT, finance, non-equipment procurement), and for which relatively granular benchmarks are available (~6,000 Australian Public Service (APS) full-time equivalents (FTEs), 5,700 military roles and ~600 contractors across Defence). The second comprises a large number of functions—such as engineering, legal, estates, logistics, hospitality, assistants and clerks—that collectively comprise ~5,000 APS FTE and ~860 contractors across Defence, but where appropriate benchmarks for a top-down diagnostic are only available for some categories (for example, legal). Applying a benchmark corresponding to average corporate performance to the first category, for which benchmarks are available, suggests a potential opportunity of \$186 million pa, representing an average opportunity of ~18%. If a bottom-up review of the second category was to yield a similar percentage opportunity, this would imply an additional saving of \$84 million. The third comprises ~5000 additional APS FTE outside the four core processes within the Defence Materiel Organisation (DMO) where we retained the \$24 million saving estimate previously identified by DMO, and ~2,300 APS in the Defence Science and Technology Organisation (DSTO), where a \$26 million saving was identified. In practise, developing specific near-term and longer term productivity targets would form part of a detailed reform design phase, and include tradeoffs around ease of opportunity capture and business risk.

2. **Shift to a largely civilian, professionalised non-deployed workforce.** Since fully loaded APS costs are significantly lower than their military or contractor equivalents, the core of the non-deployable support workforce should be civilian—complemented by a professional uniformed workforce and contractors used for their unique knowledge or where military respite, rehabilitation or career stability postings are required.⁶¹ Across Defence we believe there is currently an opportunity to convert at least 1,100 non-deployed support positions from military to APS, and ~1,100 contractor positions to APS to save a total of \$42 to \$85 million pa.⁶²

Acting on these reforms implies driving behavioural and process changes across multiple areas in Defence, and challenging existing workforce composition norms. It also implies a model where customers of these Services take greater ownership

⁶¹ The move to further civilianisation must be considered in conjunction with actions deemed necessary to comply with other Government requirements, such as increasing the proportion of women in the military.

⁶² After adjusting for the effects of moving to a leaner, more effective business support model.

for understanding and controlling the drivers of cost. This will require sustained commitment and clear top-down leadership during program design and implementation. In both cases, however, there are successful examples of similar reform actions being taken either in Defence previously, in other Defence forces, or both. Hence, we are confident that the reforms outlined in this section are practical, will result in a step-change improvement in workforce performance at Defence, and provide an essential underpinning of the broader reform agenda.

A critical note on methodology

For support functions, we principally relied on benchmarks to obtain a rough gauge of the potential opportunity from productivity gains. For several reasons, we strongly caution against the temptation to view these benchmark outputs as specific targets for workforce reduction:

- Benchmarks were not available for all categories represented in the non-deployable workforce at Defence.
- There are limitations to the direct applicability of broad benchmarks to the Defence environment (given its specific characteristics), so that the ability to approach benchmark performance will vary by area.
- Any deep reform program must proceed in a sequence of waves informed by criteria such as ease of opportunity capture and inherent business risk. Hence, productivity gain targets should reflect the pace of these waves of reform—they are not captured in a single ‘right-sizing’ effort.

We recommend that Defence treats this benchmarking analysis as a useful indication of the potential magnitude of the opportunity. Setting specific targets for workforce productivity improvements, however, should be delayed until the detailed work on translating this potential opportunity to specific targets, as part of an implementation planning effort, has been completed. The effort should examine in detail the opportunity within each workforce and develop specific targets linked to specific phases of a reform program.

7.2 CURRENT WORKFORCE STRUCTURE AT DEFENCE

The current Defence workforce comprises some 21,000 APS, 53,000 full-time military personnel, 23,000 paid reservists (with a further 21,000 reservists on standby), as well as contract labour (including professional service providers).

Defence has already made some significant changes to workforce structure and practices over the past 10 years. For example, the Defence Reform Program in the

late 1990s saw an increase in the use of civilians in non-deployable roles, and a greater use of shared services delivery. Establishing the Defence Support Group (DSG) as an internal specialist service provider has improved non-equipment procurement practices. Defence also consolidated military equipment procurement and sustainment functions with the formation of the DMO (Exhibit 76).

Exhibit 76

Major changes to Defence 1997–2007

Change theme	Description	Source	Affected areas of Defence	Scope for further reform
Workforce civilianisation	<ul style="list-style-type: none"> Full-time military personnel substituted with civilians, Reservists and contractors 	<ul style="list-style-type: none"> Defence Reform Program 	<ul style="list-style-type: none"> All of Defence 	<ul style="list-style-type: none"> AFS and FTE guidance restricts workforce flexibility. There is a need for <ul style="list-style-type: none"> Further civilianisation Conversion of ad hoc contractors to APS Measure capability by the 'Total force' of deployable AFS and Reservists
Consolidate and outsource Garrison and Estates support	<ul style="list-style-type: none"> DSG established as a specialist service provider 	<ul style="list-style-type: none"> Defence Reform Program 	<ul style="list-style-type: none"> DSG, Services 	<ul style="list-style-type: none"> Further consolidation via a centralised shared services model
Consolidate military equipment procurement and sustainment	<ul style="list-style-type: none"> DMO formed from Support Command Australia and Defence Acquisition Organisation 	<ul style="list-style-type: none"> Internal initiative 	<ul style="list-style-type: none"> DMO, Services 	<ul style="list-style-type: none"> Further improve procurement effectiveness <ul style="list-style-type: none"> Merge CDG and pre-contract management arm of DMO Professionalise military workforce
Shift to ICT shared services model	<ul style="list-style-type: none"> IT support functions centralised 	<ul style="list-style-type: none"> Internal initiative 	<ul style="list-style-type: none"> All of Defence 	<ul style="list-style-type: none"> Improved ICT investment effectiveness to improve workflow, shift to paperless environment and in turn reduce staffing requirements in other support functions (HR, Finance, Procurement)

Source: Auditor general report DRP outcomes 2001, Defence Efficiency Review 1997, Client interviews, McKinsey analysis

While many of these prior reforms represent steps in the right direction, we believe a much bolder program of reform is needed to achieve a step-change in Defence workforce efficiency and effectiveness. The remainder of this section outlines the proposed elements of this deep reform agenda.

7.3 COMPLETING A MOVE TO LEANER, MORE EFFECTIVE BUSINESS SUPPORT FUNCTIONS

Well-performing business support functions are critical to the effectiveness of any enterprise. For practicality, given the workforce's size and diversity, we focused on functions with available benchmarks to gauge the approximate opportunity size in those areas—in particular, the four core functions of HR (including HR personnel in both the People Strategy and Policy Group (PSPG) and DSG), ICT,

finance and procurement. In practise, the opportunity in areas not explicitly benchmarked may well be larger than in the areas examined, since they are often less core to the operation of the business (for example, hospitality). In other cases, however, they are vital to the successful delivery of Defence's mission (for example, many engineering and technical functions), and relatively less opportunity may be available. As discussed above, translating these potential opportunities into reform targets is an essential element of reform implementation planning, and should be conducted in a bottom-up manner across the myriad of functions represented.

Nature of the opportunity

There are five principles to reforming the business support functions at Defence:

1. Revising the services offered, SLAs and demand management model
2. Redesigning core business processes
3. Building capabilities and improving systems and tools for better execution quality
4. Increasing the use of shared services and centres of excellence
5. Improving spans of control.

We believe each support function should aspire to reach at least mean benchmark performance (recognising the limitations of the public sector environment). This starts with an agreement on what services to offer to adequately support the operation of business, and what service levels are appropriate for each Service. This requires an effective governance model, active engagement with customers, and joint ownership by service providers and key customer groups across Defence.

Following clearly defined services, the implementation of an efficient delivery model should be initiated. This involves a fundamental redesign of core business processes to eliminate unnecessary work, reducing the number of low value-added tasks, and streamlining and automating workflows where possible.

This drive to improve productivity should support a parallel move to greater effectiveness—by improving skill sets within the function and reinvesting a portion of the productivity savings from eliminating redundant/low value work to higher value-added tasks. In many areas, reaching benchmark performance will also imply substantial improvements to systems and tools, which are currently highly fragmented and sub-optimised. Where we have seen the greatest gains achieved, however, the majority of the process redesign effort has preceded the majority of the systems investment, to avoid 'automating' an inefficient and

overly complex process. The reform planning process should include a review of the appropriate sequencing of process and systems reform.

Achieving a step-change in performance will require not just leaner processes, but also increased use of centralised shared services and centres of excellence to improve effectiveness, achieve economies of scale, and reduce the current high degree of duplication and fragmentation (Exhibit 77). Previous efforts to increase the use of shared services at Defence have met with mixed success. Experience with support function reform in many other situations has shown any move to greater centralisation must start by clearly identifying three categories of work:

- Tasks best delivered via a high-touch local model (for example, career management conversations and evaluations).
- Tasks best suited to a ‘centre of excellence’ model (for example, legal services, IT applications development, auditing, training program design and recruiting services).
- Tasks best delivered via a more transactional, centralised and standardised shared services centre (for example, benefits processing, payroll administration, accounts receivables processing, time management and IT helpdesk).

Exhibit 77

Proposed delivery models for Defence business support functions

Delivery models	Key characteristics of delivery	Typical types of services	Examples
Centre of excellence	<ul style="list-style-type: none"> Strongly specialised staff with specific expertise/skill set Often project-based delivery 	<ul style="list-style-type: none"> Strategic services with economies of scale/ specialization Services delivered with uniform criteria/ method across Groups and Services 	<ul style="list-style-type: none"> Procurement Legal Talent management IT investment Training design Careers policy Recruiting services Budgeting/planning
Shared services centre	<ul style="list-style-type: none"> ‘Service factory’ approach Separation of front office (call center) and back office Automated workflow system 	<ul style="list-style-type: none"> Transactional/ administrative activities Standardized processes with high volume 	<ul style="list-style-type: none"> Payroll administration Accounts receivables processing Time management IT helpdesk/user support

Source: McKinsey analysis

For tasks that are to be delivered via either a centre of excellence or shared services model, establishing clear SLAs and metrics between the support functions and their customers across Defence is critical to success. This allows each function to set clear expectations for customers on the specific services to be delivered and the performance requirements when delivering them.

Finally, there is also an opportunity to improve spans of control as densities improve in some support functions. Spans of control should be tailored to the type of work performed and can be constrained by a distributed footprint of locations, but in general spans of six to seven employees are considered good practice. We examined current spans of control in the People Strategy and Policy Group (PSPG) using PMKeys and this yielded spans varying from 1.6 to 5.6 across its seven layer structure. This sample suggests Defence should explore options to improve spans through a combination of aggregating locations and reducing layers.

We recommend that in designing the reform approach for each element of business support spend, Defence should explore all five of the abovementioned approaches to driving greater efficiency and effectiveness. Defence should use the approaches to set appropriate targets by function, for which both providers and customers of the service are mutually held accountable.

Sizing the opportunity

To size the opportunity in support functions we compared the number of FTE in each of the functions for which benchmarks were available with McKinsey & Company's database—this database details employee data from more than 500 international organisations across a range of industries and geographies, including the public sector. It contains benchmark data at the overall function level and at a more granular sub-function level to enable more accurate pinpointing of opportunity sources.

An appropriate benchmark sample was selected based on client industry/sector and a range of capacity drivers (for example, the high number of internal transfers in Defence HR was accounted for within the sample). On the Defence side, we started with September 2008 PMKeys data for each of the functions analysed. While we necessarily had to rely on PMKeys data as the primary source for our analysis, Defence acknowledges multiple issues with the integrity of this data source, including (Exhibit 78):

- Infrequent database updates, so that some position descriptions are significantly out of date
- Position title fields which are sometimes blank, vague or mis-keyed

- Personnel on long-term service leave registered as current FTE in the system
- The inability to capture part-FTEs assigned to a function.

Exhibit 78

Data integrity issues associated with PMKeys database that affected the benchmarking exercise

Key issue	Description	Example	Implication for benchmarking
Infrequent database updates	<ul style="list-style-type: none"> Some position descriptions are significantly out of date 	<ul style="list-style-type: none"> Injury manager listed as a travel agent 	<ul style="list-style-type: none"> Personnel may be classed incorrectly. Figures may over- or under- estimate workforce attributed to each function
Position title field is blank, includes a vague description code or is misused	<ul style="list-style-type: none"> Title codes do not reflect any specific employee occupation 	<ul style="list-style-type: none"> Admin, General clerk, Clerk, General hand 	<ul style="list-style-type: none"> Personnel are unable to be classified. Figures may underestimate workforce attributed to each function
FTE amount includes personnel on long term service leave	<ul style="list-style-type: none"> Personnel on long-term service are paid and this is registered by the system and shows as an FTE 	<ul style="list-style-type: none"> Longterm compensation under CommCare 	<ul style="list-style-type: none"> FTE figures will overestimate workforce attributed to each function
Unable to capture part-FTEs assigned to a function	<ul style="list-style-type: none"> Personnel may be involved in multiple functions but the dataset was only classified against 1 	<ul style="list-style-type: none"> General manager across a variety of functions will be assigned to the primary function based upon Department description 	<ul style="list-style-type: none"> Figures may over-or underestimate workforce attributed to each function

Source: PMKeys database; client interviews; McKinsey analysis

To improve data accuracy, we formed a team of HR specialists to examine data pertaining to job function, department, unit and subgroup to:

- Exclude specialist military positions (for example, IT supporting Operations) from benchmark comparisons
- Supplement the HR data set with recent personnel census results
- Capture external contractor FTE data where possible
- Capture capacity drivers for benchmark regression (for example, total headcount for HR, total cost base for finance, total purchasing volume for procurement, and total PC users for IT).

For all functions analysed in the benchmarking exercise, we included only those Defence FTEs who fell into the specific categories identified in the sample database to ensure an apples-to-apples comparison. While this reduces the number of Defence FTEs included in the benchmarking exercise, we believe this approach

produces more accurate results than a blunt top-down comparison of total employee sizes by function.

The output from these regressions is a set of potential opportunity sizes expressed as a percentage of FTEs by function in order to achieve varying levels of best practice. To translate these opportunities into cost savings, we then used the following approach:

- Applying the percentage savings on FTEs benchmarked in a function to the total number of FTEs in that function. Essentially, this says that if we were able to benchmark 80% of a function's activities and demonstrate that an average 10% productivity gain was possible (for example, by eliminating unnecessary work), we then assumed the remaining 20% of activities were also likely to have a productivity potential of 10%. We then applied the 10% factor across the entire function.
- Converting FTE savings to cost savings based on the weighted average fully-loaded cost per FTE in the function concerned.

Our regression compared Defence with the appropriate benchmarks to quantify gaps to the average practice across a wide variety of industries.

Recognising that in some areas there are inherent limitations on Defence's ability to achieve performance comparable to the highest-performing global corporations, we recommend taking average corporate practice as an appropriate near-term starting point. Top quartile performance levels are also included in the analysis and should be considered aspirational long-term targets as Defence moves beyond average corporate practice.

While a detailed function-by-function analysis of reform levers was beyond the scope of this review, we supplemented the benchmarking analysis with interviews in the major functions represented, as well as an operational diagnostic within the MPAC-CNNSW military personnel administration centre to confirm our hypotheses on the process redesign opportunity.

Moving to average benchmark performance in the functions for which benchmarks are available implies a potential opportunity size of \$186 million pa in direct workforce spend. The gap to average benchmark performance varies significantly by function, but averages ~18%. If we assume a similar level of opportunity exists for the ~5,000 APS and ~860 contractors⁶³ in support functions

⁶³ Where data were available, contractors were allocated to a specific function and included in the benchmarking exercise (~600 contractors were included in HR and ICT benchmarking). The remaining contractors were not allocated to a specific function, but, as with the remaining APS workforce, we have assumed an 18% reduction in the number of contractor positions required. The contractor reductions are

not benchmarked (excluding the remainder of the DMO and the DSTO), this scales up to a potential opportunity size of ~\$270 million.⁶⁴

In the case of the DMO sustainment procurement and the DSTO, standard corporate benchmarks are less applicable. The DMO provided us with an estimate of the FTEs supporting procurement and supplier management functions. We compared these functions with the equivalent function at a NATO defence ally, and to average performance in the defence supplier/aerospace industries to gauge the potential opportunity size. We retained the \$24 million workforce saving the DMO has already committed to. The DSTO provided a decomposition of the existing workforce, including comparisons to other Government research organisations and an overview of workforce reductions already underway. We agreed to an additional 5% saving on top of existing reductions of 6% of the workforce, which totals \$26.5 million in incremental savings.

In total, savings from the four benchmarked functions—and extrapolation to APS and contractors in other support functions—and specific targets for the DMO and DSTO yields a potential opportunity of \$321 million. As emphasised above, translating these rough opportunity sizes into specific reform targets requires detailed bottom-up reform implementation planning work within each function.

Opportunity by function

The size of the gap to top quartile performance varies significantly by function, and is largest in HR and non-equipment procurement.

converted to a financial saving using an average APS wage of \$87,000, to avoid any overlap with the 'wage premium' captured in the section titled 'Reducing the use of contractors' in Chapter 7.4.

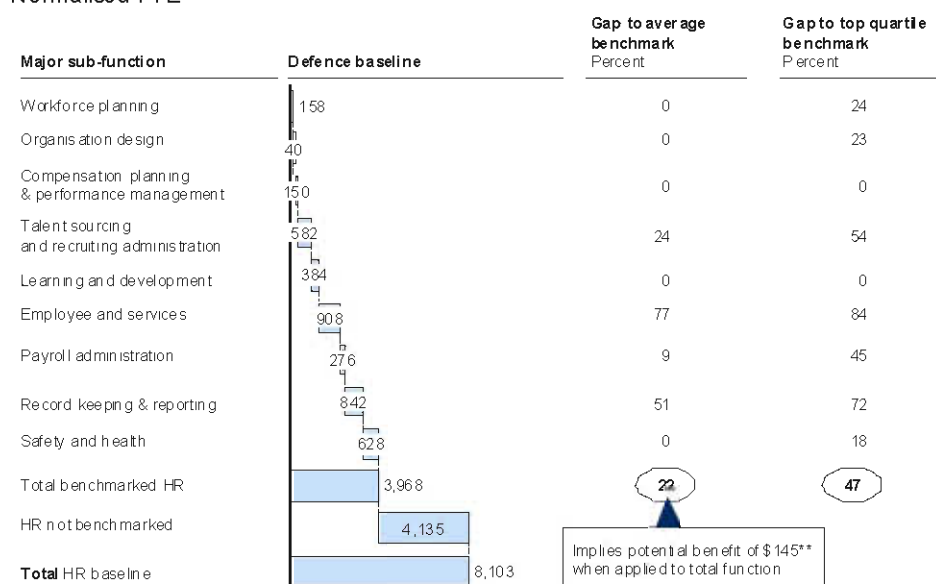
⁶⁴ The savings estimate of \$270 million excludes the savings from removing 134 APS FTEs in Joint Logistics Command, which are captured in Chapter 6.3, as part of the warehousing and distribution network consolidation plan.

HR. The gap to average performance in HR is ~22% of FTE, or approximately \$145 million. This figure includes an adjustment for outsourcing elements of some functions such as recruitment and training. Opportunities include streamlining payroll and career management functions (payroll consolidation is already underway at DSG), as well as substantial reductions in time dedicated to recordkeeping and reporting. As with most support functions in Defence, there are structural constraints that create additional costs in HR relative to corporate environments (for example, unusual recruitment requirements and an unusually large and fragmented estates footprint) (Exhibit 79).

Exhibit 79

Comparison of Defence HR function to corporate benchmarks

Normalised FTE*



* Normalised with respect to internal headcount of 99,613. Benchmark sample of 256 companies from a wide cross-section of geographies and industries with an internal headcount of 2k-131k. Benchmarks conservatively adjusted to account for frequent internal transfers at Defence.

** Based on an average FT EAFS cost in HR function of \$81k, multiplied by a 22% saving on 8,103 HR FTE.

*** Includes only roles readily identifiable as payroll in dataset.

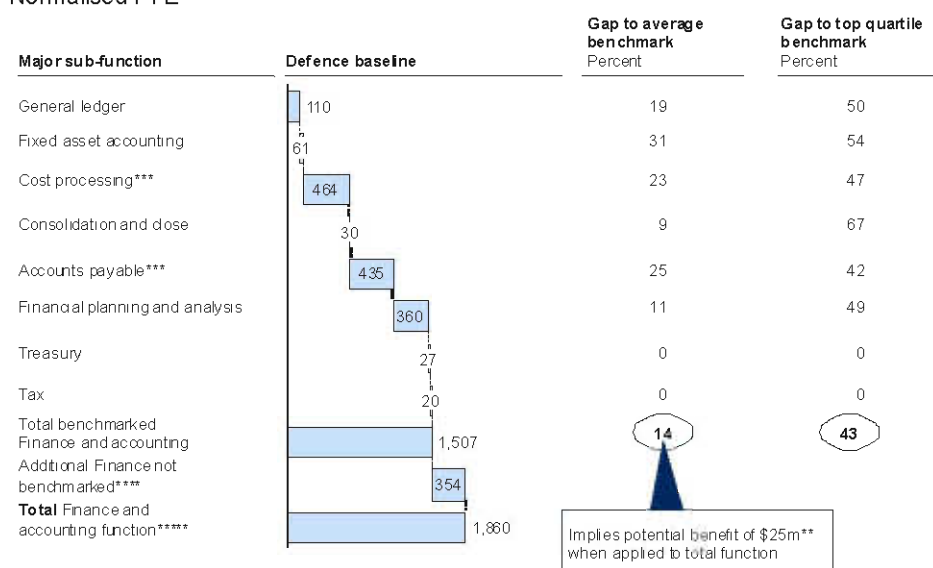
Source: Defence Census of People Functions, August 2008—Mercer Group, McKinsey Overhead Benchmarking Initiative, McKinsey analysis.

Finance. The gap to average performance is ~14% of FTE, representing a saving of ~\$25 million pa. In multiple areas finance is already operating at a good level of efficiency (for example, tax and treasury). As with HR, there are also characteristics of the Defence operating environment (for example, additional reporting requirements), which drive up costs over what would be expected in a corporate environment. The sub-functions which show the greatest potential for savings based on benchmark results are cost processing and accounts payable. While we did not profile the accounts payable and cost processing processes in detail, our interviews support this finding and suggest an opportunity to move to much higher levels of automation and centralisation to eliminate manually intensive, distributed workflows (Exhibit 80).

Exhibit 80

Comparison of Defence Finance function to corporate benchmarks

Normalised FTE*

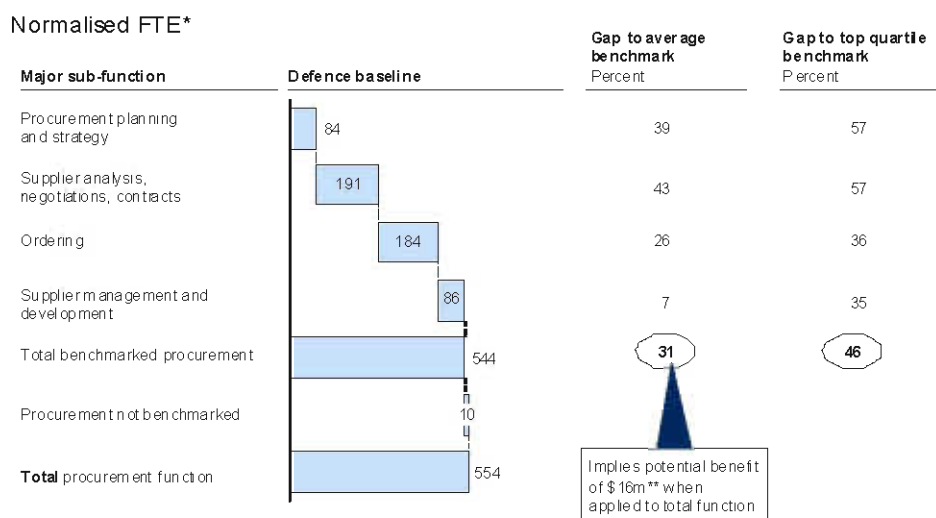


* Normalised with respect to total revenues of AU\$21.2b. Benchmark set of 174 companies from a wide cross-section of geographies and industries with revenue AU\$0.2b-18.6b
 ** Based on an average FTE cost of \$34k multiplied by 14% saving on 1,860 Finance FTE
 *** Normalised with respect to costs by comparing Defence Finance numbers to benchmark set of company's Revenues less EBITDA
 **** Includes 174 FTE in Accounting policies, 155 FTE in External Reporting and 25 FTE undertaking DMO prescribed agency reporting requirements
 ***** Excludes ~57 Internal audits and ~43 needs analysis managers classified elsewhere
 Source: OBI database/McKinsey & Company, Inc. Defence Annual Report 2005/07

Non-equipment procurement. The gap to average performance is also large in the non-equipment procurement area, at ~31% of FTEs, or ~\$16 million pa. Significant opportunities exist across each of: procurement planning and strategy; supplier analysis, negotiations and contracts; and ordering. Since we are also recommending a deep reform of contracting practices and a comprehensive review of the procurement spend base to drive substantial savings in category spend, we suggest a more modest near-term target until these reforms have been executed (Exhibit 81).

Exhibit 81

Comparison of Defence non equipment procurement function to corporate benchmarks



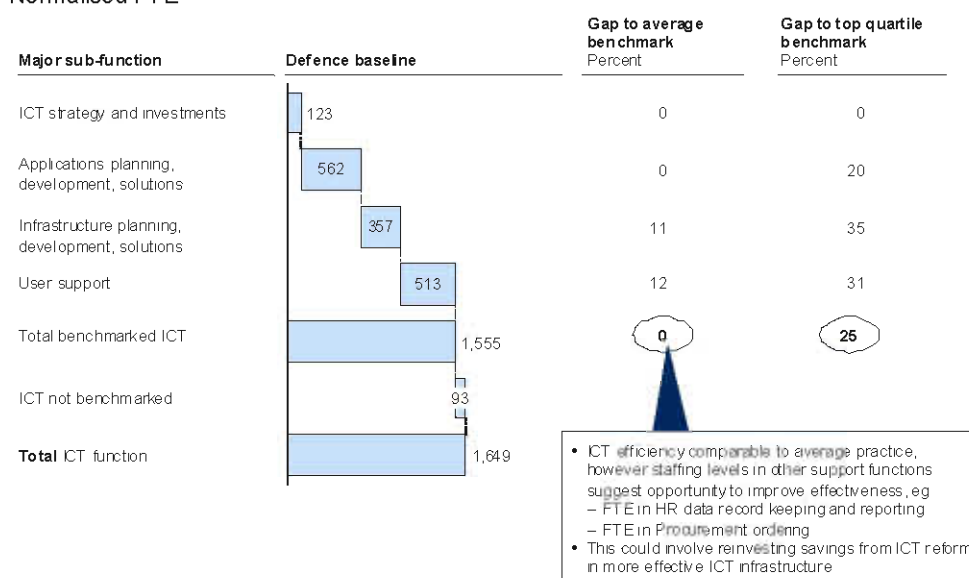
* Normalised with respect to purchasing volume excluding military equipment acquisition and sustainment of AU\$5.15b. Benchmark set of 203 companies from a wide cross-section of geographies and industries with total purchasing volume AU\$0.1m-12b.
 ** Based on an average FTE cost of \$94k multiplied by 3.1% saving on 554 non-equipment procurement FTE.
 Source: OBI database McKinsey & Company, Inc.

Information and Communication Technologies (ICT). Taken as a whole, the ICT function at Defence is currently sized below the average benchmark performance, but shows a gap of 25% to top quartile benchmark performance. Specialist military IT support was excluded when comparing with the benchmarks. Looking at the sub-function level shows that relative to average benchmark performance, the ‘ICT strategy and investments’ sub-function is significantly under expectations, which may indicate a lack of investment that is inhibiting effectiveness. On the flipside, the ‘User support’ and ‘Infrastructure planning, development and solutions’ sub-functions are 12% and 11% above the average benchmarks, respectively. In addition, high staffing levels to support record keeping and reporting in other support functions (for example, HR data record keeping and reporting, and procurement ordering) suggest an opportunity to improve overall ICT effectiveness by reinvesting a portion of savings from ICT reform into more effective ICT infrastructure, as discussed elsewhere in this report (Exhibit 82).

Exhibit 82

Comparison of Defence ICT to corporate benchmarks

Normalised FTE*



* Normalised with respect to total PC users of 4.9k. Benchmark set of 203 companies from a wide cross-section of geographies and industries with 0.5k-7k PC users. Specialist military ICT spend excluded.

Source: CBI database/McKinsey & Company, Inc.

Sustainment procurement. We compared figures supplied by the DMO for FTEs supporting procurement and supplier management functions with equivalent data from a NATO defence ally after they had implemented a reform program in this area. Normalising FTE count relative to procurement spend per FTE indicates the DMO already has ~30% fewer FTEs per dollar managed than the NATO ally, and is roughly in line with mean performance from the Defence/ Aerospace industry. The DMO has started implementing some of the same reforms pursued by the NATO ally organisation, and is looking to do more (Exhibit 83). As part of the Defence Savings Plan prepared prior to the Audit, the DMO targeted a saving of \$40 million on the DMO Service Fee charged to Defence, of which \$24 million relates to workforce savings. This has been integrated into the overall workforce saving.

Exhibit 83

Example of Defence reform agenda of NATO member

	Issue	Example actions taken
Organisation	<ul style="list-style-type: none"> Multiple interfaces between suppliers and purchasing organisation, with touch points not coordinated or managed in a consistent fashion Similar commodity items purchased separately across multiple platforms Purchasing activity too decentralised 	<ul style="list-style-type: none"> Introduced centralised, streamlined structure: <ul style="list-style-type: none"> – Category managers responsible for developing and implementing sourcing strategy for commodity items across platforms – Key supplier managers introduced for top 50 suppliers by value, to coordinate approach to supplier across the organisation, supported by professional buyers – Supplier management team to develop supplier performance management tools and ensure they are used across organisation
Process	<ul style="list-style-type: none"> Manually intensive purchasing process with multiple sign-offs and systems used Duplication and inaccurate data drive up need for manual intervention and increased processing time One-off purchasing inefficient and compounded by public sector requirements 	<ul style="list-style-type: none"> Moved to a standard, streamlined process, then automated elements of process to gain further efficiencies Implemented larger number of frame contracts where individual items purchased frequently Streamlined implementation of government tendering requirements to minimise additional process burden
Skills	<ul style="list-style-type: none"> Workforce with large number of relatively low skill staff 	<ul style="list-style-type: none"> Moved to a smaller group of higher-skilled staff by upgrading commercial and contracting skills of managers

Source: McKinsey analysis

DSTO. The DSTO is another organisation where standard corporate benchmarks are less applicable. The DSTO provides important support to Defence which helps Australia maintain a capability edge, and there is a risk that if too many savings are realised from the DSTO, this will lead to some compromise of capability.⁶⁵ When contemplating savings from the DSTO, especially by reducing the number of projects conducted, Defence should therefore take a holistic view of capability, and consider the balance between options including: acquiring new equipment; investing in research to develop new technologies and equipment; investing in research to extract more capability from new or existing equipment (including better integration with other force elements) and investing in human resources (for example, more people, more skilled people or more training).

The DSTO believes the large capital acquisition program proposed in the recommended force structure option will require significant support from the DSTO, in a manner similar to the Capability Development Group (CDG) and the DMO. This workload will include:

- The need to commence significant research on new capabilities (for example, the SEA-1000 project)
- Additional Technical Risk Assessments (TRAs) on new acquisitions, combined (depending on how Defence responds to the Mortimer Review) with greater input at the requirements definition stage.

The audit team did not have sufficient information to analyse the full implications of the proposed force structure on the DSTO. We accept that there are likely to be greater demands on the DSTO as a result of the White Paper (although if Defence does hold firm to acquiring a greater portion of Military Off The Shelf (MOTS) equipment, this should provide some easing of demand).⁶⁶

The DSTO has reduced its workforce from 2,460 FTE in July 2007 to 2,331 in January 2009, and plans to reduce it further to 2,308 by June 2009. This reduction of 6% of FTEs has been achieved through natural attrition, and has left the workforce ‘unbalanced’ as those leaving do not necessarily align with changes in future requirements. The DSTO also provided figures that showed ~80% of the workforce are scientists and engineers, ~10% are provide specialist support to the scientific workforce (for example, maintaining specialist facilities such as wind

⁶⁵ The DSTO has a number of specialist skills (often vested in a small number of staff) that, if lost, are very difficult to recreate. The DSTO believes that there is a risk that some capabilities could be permanently lost to the nation if significant cuts are made.

⁶⁶ We understand that the future DCP contains funding to enable the DSTO to conduct TRAs, and that the Science & Technology companion review proposes a new funding mechanism to streamline the process of allocating funds for TRAs to the DSTO.

tunnels, or providing specialist IT support) and ~10% are administrative and managerial support.⁶⁷ Other data provided by the DSTO show the ratio of scientific to other staff at the DSTO compared favourably with other Australian science agencies, including the CSIRO and NICTA.

While FTEs have been significantly reduced since July 2007, there was a significant increase in DSTO staffing levels from 2005/06, when the FTE count was closer to 2,200.⁶⁸ The DSTO advises that the increase was, in part, to cover the additional workload from TRAs and support for operations.

In corporate contexts, organisations with significant research divisions (such as electronics, software and pharmaceuticals) have realised significant savings of up to 20% in research and development (R&D) functions, using a combination of three approaches:

- **Portfolio management.** Reviewing the link between an organisation's strategic priorities (in this case, Australia's national security priorities) and its research program's priorities and resource levels can deliver savings of 10 to 20%. This should become an annual process, with the link between strategic priorities and research initiatives clearly articulated and rigorously tested.
- **Project management.** Once projects are agreed, there should be tighter management against key milestones and 'stage gates'. At a minimum, root causes of project delay should be examined to improve the performance of the individual project, and to identify and rectify any common causes of project overruns. In addition, there are likely to be projects which will not deliver the planned outcome in the time/budget originally planned, and should be stopped or re-scoped earlier rather than later. Support from the DSTO's internal customers, especially the Services, will be important to help the DSTO reduce the number and scope of projects, and to stop underperforming projects.
- **Lean R&D.** Streamlining processes and increasing productivity are possible, even in an R&D environment. Basic disciplines such as a 'morning stand-up'—where all project members spend 10 minutes together confirming their priorities for the day and resolving any potential delays due to lack of access to data or resources—can avoid wasted work or waiting time. Ensuring project specifications are clear, and minimising specification changes, avoids unnecessary rework. Streamlining meetings, approval processes, and other administrative requirements can also increase productivity.

⁶⁷ Around half the 'managerial and administrative' workforce will be covered by the HR and Finance streams.

Based on our experience in other R&D environments and discussions with the Chief Defence Scientist, we believe an additional savings of 5% is achievable in addition to the savings already committed. In total, this yields a savings target of \$26.5m pa, consisting of

- The workforce savings of \$15.7 million committed for the 2008/09 budget
- An additional saving of 5% of the DSTO workforce (excluding those already captured in the finance and HR benchmarking), which translates to ~115 FTE or \$10.8 million per annum.

As with the other areas addressed in this Audit, the reform process at the DSTO should start with a detailed analysis to assess the potential value of the types of improvements described in this section to ensure savings are captured in a sustainable way.

Business process redesign example: military personnel administration

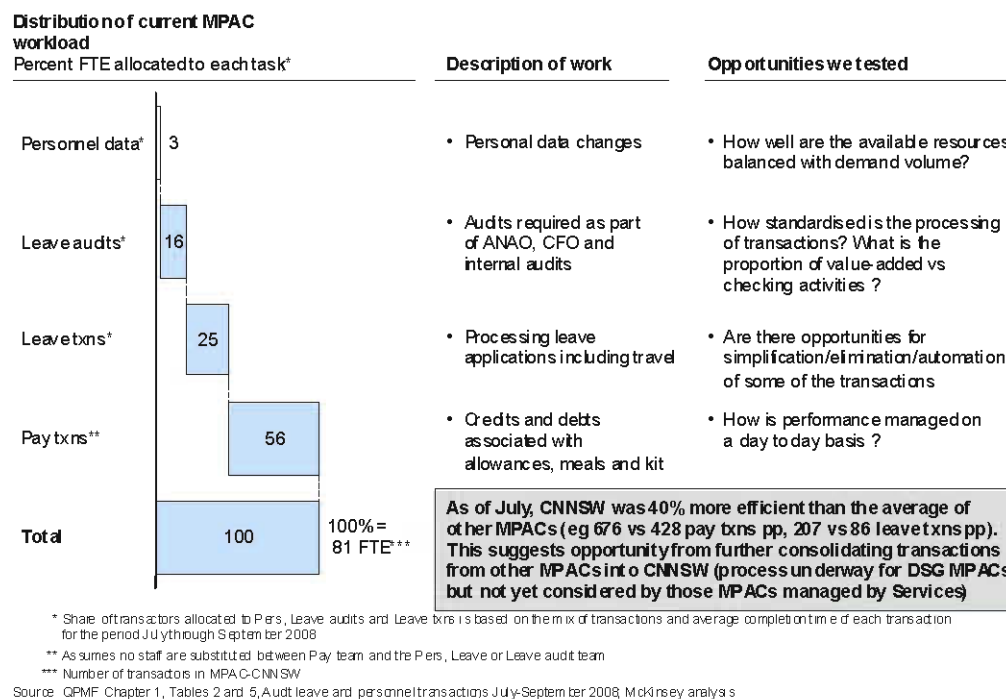
As an example of how a lean diagnostic can be used to identify opportunities for business process redesign that drives efficiency and effectiveness improvements, we conducted several interviews and a walk-through of military personnel administration procedures at MPAC-CNNSW. We also used this analysis to provide bottom-up support to test the order of magnitude findings of our benchmarking exercise.

As of July 2008, CNNSW employed 81 FTE transactors, with roughly 56% of time spent on pay transactions (for example, credits and debits associated with meals, kit and field allowances), 25% on processing leave applications (including travel), 16% on leave audits, and the remaining 3% on personnel data changes (Exhibit 84).

⁶⁸ DSTO Workforce Analysis 2007–08, Figure 1.

Exhibit 84

MPAC-CNNSW high-level lean diagnostic



We chose CNNSW as one of the highest-performing military pay and leave processing centres, on the basis that any opportunities found there would probably be magnified elsewhere. Currently, CNNSW is 40% more efficient than the average MPAC centre (for example, 676 versus 428 pay transactions per person per month, and 207 versus 86 leave transactions per person per month). We tested four specific opportunities:

- How effectively are the available resources balanced against demand?
- How standardised is the processing of transactions and what is the proportion of value-added versus checking/verification activities?
- Are there opportunities for simplifying/eliminating/automating some transactions?
- How is performance managed on a day-to-day basis?

We identified three major sources of improvement potential, which together would drive a 50% reduction in activity at CNNSW through eliminating wasted or low value-added activity, and streamlining of existing processes (Exhibit 85):

Exhibit 85

MPAC-CNNSW improvement levers

Improvement lever	End to end optimisation required?
① Increase workload balance through <ul style="list-style-type: none"> • Improved forecasting of activity • Better workforce scheduling • More flexible staffing model 	Yes
	Yes
	No
② Reduce variability in executing transaction through improved <ul style="list-style-type: none"> • Upstream information accuracy • Performance management 	Yes
	No
③ Reduce number of manual transactions <ul style="list-style-type: none"> • Self service use at Army • Automating meal and kit charges 	Yes
	Yes

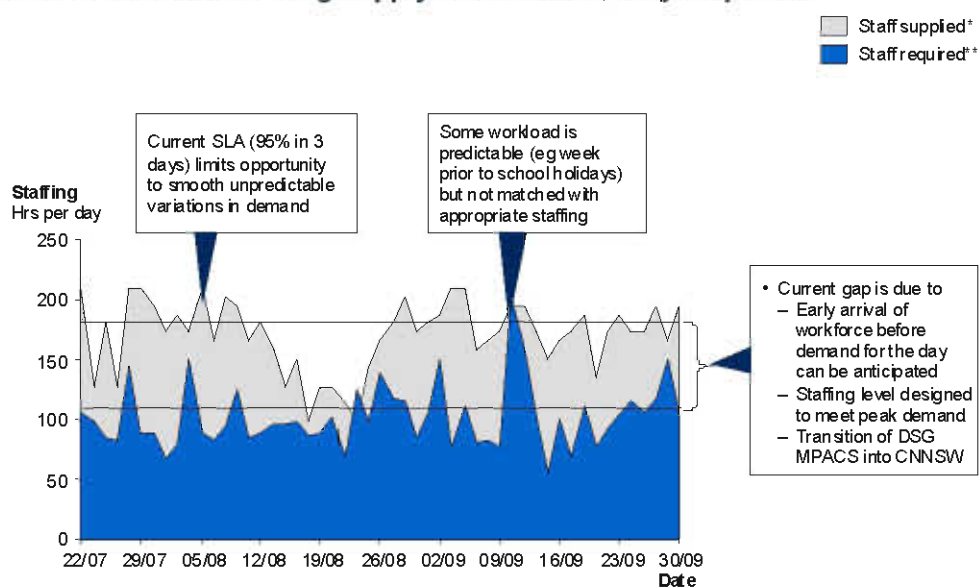
Source: McKinsey analysis

- 1. Improving the workload balance.** The CNNSW is currently staffed to meet a peak transaction load.⁶⁹ Moving to a better understanding of demand, setting appropriate Service Level Agreements (SLAs), and staffing accordingly could drive a 25% reduction in staffed hours while still delivering against the workload (Exhibit 86). Example actions include:
 - Establishing a workload forecast with different customer groups.
 - Setting appropriate SLAs—currently, all transactions carry the same SLAs which limits the opportunity to balance workloads. Moving to a slightly lower SLA on a small number of transactions (reflecting the true needs of the customer) has a dramatic impact on workload balancing.
 - Readjusting the level of resources to meet the new forecast.
 - Implementing flexible hours to absorb predictable peaks and troughs.

⁶⁹ For the purposes of this analysis we took a static view of current staffing. The DSG has begun staffing up CNNSW in advance of expected load increases from consolidation, which contributes to the current over-staffing levels.

Exhibit 86

MPAC Leave team staffing supply and demand, July–Sept 2008



* Personnel supplied calculated as # people scheduled to work on any one day x 7.5 hrs

** Personnel required calculated as # of Leave, Audit and Personnel transactions completed in a day times mean transaction time per transaction for 3 month period (11 min, 76 min, 17 min respectively)

Source: MPAC Leave and Personnel data transactions July 1st – September 30th 2008

2. **Reducing variability.** There is currently a very high degree of variability in the amount of time taken to process transactions of the same type. Drivers of this variability include: complexity of the transaction; additional work required to check/verify the completeness of the information; and differences in operating procedures between processors in CNNSW. A quick diagnostic suggests an opportunity to drive down average transaction time by 20% through a combination of:
 - Tracking the accuracy of information submitted to MPAC to provide feedback to submitters of high levels of re-work and developing improvement measures.
 - For remaining checks where MPAC is the logical owner (for example, leave entitlements), developing and rolling-out ICT automation to reduce processing time dramatically (currently a highly manual process).
 - Tracking hourly performance within CNNSW using median time as a reference, identifying and implementing best practices in processing procedures.
3. **Reducing transaction volume.** The most effective method to drive down MPAC workload is to eliminate it altogether, either through automation or

eliminating redundant/wasteful process steps. We profiled two opportunities at CNNSW:

- Increasing the use of self-service systems for basic HR-related transactions. DSG has had success in driving self-service for leave transactions at the Navy and Air Force, and has recently gained traction in increasing uptake at the Army. Lifting the Army from 16% usage in June/July to the average of the Navy and Air Force in that same period (77%) would represent a 49% reduction in manual leave transactions and a 22% reduction in the total available work hours. In practise, achieving this would require upgrades to hardware and network infrastructure to increase system capacity.
- Automating the process for meal and kit charges. Processing pay deduction requests for meal and kit charges represents one-third of all transactions, and ~25% of CNNSW pay processor time. This requires multiple and manual data entry of (often illegible) handwritten data fields, with ~80% of transaction time being non-value add copying. The size of these deductions is typically low (for example, meals at ~\$5; kits <\$20), and although cards are available to be swiped at messes, the data is not sent to a central location for processing. By implementing an IT solution to link staff cards to the central processing system and requiring service members to pay meals and kit by cash, ~11% of the total available work hours could be saved.

We recommend that Defence implement the actions outlined above to improve workload balance, reduce variability and reduce transaction volume at MPAC centres across the existing footprint.

Achieving these savings will require a fundamental redesign of business processes, including a commitment to end-to-end process optimisation. This has implications for support function delivery both on bases and in back-office delivery. In particular, we see four preconditions to capturing and sustaining the opportunity.

We recommend Defence pursue the following four enablers:

- **Revising SLAs.** Selectively adjusting SLAs for some transaction types to enable more flexible scheduling and better reflect true end-user needs.
- **Better collaboration up/downstream of MPAC.** Better information sharing on expected volume to enable improved scheduling of resources; a concerted effort by commanders and base liaison officers to ensure forms are complete and accurate; MPAC to raise awareness of the implications of incorrect information on process efficiency.

- **Cultural shift in the Services towards more self service.** Drive self-service uptake by the Services towards civilian (APS) levels.
- **Upgrading technology.** Further IT investment is needed to support the move to greater automation—upgrades to hardware, application and bandwidth (current performance is discouraging use); better use of digital/electronic files; a move to efficient data entry with fewer handoffs (for example, web based).

By adopting these measures and making a real commitment to business process change, Defence can move beyond incremental, one-time improvements in efficiency, to capture substantial and lasting efficiency gains while driving greatly improved effectiveness in core business support functions.

Implementing reform in business support functions

Reform of business support functions typically proceeds in waves of activity, starting with an assessment of the opportunity, followed by detailed business process redesign, and finally a move to a highly efficient and effective IT-enabled model. An example wave structure follows—the exact approach to be taken within any given function would naturally need to be tailored to the opportunity and context of that function.

- **Wave 1: Diagnostic and transformation design (3 to 9 months).** Example activities include:
 - Establish team, master plan, tracking mechanisms and engagement plan
 - Communicate principles
 - Review current workforce deployment
 - Create and review people metrics
 - Define performance management goals in concert with customers
 - Diagnose current processes
 - Start design of shared services 2.0
 - Diagnose current IT systems
 - Capture quick wins.
- **Wave 2: Business process redesign and launch of shared services 2.0 (12 to 24 months).** Example activities include:
 - Redesign initial set of business processes
 - Launch initial elements of shared services 2.0

- Improve spans of control
 - Design IT transformation enablers
 - Implement organisational design changes
 - Communicate plan and progress
 - Implement governance mechanisms
 - Build change capability
 - Begin implementing metrics and new SLAs and link to new governance models.
- **Wave 3: Transformation to efficient and effective IT-enabled processes (2 to 3 years).** Example activities include:
- Complete process redesign and move to shared services 2.0
 - Complete transition to new metrics and SLAs
 - Implement IT enablers
 - Embed mindset and capability themes
 - Establish sustainability/continuous improvement team and pipeline
 - Make the transition to become a strategic partner to customer groups
 - Review performance expectations.

7.4 SHIFTING TO A LARGELY CIVILIAN, PROFESSIONALISED NON-DEPLOYED WORKFORCE

The second opportunity to increase the productivity of the support function is to adjust the mix of military, APS and contractor staff chosen to fill available positions. In this section, we focus on the non-deployable workforce and the opportunity to move toward greater use of civilians within that workforce.

Summary of the opportunity

The fundamental driver behind the push to increase civilianisation of non-deployable roles is the fact that typical fully-loaded APS costs are significantly lower than their military or contractor equivalents (~30% savings over military FTEs on average, and savings of 15 to 40% versus contractors).

We recommend that the core of the non-deployable support workforce should be civilian—complemented by a professional uniformed workforce and selective use of contractors where specific conditions require it.

We further recommend that circumstances under which uniformed staff should be used in non-deployable roles include the following:

- **Providing sufficient respite posting roles to support necessary military rotations, and to provide rehabilitation and career stability support necessary for retention.**
- **Accessing the specialised military knowledge/experience required to adequately perform a function.**

Where military staff are to be used in non-deployable roles, we recommend changes to the rotation model to allow deep expertise to be developed in areas where specialised skill sets are required. Specifically, by encouraging and rewarding multiple postings within a particular area, Defence can enable specialist skill sets to be developed more easily.

We recommend that the use of contractors should be restricted to situations where temporary ‘surge’ capacity is required that does not justify full-time roles, or where a specific expertise is needed and no full-time candidate can be found for the role in the near term.

Across Defence, we identified a total opportunity to convert ~1,100 non-deployable support positions from military to civilian, and ~1,100 contractor positions to APS to save a total of \$52 to \$85 million pa. After adjusting for the effects of implementing the proposed reform of Defence business support functions, these savings total \$42 to \$85 million pa.

Civilianisation of non-deployable roles

For each of the three services, we analysed the proportion of the workforce in non-deployable roles to identify a subset of these roles that are candidates for civilianisation. In practise, civilianising these roles requires recruiting individuals with the appropriate skill sets, which is likely to be a gating factor on the speed of implementing these changes.

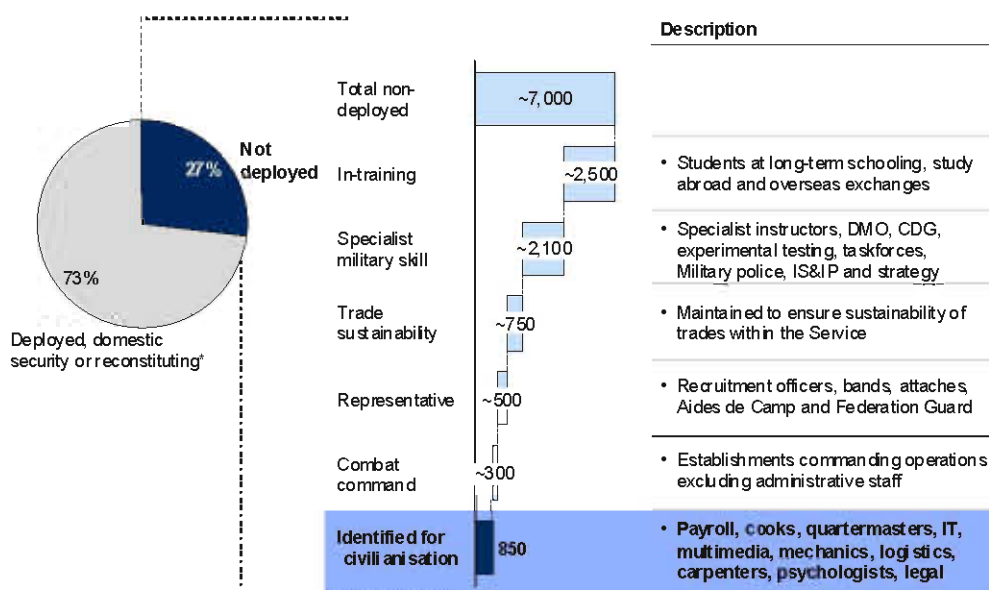
- **Army.** Of the ~7,000 staff in non-deployable roles, approximately 1,500 to 1,600 are in non-specialist positions that we would consider candidates for civilianisation. Based on discussions with Army personnel, we identified 850 of these positions that we consider applicable.⁷⁰
 - Non-specialist roles considered candidates for civilianisation included: personnel and payroll; cooks; medical; quartermasters; IT; multimedia; mechanics; logistics; carpenters; psychologists; and legal.
 - We excluded roles in combat command, specialist military skills, long-term schooling and representative roles (Exhibit 87).

Exhibit 87

Breakdown of 850 positions for civilianisation in Army

ARMY

100% = 26,013; Mix of deployable and non-deployable establishments

 Area of focus


⁷⁰ These numbers were confirmed by the Army in minute DPERS-A/OUT/2008/R3410203 dated 30 October 2008. In subsequent discussions, the Army suggested conducting a further review of the feasibility of this figure.

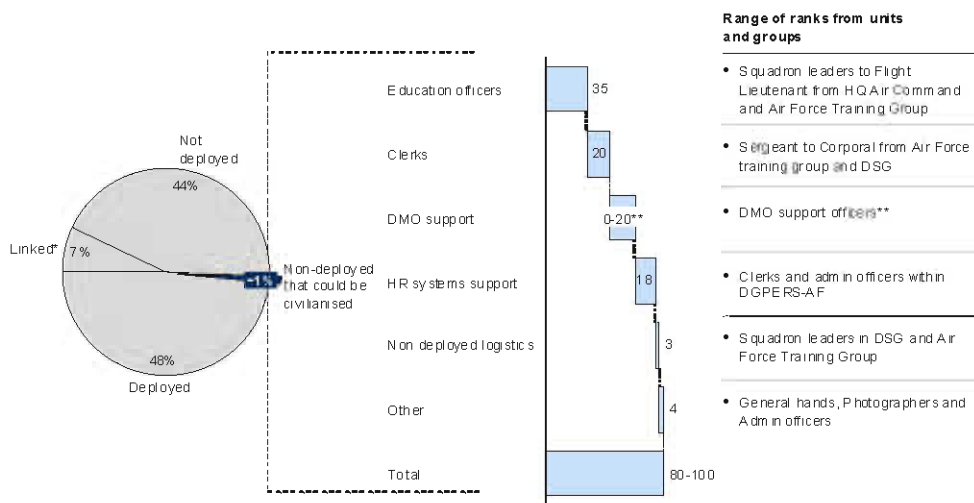
- **Air Force.** During the Defence Reform Plan, the Air Force converted ~4,000 roles into civilian positions. We reviewed the ~6,000 staff currently in non-deployable roles, and identified 270 to 330 that we would consider candidates for civilianisation. Based on discussions with Air Force personnel, we identified ~80 to 100 of these positions that we consider applicable.
 - Roles we propose converting to civilian positions include: clerks; administrators; logisticians; education office staff; HR support officers; and personnel managers (Exhibit 88).

Exhibit 88

Breakdown of 80–100 positions for civilianisation in Air Force

AIR-FORCE

100% = 13,643; Mix of deployable and non-deployable establishments



* Personnel who are deployable in war-time, but in peace-time assume a support role
 ** To be confirmed following detailed review underway by Air Force as of November 2008
 Source: RAAF establishments August 2008

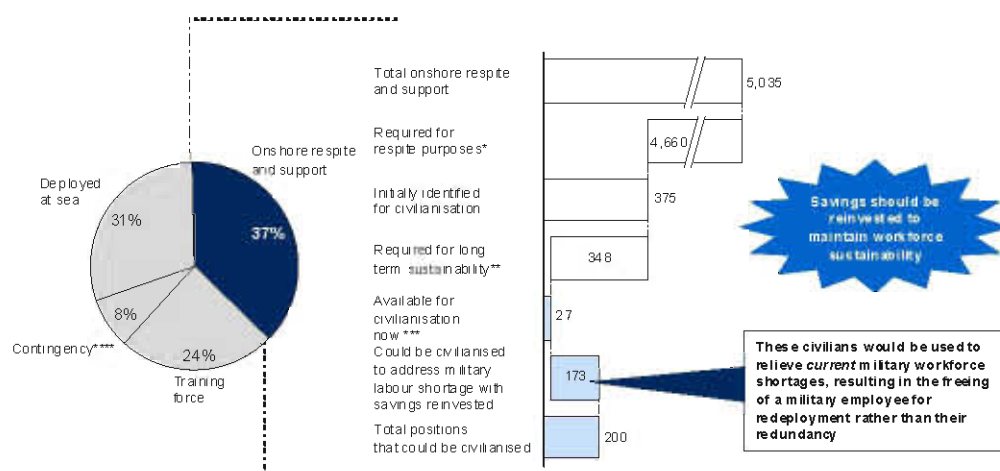
- Navy.** During the Defence Reform Plan, the Navy also converted ~4,000 roles into civilian positions. We reviewed staff in onshore roles and identified a further 220 to 375 that we would consider candidates for civilianisation. Based on discussions with Navy personnel, we identified ~200 of these positions that we consider applicable. Roles we propose converting to civilian positions include: clerks, stewards, cooks, physical trainers and training instructors (Exhibit 89).

Exhibit 89

Identification of 200 positions for civilianisation in Navy

NAVY

100% = 13,569; Mix of deployable and non-deployable establishments



We recommend pursuing the specific civilianisation opportunities identified within each Service, and implementing an approach where the Service shares a portion of the benefit from the savings achieved.

We recommend implementing a workforce management construct that enables Services to balance AFS and FTE within a total workforce budget, where this enablement acts to achieve better spend effectiveness.

By shifting to a greater mix of civilian roles, a portion of the savings accrued can be used to remediate ‘hollowness’ within the Services. The following example shows how this might work for the Navy:

- The Navy has plans to hire an additional 700 personnel in uniformed roles, and currently has ~200 uniformed personnel on its payroll in onshore positions, which it considers candidates for civilianisation.
- Instead of hiring 700 uniformed personnel as planned, given the lower cost of APS staff, the Navy could hire 540 uniformed personnel and 200 APS personnel at an equivalent cost. The 200 APS personnel could then take on (and civilianise) the onshore roles, freeing an additional 200 uniformed staff for deployment.
- The result would be 200 civilian staff completing onshore duties, and a net add of 740 uniformed, deployable staff.

When considering the extent to which roles can be converted to civilian positions, it is important to consider availability of suitable respite roles—the military must retain a sustainable rank and trade structure, as well as provide options for sustainable family support (Exhibit 90).

Exhibit 90

Concerns of Services relating to Civilianisation

Major concern	Description	How it can be addressed
Control over workforce budget	<ul style="list-style-type: none"> • A reduction in AFS equates to Service Chiefs losing partial budget control 	<ul style="list-style-type: none"> • Provide Service Chiefs with a budget rather than a guidance of AFS and FTE to enable them to deliver the most cost-efficient mix of civilians, military and contractors
Respite positions	<ul style="list-style-type: none"> • Civilianisation will remove necessary respite positions 	<ul style="list-style-type: none"> • Ensure sufficient military positions remain at appropriate geographical locations to meet respite requirements
'Ineffective' positions	<ul style="list-style-type: none"> • A number of non-combat uniform positions created for women will be removed 	<ul style="list-style-type: none"> • Redeploy women in those positions identified for civilianisation to other functions • Remove restrictions preventing women from participating in front-line combat
Career broadening opportunities	<ul style="list-style-type: none"> • There will be fewer opportunities for military staff to develop skills across a broad range of support functions 	<ul style="list-style-type: none"> • Not everyone must be trained for Service Chief—offer opportunities to build professional specialist careers • Leave gates between tracks for select candidates following the command path
Control over service delivery	<ul style="list-style-type: none"> • Military will lose control over standards of service delivered by support groups 	<ul style="list-style-type: none"> • More transparent and robust SLAs • Process redesign to improve service quality • Introduction of a performance management framework
Growth for future capabilities	<ul style="list-style-type: none"> • Positions required for Navy's new generation deployable workforce will be removed 	<ul style="list-style-type: none"> • Reinvest savings from civilianisation back into the Navy workforce
Competing for appropriately skilled talent	<ul style="list-style-type: none"> • Competing with commercial employers to attract suitably skilled specialists (eg medics, legal) 	<ul style="list-style-type: none"> • Introduce flexible civilian pay structure where appropriate (also applicable to some military roles, e.g. pilots as part of Aircrew Sustainability Project) • Develop skills through in-house/proprietary training

Source: Service Chief, Deputy Chief, DG Pers interviews

We recommend selecting these roles thoughtfully. Example factors that would weigh against civilianising specific roles would include:

- **Role requires specialist military knowledge** (for example, DMO technical engineering)
- **Military oversight to provide context necessary**
- **Role is ceremonial** (for example, Band, Federation Guard)
- **Civilians are not readily available to fill the required role** (for example, dentist in Tindal).

We further recommend that Defence should avoid using uniformed staff in non-deployed roles simply to ensure desired levels of service delivery or where the role is representative but a uniform is not necessary (for example, UN special representatives).

Developing deep expertise

To drive a step-change in performance, Defence needs to develop greater capabilities in key non-deployed roles. Examples of groups that would benefit from deeper specialist expertise include the DMO, DSG, Capability Development Group (CDG), CFOG, and CIOG and other ICT providers. The need for this increased capability has been a major theme of this Chapter. In Chapter 13, we report on what is required to drive deep reform in Defence and explore how these capabilities can be built.

Reducing the use of contractors

We analysed a sample of 50 contracts across a variety of support groups to understand the drivers of contractor use at Defence. The total annualised contract value represented was just under \$20 million. This spend was distributed as follows:

- **Replacing a short-term gap.** Fifteen percent of spend was in situations where a short-term gap was needed to be filled and no full-time resource was available.
- **Accessing specialist skills.** Twenty-seven percent of spend was to access specialist skills.
- **Reaching FTE guidance.** Fifty-seven percent of the spend was due to FTE caps being reached.

We recommend in this third category of contractor spend that Defence move to labour cost guidance in place of FTE caps, to avoid a 15 to 30% over-spend on non-specialist contract labour.

If this sample analysis proves representative of the estimated \$228 million in annual contract labour spend across Defence, this implies a potential savings opportunity of \$17 to \$33 million (based on a wage premium of 15 to 30%) for internalising the contractors employed due to FTE guidance.

We recognise that recruiting specialist skills may be a tough challenge for Defence. Converting 20% of the contractors in the 'specialist skills' category would create an additional saving of \$5 to \$7 million pa.

The saving from removing all contractors employed to meet FTE guidance and 20% of those with specialist skills ranges from \$22 to \$40 million.

8 Capturing efficiencies while reforming ICT

In this chapter we address opportunities to drive productivity and effectiveness improvements in the Information and Communication Technology (ICT) area. As the Chief Information Officer Group (CIOG) has already commissioned two reviews in addition to the ICT Companion Review, we limited our scope to identifying any potential gaps in the analysis conducted to date, and whether the audit would recommend follow-up action to address these gaps.

This review is therefore based on a high-level assessment of the output of these three efforts, as well as limited engagement with CIOG and the consultants who completed the additional reviews (Boston Consulting Group and Booz & Co.). The audit team was provided with version 0.4 of the Defence White Paper ICT Companion Review and a final copy of CIOG's ICT Sourcing Strategy Review. Since the ICT strategy development was in process, we were provided only with a short extracted document, entitled "Collected Financial Information", from that work.

8.1 THE EFFICIENCY OPPORTUNITY IN ICT

In summary, our perspective from reviewing these documents is that they effectively capture, to varying degrees, many of the key challenges facing ICT—with an emphasis on the need for remediation and increased effectiveness. Our concern, given the magnitude of the transformation required, focuses more on 'how' to address these challenges—in particular, the pressing need for an integrated path forward that combines effectiveness and efficiency goals.

Working with CIOG, we developed an approximate bottom-up sizing of the efficiency opportunity, which we then verified against a top-down opportunity sizing based on our experience working with other clients on similar ICT reform plans. In developing the bottom-up estimate we combined three sets of opportunities:

- Opportunities in sourcing, single secure desktop and infrastructure remediation previously identified by the Boston Consulting Group and Booz & Co.
- Additional opportunities not previously quantified (e.g., savings from applications consolidation)

- Previously committed savings which CIOG had not yet captured, but which they viewed as incremental to the other bottom-up opportunities

These bottom-up opportunities together represent a savings target of \$215 million pa, which is what CIOG has committed to as part of the proposed reform.

To gauge whether this target is of appropriate size, we compared it with the typical 15-30% savings we have seen achieved in similar reform programs targeting major elements of the ICT stack (even higher savings have sometimes been achieved in holistic programs pursued over multiple years). Estimating the baseline spend against which to apply this range has proven difficult in the past due to the fragmented nature of ICT spend across Defence. CIOG recently completed additional work to quantify this baseline more accurately for the 2008/2009 budget: excluding personnel costs (where efficiencies are captured elsewhere), the total projected spend is \$917 million.

Applying a savings range of 15-30% to this baseline yields an efficiency opportunity range of \$138-275 million pa, which suggests the agreed target of \$215 million pa falls comfortably within the range of what we have seen achieved elsewhere—with the potential for additional savings if best practice is achieved. However, achieving savings on the high-end of the top-down range will require much greater centralisation of spend than has historically been the case, with CIOG taking control of most/all of the ICT expenditure in question.

Note that in this instance we have applied the top-down savings range to a 2008-2009 budget estimate, whereas the rest of the budget audit has used 2007/2008 actuals. This was necessary as 2008/2009 data were the only accurate figures available—as further baselining is conducted as part of the reform effort, CIOG should ensure this new baseline estimate reconciles with the rest of expenditure across Defence.

8.2 CAPTURING THE EFFICIENCY OPPORTUNITY

We believe capturing substantial efficiency gains should be an integral part of the transformation program. This will support a move to greater effectiveness and help fund remediation. We therefore suggest extending the work of the existing ICT Companion Review to include greater detail and emphasis on efficiency improvements.

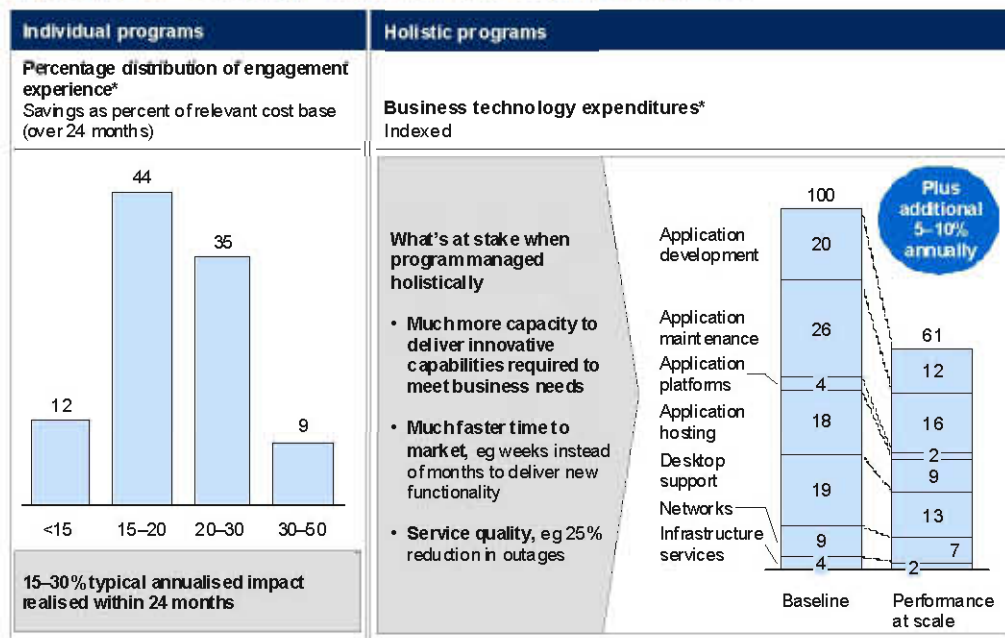
We recommend making efficiency improvements a core component of the ICT reform plan—starting from a more detailed, fact-based understanding of the services and costs required, which will help create the transparency needed to drive simplification.

CIOG has already begun work on many fronts to improve its operations—for example, by driving down unnecessary variability in equipment purchases and reviewing the use of contractors. At the same time, CIOG is somewhat hampered by a lack of talent (even among ICT project manager ranks), highly distributed spend, and a long project approval process that conflicts with short technology lifecycles. As noted in the Companion Review and ICT Sourcing Strategy Review, Defence’s ICT asset base is largely depreciated and in need of refresh. Hence, once a consolidated future state architecture has been defined, a significant portion of these savings will need to be reinvested in infrastructure replacement.

To achieve this consolidation, Defence needs to undertake a comprehensive transformation of the ICT function—given the large number of distributed applications, hardware and networks currently in place. Where the scope of an ICT transformation is holistic, the opportunity for improvement is typically even greater—with the potential to improve technology efficiency as high as 40% with a concurrent increase in quality (for example, a 25% reduction in outages). Therefore, we suggest setting high aspirations for ICT efficiency savings, which can be used to offset the significant anticipated refresh costs (Exhibit 91).

Exhibit 91

Impact on IT efficiency: Individual and holistic programs



* Sample of 159 of 205 total engagements
 ** Excludes long distance and wireless communications, includes end user assets
 Source: McKinsey analysis

Before embarking on this transformation, there are several preconditions we believe must be met. There are also elements of the plan that should be developed beyond what is articulated in the existing reviews.

We recommend defining the following elements at the outset of the reform program:

- **Establishing a sufficiently strong governance model as a precondition to launching the reforms, including:**
 - **Having one authority across ICT and a sufficiently robust set of governance mechanisms in place to monitor and guide the process. Some progress has been made in this area (for example, establishing the CIO as the single authority at a high level); however, the model is still highly dispersed and we recommend a tightening of governance and control as a precursor to launching a major reform program.**
 - **Ensuring the program is owned and driven Defence-wide—ensuring all Groups and Services actively participate in the process; recognise the need for behavioural changes on the demand and supply sides; and participate in cross-functional governance bodies, which are empowered to make cross-cutting decisions where appropriate.**
- **Establishing a 3- to 5-year vision for ICT’s end-state aspirations—these should complement the Companion Review’s effectiveness recommendations by providing clear aspirations for efficiency gains based on simplification, consolidation and demand management. This would include:**
 - **Determining what and how products and services should be managed centrally versus remaining with Groups/Services.**
 - **A more detailed, fact-based understanding of the services and costs involved to: create the required transparency for driving simplification; set firm targets; enable progress measurement; and build an improved set of metrics and Service Level Agreements (SLAs) for delivering services to internal customers.**
 - **A lean ICT operating model for dramatically driving down capital and operating expenses by consolidating and simplifying hardware, applications and networking environments (Exhibit 92).**

Exhibit 92

Lean levers to reduce waste and achieve improvements

MID-RANGE TOWER
EXAMPLE

Lever	Description	Example
1 Segment complexity	Form separate channels for complicated tasks and enable more 'rhythm' building	Separate teams process complex tickets vs simple tickets
2 Redistribute activities	Align activities to group with appropriate skill set and pay-grade	Transfer tasks such as manual reboot of servers and password reset from SAs to lower-tiered console operators
3 Pool resources	Utilise existing skills and resources to reach economies of scale	Cross train Unix SAs on all flavors (eg AIX, Solaris) to reach scale and better manage workload
4 Create flexible manpower systems	Balance processing capacity with the ongoing demand by moving people to where work activity is	Quickly swing resources across teams or groups if workload or backlog is increased in one area
5 Reduce incoming work	Manage demand and eliminate work that doesn't need to be performed	Optimising monitoring thresholds to remove false-positive alerts
6 Reduce NVA work	Reduce work that does not directly add value to the end customer	Review meeting frequency, duration and attendance
7 Standard operations	Establish best practices to execute a task	Standardise processes and procedures for common tasks (eg running Bridge call)

Source: McKinsey analysis

- **Establishing end-to-end management, rather than a piecemeal approach, across core services such as equipment, personnel, outsourcing and facilities spend—outsourcing the various elements of a service to different providers makes end-to-end accountability difficult.**
- **Demand management that goes beyond project prioritisation to include provision of standard ICT products and services (Exhibit 93).**

Exhibit 93

Defining standard 'services' reduces fragmentation, complexity, and improves transparency

Element of standardisation	Description	Impact
Standardised menu of services	<ul style="list-style-type: none"> Standard products translate into highly streamlined infrastructure Investment in efficient delivery approaches by the IT organisation 	<ul style="list-style-type: none"> 4–5 menu items that meet 90%+ of needs enable increased scale benefits Reduced cost of infrastructure through improved utilisation, support ratios, and process maturity
Meaningful description of IT as services	<ul style="list-style-type: none"> Business users select from a comprehensive menu addressing business needs, eg 'office desktop vs mobile warrior' Business users and application developers can reorder proven platforms and service levels 	<ul style="list-style-type: none"> Limited exposure of technical complexity to business users Reduced effort and better quality in services
Transparent pricing and governance	<ul style="list-style-type: none"> Business users are charged based on usage Business users help IT forecast demand and fund factory build-out; IT department takes on the risk of utilisation 	<ul style="list-style-type: none"> Variable pricing of infrastructure services provides flexibility to the business users to meet changing business demands Improved utilisation and reduced fixed costs

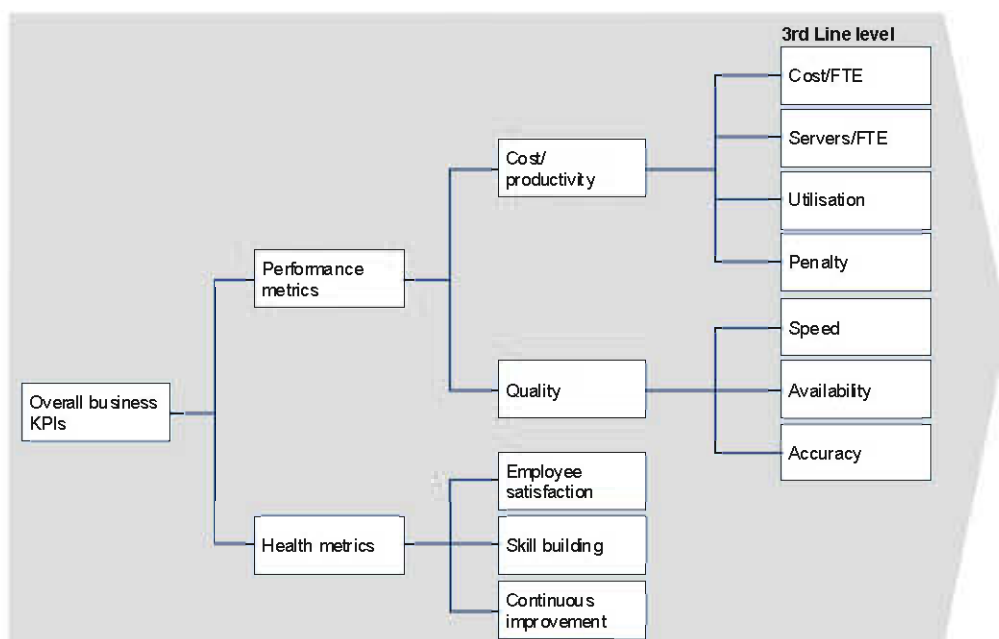
Source: McKinsey analysis

- **A structured program of initiatives detailing how to take each element of the model from its current state to the end state. The program should:**
 - **Be managed according to an integrated transformation plan by:**
 - **Sequencing initiatives based on interdependencies—for example, consolidation and standardisation enable flexibility in the workforce, ease demand management, and simplify metrics tracking and management.**
 - **Phasing the initiatives based on relative value—for example, targeting quick wins and also waiting for systems overhauls to begin tackling broader savings opportunities such as services procurement.**
 - **Front-load, high value-add activities and include aggressive near-term targets for improvement to help fund reinvestment in much needed infrastructure.**
 - **Develop the supporting performance management infrastructure, including performance management systems, metrics and SLAs, to ensure performance levels are consistently met and ongoing efficiency gains are captured (Exhibits 94 and 95).**

- **Ensure the required capabilities are in place to drive transformation.**
- Supply significantly more detail on each individual initiative and how it will help drive the transformation, including: detailed operating changes linked to financial impact; specific initiative charters; and a performance dashboard to measure and track progress.

Exhibit 94

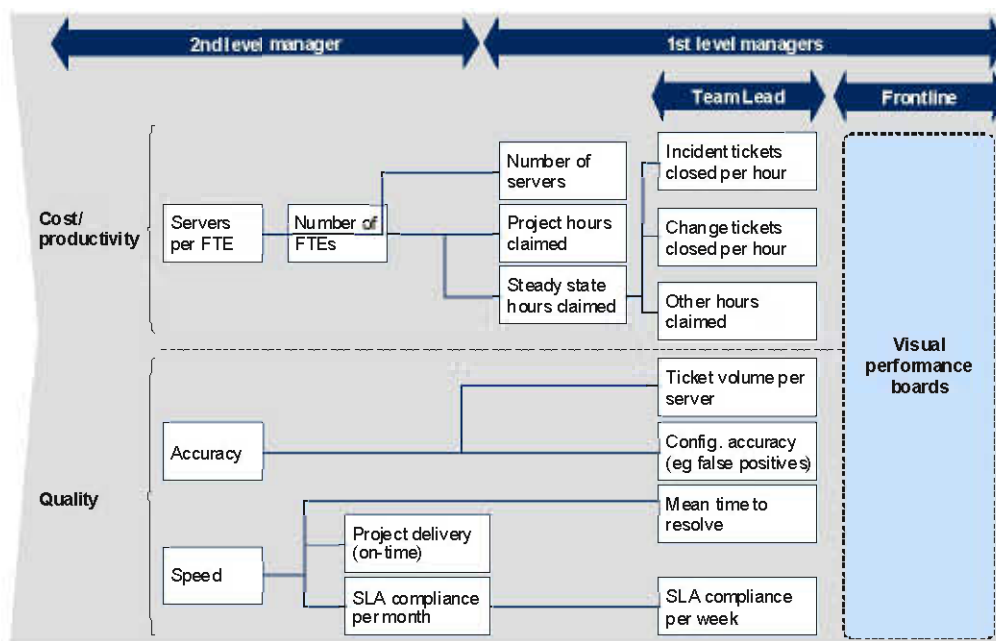
Detailed definition of performance management metrics (1/2) MID-RANGE SERVER EXAMPLE
 Performance scorecard incorporate productivity, quality and health metrics...



Source: McKinsey analysis

Exhibit 95

Detailed definition of performance management metrics (2/2) MID-RANGE SERVER EXAMPLE ... which are cascaded down the organisation



Source: McKinsey & Company

An important component of this transformation plan is the sourcing strategy, which is addressed in the ICT Sourcing Strategy Review. We agree with the conclusion that current ICT vendor relationships are generally too small and too short term to be strategic, and that aggregating ‘bundles’ of IT services to be re-bid is an appropriate step towards achieving improved sourcing performance. We suggest building on this initial analysis as follows.

We recommend ICT develops a new sourcing strategy which incorporates the following elements:

- **Specific volume/output metrics for each set of infrastructure/application services.**
- **Strong vendor performance management, including expected performance levels and specific SLAs.**
- **End-to-end vendor relationships to enhance accountability and transparency.**
- **Explicit demand management approaches across the customer base.**
- **Paced systems spend—where possible, delaying investments in systems automation until after the lean transformation of the sourcing process.**

- **Focused Request For Proposal (RFP) process that identifies specific areas within each tower or applications area that would truly benefit from scale and form part of a ‘utility’ model.**

We also recommend that this sourcing transformation be incorporated explicitly into the broader transformation, rather than being pursued separately.

Achieving a sustained step-change in performance across a large and complex ICT environment is a very challenging task. This is magnified in the Defence context where CIOG controls a minority of the budget, accessing sufficient talent in-house is difficult, and where there are very specific requirements for serving some stakeholders (for example, military applications and the intelligence community). As a result, successful implementation will rely on careful planning and consistent leadership commitment.

We recommend structuring the implementation plan around four main steps:

- 1. Defining the implementation planning inputs, including:**
 - **The aspirations for the future state (cost, service quality, innovation)**
 - **The current performance (efficiency and effectiveness)**
 - **The constraints (for example, remediation needs, management bandwidth).**
- 2. Identifying specific improvement opportunities.**
- 3. Defining operating model changes, a portfolio of initiatives and sequencing.**
- 4. Developing a phased multi-year execution plan.**

With a focused implementation plan and strong top-down leadership, we believe ICT will achieve a transformation that captures substantial efficiency gains, and also deliver a step-change in effectiveness that will enable the broader transformation agenda across Defence. Since an efficient and effective ICT function is essential for enabling this agenda, the ICT reform effort should begin as soon as is practical.

8.3 OBSERVATIONS ON THE ICT COMPANION REVIEW

Summary of Companion Review findings

The primary focus of the Companion Review is ICT effectiveness—improving the ability of the Defence Information Environment to support Defence war fighting and business objectives. The review observes that the Defence ICT environment is currently unacceptably fragile, fractured and ungoverned, and calls for fundamental changes spanning:

- The overall strategy and supporting architectures
- The governance, planning and control frameworks
- Refreshing infrastructure
- Prioritising resources
- Delivering efficiency
- Using the capabilities of commercial partners
- The accountabilities and authorities needed to underpin reform.

Our high-level assessment indicates change is indeed needed in all of these areas.

Our experience also suggests, however, that increasing efficiency should be a much greater component of the reform plan—starting from a more detailed, fact-based understanding of the services and costs required, which creates the transparency needed to drive simplification. In many cases, this will support rather than work against the other reform goals. For example, driving substantial consolidation and simplification of networks, applications and hardware will: aid greatly in achieving good governance; help control the quality of delivery; make resource prioritisation more straightforward; require fewer third party expert resources to maintain; and lessen the financial cost of infrastructure renewal.

We agree with the Companion Review's conclusion that ICT must be managed holistically. We also agree that a whole-of-Defence view of ICT spanning management, operations and investment is needed. Further, we would say what is needed is not just a whole-of-Defence view, but a whole-of-Defence agreement for urgently reforming how ICT's Defence customers consume ICT services. In particular, this agreement will be needed for a successful consolidation and simplification plan, since it will require acceptance from each of the Services and Groups that a more streamlined and effective suite of ICT capabilities is in the best interest of Defence as a whole.

We agree with the Companion Review's call for creating governance arrangements and stakeholder engagement to develop a single information environment for Defence.

We recommend moving rapidly to define a streamlined set of infrastructure and application services to be provided to CIOG's customers.

Unless Defence can achieve up-front alignment on this point, we believe the massive investments planned for upgrading ageing infrastructure will not result in successful improvements to governance and control, nor capture significant efficiencies as these require a substantial consolidation of the ICT architecture.

In all, the Companion Review makes 18 specific recommendations. Initiatives which are expected to result in lower project costs include:

- A single ICT capex portfolio
- Reengineering capability development, approval and delivery methodologies
- Governance and stakeholder arrangements for the single information environment
- A Business Solutions Group
- A move to a Service-orientated architecture
- A Stakeholder Aligned Organisation
- A Coordinating Capability Manager for Defence ICT.

Initiatives for sustaining the ICT environment include:

- Infrastructure Refresh
- Data Centre consolidation
- Multiple desktop reduction.

Initiatives focused on supplier contracting include:

- New sourcing arrangements.

Initiatives targeting new capabilities to support business efficiencies:

- New information search and retrieval capability
- Repurposing the JP2047 for high-speed IP network
- Analysing disruptive technologies
- Expediting information sharing initiatives.

Other initiatives include:

- Financial and performance management processes and mechanisms
- Extending control of ICT spend to all opex and capex

- Standardising and optimising applications and networks
- Building out enterprise architecture
- Investing in workforce management tools and processes
- Developing better career path management
- Introducing new processes/tools for improving project delivery capabilities.

The broad thrust of these recommendations appears reasonable although, naturally, how they are implemented will be critical. For example, the success of a Service-Oriented Architecture depends on finding vendors with specific products and services required to deliver it, which many of our clients have found difficult.

We recommend that in reforming ICT business processes, the use of a specialist solutions design group should be limited, so that businesses are pushed to standardised solutions wherever possible.

More generally, the Companion Review quantifies the scale of investment required in some of these areas.

We recommend conducting an efficiency analysis that identifies opportunities to substantially drive down capital and operational costs via a streamlined architecture and work practices. This will help CIOG make a compelling case for deep reform that will involve its customers across Defence.

In addition, this will create the transparency essential for setting firm targets and enable progress measurement for the reform program over time. It will also build up an improved set of metrics and SLAs for delivering services to internal customers.

Environmental assessment

The Companion Review provides an assessment of trends in the ICT space relevant to Defence through 2030. Given the rapid pace of change in the ICT space, any view of likely ICT scenarios 22 years from now is, of course, speculative at best, and a detailed review of likely technology trends is beyond the scope of this report.

Nonetheless, the nine trends highlighted in the review, likely to shape the course of ICT development during that period (spanning operational enablement, to simulation use, to security threats, to technology trends), all appear reasonable. The time span is, however, lengthy and nine trends are a lot to manage across.

We recommend focusing the planned ICT environmental assessment effort on those trends which are most immediate and likely to have a near-term impact on ICT architectures, cost structures and management complexity.

This implies a process to identify and prioritise the two to three trends most relevant in the immediate term. These trends could be drawn from the initial list in the Companion Review, as well as any other important near-term trends not listed. An example would be virtualisation, which is currently being used to great effect in leading-edge data centres globally to dramatically reduce footprint, power usage, capital costs and complexity.

Reform principles, architecture and governance

The Companion Review outlines many high-level principles by which the ICT reform program should be guided, specifically:

- Taking a holistic and coordinated management approach
- Establishing a blueprint of standards for interconnecting capabilities
- Recognising all stakeholders
- Setting up a program management office to advise the CIO and coordinate:
 - ICT funding decisions (to maximise ROI)
 - ICT components of the Defence Finance and Management Plan
 - ICT components of the Defence Capability Plan (DCP).

In addition, it proposes establishing a high-level Enterprise Architecture and Governance model that spans:

- Business architecture (ensuring delivered capabilities are aligned with business goals)
- Systems architecture (structure, behaviour, components, plans, roadmaps, priorities and process to implement systems)
- Data architecture (standards, taxonomies, models, interoperability, management of data)
- Technical architecture (hardware configurations, protocols, services, performance, resilience, backup and restore)
- Security architecture (confidentiality, integrity, availability of systems and data).

Based on our experience helping many other clients with ICT transformation efforts, we agree that the high-level principles and architecture requirements set out in the Companion Review are desirable elements of the future ICT model.

We recommend that CIOG identifies the specific elements of the future ICT model that will deliver against the broad goals for efficiency, accountability

and return on investment set out in the Companion Review. This means developing proposals for:

- **Defining a lean operating model for ICT that will drive down both capital and operating expenses dramatically (for example, using virtualisation).**
- **Substantial consolidation and simplification of CIOG hardware, applications and networking environments within this architecture.**
- **Engaging with Groups and Services across Defence to catalogue, review and reduce the number and complexity of supported systems—for example, by consolidating onto new off-the-shelf systems with dramatically reduced complexity.**
- **Establishing performance management systems, metrics and SLAs to ensure performance levels are consistently met and ongoing efficiency gains are captured.**

Workforce and skills management

The Companion Review correctly identifies competition for ICT talent as a major challenge confronting CIOG in the coming years. This will apply to recruitment and retention.

We agree with the Companion Review's conclusions that greater civilianisation of the ICT workforce will probably be necessary over time. In addition, given the likely difficulty in recruiting sufficient leading-edge talent, this will place even greater importance on establishing simpler, consolidated and standardised ICT platforms that are easier to provision, maintain and deliver to stakeholders across Defence.

The Review calls attention to the absence of a coordinated approach to learning and development, career planning and succession management. Although an independent review of these processes is beyond the scope of this review, we agree that providing adequate development and progression opportunities is critical to maintaining a high-quality workforce.

We support the recommendation in the ICT Companion Review to improve training practices in line with Defence approaches. However, the recommendation to develop a 'workforce management system' with broad functionality should not be allowed to cause a significant delay in improving development and career planning approaches—since typically a significant portion of the value from these efforts comes from up-front process changes which are then further enabled by technology.

Finally, while industry partnerships can and should remain an important element of the future ICT strategy, we believe (as stated in the Companion Review) that these should be used judiciously—in particular, to ensure Defence retains a core capability in strategic areas. The review calls attention to vendor and service provider management that is “uncoordinated, unsophisticated and undisciplined”, and procurement and contract management policy that is “inconsistent, complex and unhelpful”. There is insufficient capacity to plan for the long-term sustainment of capability and demonstrate benefits realisation, on top of an “already cumbersome policy and operational environment”.

These are serious deficiencies in a set of capabilities that will be critical to the success of ICT (and hence Defence overall) in the medium term.

We recommend that CIOG should take action to improve its procurement and contracting capabilities by building a critical mass of partner management professionals with the tools and skill sets to structure, establish and manage industry partnerships at world-class levels.

ICT efficiency dividends

The Companion Review includes a short section on potential efficiency gains to offset the cost of sustaining Defence ICT. In particular, five efficiency categories are highlighted:

- Infrastructure consolidation (data centres, servers, networks)
- Application rationalisation (reduce from ~4,000 today)
- Operational efficiency (Defence-wide management of project portfolios)
- Staff costs (convert Professional Service Provider (PSP) positions to Australian Public Service (APS) positions)
- Sourcing improvements (bulk purchasing and eliminating duplicated contracts).

While we agree with the broad thrust of these efficiency areas to target, we believe the efficiency opportunities in Defence require an integrated program.

We recommend that Defence pursues an integrated program that is:

- 1. Managed end-to-end across core services—while savings are likely to be substantial, they span equipment, outsourcing, personnel and facilities spend.**
- 2. Properly sequenced—many components integral to the reform effort are dependent upon other initiatives (for example, consolidation and**

standardisation enable flexibility in the workforce, ease demand management, and simplify metrics tracking and management). Getting the right sequence for a multi-year transformation is paramount.

- 3. Adequately phased—large initiatives within programs tend to fail due to size and complexity. The focus should be decomposing these initiatives into smaller phases and front-loading the largest value pieces wherever possible. This means not only targeting quick wins, but also not waiting for systems overhauls to begin tackling broader savings opportunities such as procurement of services.**
- 4. Inclusive of demand management—for the ICT reform agenda to be successful, it will require willingness on behalf of customers across Defence to more actively manage demand for ICT services. This ranges from prioritising project portfolios to providing greater transparency in the cost of standard services.**

As a result, we recommend a substantially greater focus on efficiency as a cornerstone of the new ICT strategy, with aggressive near-term targets for improvement to help fund reinvestment in much needed infrastructure.

8.4 OBSERVATIONS ON “COLLECTED FINANCIAL INFORMATION” DOCUMENT FROM ICT STRATEGY

We were also provided a copy of the “Collected Financial Information” document from the ongoing ICT strategy development project. This document provides a breakdown of ICT spending across Defence, an asset depreciation analysis, and an analysis of the financial impact of the ICT Companion Review recommendations.

An independent validation of the data contained in this report is beyond the scope of this review, hence the observations shared here relate only to conclusions drawn from those data.

Clearly, as the document estimates only 43% of ICT spending currently flows through CIOG, this is an enormous barrier to the goals expressed in the Companion Review, which focus on substantial reforms to Defence’s information environment.

We recommend Defence moves rapidly to a model with much greater transparency on ICT spending, and alignment on what elements of decision making, reporting and tracking should be centralised, coordinated and controlled at the corporate level versus in Groups/Services. This will be critical to enabling a deep reform program.

Further, as almost 70% of this budget is currently spent on sustainment activity, and only 9% on major projects, this indicates an urgent need to reprioritise spending.

We recommend that outside of critical military-driven constraints to the contrary, CIOG should migrate the ICT spend profile to a more typical split—where roughly 60% of ICT budget is spent on sustainment, 20% on major projects to enable ongoing capability development and business system enablement, and the remaining 20% on innovation.

The “Collected Financial Information” document also highlights the high degree of depreciation in the Defence IT asset portfolio—where of the \$900 million in acquired assets, \$235 million have zero net book value and the balance is depreciated to \$366 million. The implication of this is clearly a need for substantial reinvestment in infrastructure.

We recommend that ICT develops a clear end-state architecture focused on consolidating and simplifying the environment, to avoid reinvestment that simply ‘refreshes’ the current assets and misses the opportunity to radically transform the cost base.

Finally, the “Collected Financial Information” document contains a section addressing the expected financial impact of the Companion Review recommendations, including cost estimates for seven of the initiatives, totalling roughly \$260 million, and savings estimates for three of the initiatives, totalling roughly \$25 million annually.

While it is clear that substantial reinvestment will be required to bring ICT infrastructure up to an acceptable state, we believe the distributed and ungoverned nature of the current spend indicates an enormous opportunity for efficiency gains.

We recommend expending the additional near-term effort to identify and quantify the sources of expected efficiency gains, and incorporate these as a central component of the reform effort.

8.5 OBSERVATIONS ON ICT SOURCING STRATEGY REVIEW

The scope of the ICT Sourcing Strategy Review was limited to the portion of ICT spend that falls within CIOG budget, and targeted sourcing opportunities largely based on ‘current state’ configuration of ICT systems. Although the ICT Sourcing Strategy Review and Companion Review call for a large-scale consolidation of networks, data centres, servers and applications, no clear articulation of this

intended ‘future state’ exists that could be used as a basis for a forward-looking ICT sourcing strategy.

The sourcing review provides:

- A detailed breakdown of spend in CIOG budget by ICT category (for example, infrastructure versus applications; towers versus functional application groups; people versus other).
- A detailed breakdown of spend by vendor, which is split by tower and process.
- An assessment of current sourcing processes and performance, based on both internal and customer interviews.
- The identification of challenges facing ICT due to decentralised and uncoordinated sourcing processes, a lack of end-to-end accountability and vendor fragmentation.
- Recommendations on realigning CIOG organisation; enhancing ICT sourcing team skills; using vendor capabilities to enhance CIOG efficiency and effectiveness; aggregating spend categories, managing vendors end-to-end and based on outcomes; and establishing a new four-step RFP process.

The Sourcing Strategy Review estimates the expected cost of carrying out these re-bids (based on the number of people and work involved). It also estimates the savings CIOG might expect to gain from consolidating spend into larger bundles with fewer providers to gain operating savings (based on the Boston Consulting Group’s experience and benchmarks). These estimates are as follows:

- Infrastructure—savings of \$50 to \$80 million annually with one-time spend of \$50 to \$75 million.
- Applications—savings of \$6 to \$14 million annually with one-time spend of \$16 to \$28 million.

This initial review also touched only lightly on other potential levers for driving down sourcing cost (such as demand management), as they were not core to the intended scope of the effort.

We agree with the conclusion reached by the team that current ICT vendor relationships are generally too small and too short-term to be strategic. We also agree that aggregating ‘bundles’ of IT services to be re-bid is an appropriate step towards achieving improved sourcing performance.

CIOG should also build on this initial analysis by adding several additional elements which we believe will yield additional savings:

- **Specific volume/output metrics for each set of infrastructure/application services.** A clear baseline analysis of specific volume/output metrics for each service will help create a more compelling case for change and manage progress. For example, in the hosting (midrange/mainframe) tower, what is the cost of ownership for the total devices supported and at what service level? Knowing what the service should cost will help pinpoint sourcing inefficiencies that result due to supplier fragmentation.
- **Strong performance management.** We strongly recommend pushing to much greater clarity on the performance levels expected from each vendor, along with specific SLAs. This includes a baseline fixed/variable cost analysis that projects long-term cost curves for vendors to gauge whether Defence is capturing value for money. Without this it is difficult to benchmark effectively, as vendors frequently bundle costs to make comparisons difficult. This will also enable more accurate savings estimation based on specific metrics tied to services received.
- **End-to-end vendor relationships.** To facilitate the move to strong performance management, Defence should not only move to consolidate spend with fewer vendors, but also explicitly migrate to end-to-end sourcing arrangements. This will greatly enhance the ability to hold vendors accountable and create transparency.
- **Demand management.** While this was not core to the scope of the initial effort, we believe this is a critical topic to address given the very large number of applications in service, the current lack of transparency into spend, and the distributed nature of vendor sourcing decisions. As stated above in the Companion Review section, aligning all of Defence around a need to manage demand will be critical to achieving deep reform, as opposed to bundling existing contracts before ‘pruning’ the spend.
- **Paced systems spend.** While improving sourcing and vendor management systems will necessarily be part of the long-term solution, we recommend pursuing a lean transformation of the ICT sourcing process before automating. This will avoid the risk of heavy systems spend which delays cost savings and risks embedding poor practices.
- **Focused RFP process.** Building on the proposed RFP process outline by identifying which specific areas within each tower or applications area would truly benefit from scale and form part of a ‘utility’ model, and focus the sourcing effort on these areas.

Finally, the sourcing reform effort should also be clearly embedded within the context of the overall ICT transformation. As stated in the Companion Review, a

holistic approach is required, which will span the organisation, architecture, productisation, lean processes and sourcing.

We recommend investing significant effort in the detailed design and execution planning of the ICT transformation program and accessing the deep expertise needed in organisation, architecture, productisation, lean processes and sourcing to successfully drive reform and deliver both effectiveness and efficiency improvements.

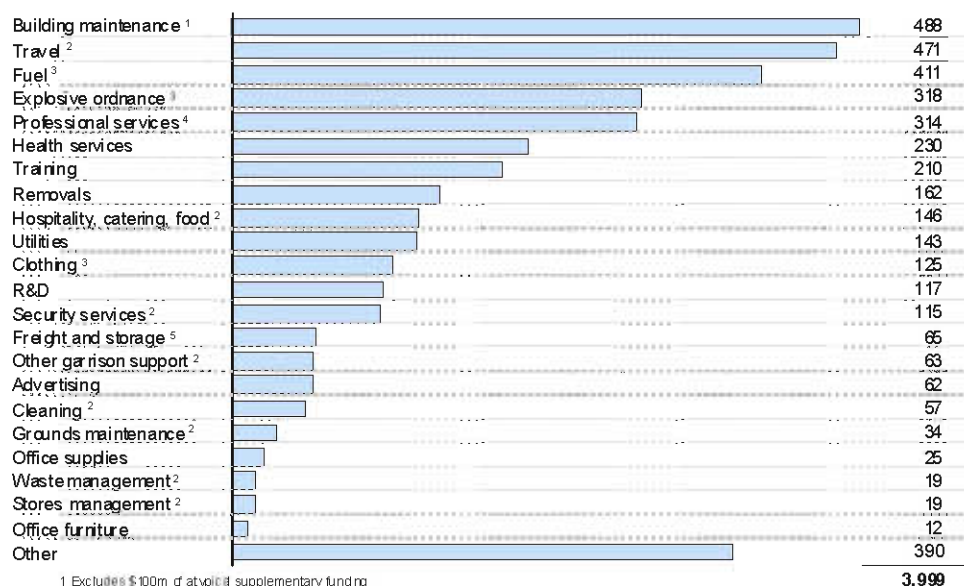
9 Reducing the cost of non-equipment procurement

Reducing input cost is the other big lever required to improve Defence productivity. The first major type of input costs we examined was the \$4 billion spent on non-military goods and services from external suppliers.⁷¹ The largest categories include building maintenance, professional services, travel and fuel (Exhibit 96). The Defence Support Group (DSG), the Defence Materiel Organisation (DMO) and the three Services are all involved in the procurement of large portions of these goods and services.

Exhibit 96

Defence's non-equipment procurement expenditure

A\$ Millions; 2007–08



¹ Excludes \$100m of atypical supplementary funding

² Excludes \$47m for Garrison Support Services (pro-rated across relevant categories) which is funded on a no-win, no-loss basis

³ Solely DMO expenditure

⁴ Includes lawyers, accountants, actuaries, consultants and other professionals, excludes \$20m of contractor/PSP services to ensure no overlap with Chapter 7

⁵ Excludes \$16.5m of freight and storage contract addressed in Chapter 6.3, and \$6.6m in operational expenditure which is funded on a no-win, no-loss basis

Source: Roman, Bonn (actuals); DMO management accounts, interviews, McKinsey analysis

⁷¹ This includes some purchases, such as clothing and explosive ordnance, which are conducted by the DMO. We believe these purchases, and the way to capture savings, are more akin to 'ordinary' goods and services than to specialised military equipment such as aircraft and ships. Hence they are dealt with in this section.

Total expenditure on suppliers has grown nominally at 13% pa from 2003/04 to 2007/08, running ahead of the total budget which has grown nominally by 9% pa.⁷² Over the same period, the number of suppliers has grown nominally by 5% pa.⁷³

It will take time to work through each major category in a structured, analytical manner; however, preliminary analysis has already been conducted on clothing, travel and removals to enable Defence to capture ‘quick wins’, subject to:

- The length and terms of existing contracts (although we note that private sector companies will opt to break lengthy contracts when it is clear that doing so will lead to greater savings over time)
- The willingness of internal customers to change practices, specifications and service levels to realise efficiencies.

9.1 SIZING THE SAVINGS/PRODUCTIVITY OPPORTUNITY

A quantitative and qualitative analysis of the \$4 billion expenditure base identified a potential annual saving/productivity improvement of \$326 to \$616 million. This ‘top-down’ estimate was calculated by classifying the expenditure into 23 categories. These categories were compared to a proprietary McKinsey database that records the scale of savings achieved on more than 1,000 procurement improvement projects McKinsey has supported. This allows a range of potential savings to be generated for each category: from 3 to 5% for fuel, to 15 to 35% on office supplies (Exhibit 97). The different savings ranges reflect that different types of spend are more or less compressible, through price negotiation, a ‘clean sheet’ review with suppliers to jointly reduce costs, or through demand management (reducing the quantity required or substituting to lower-cost alternatives).

⁷² Defence income statements as published in the 2003/04 and 2007/08 Annual Reports.

⁷³ ROMAN report.

Exhibit 97

Top-down savings estimates in non-equipment procurement

A\$ Millions; 2007–08

Bottom-up analysis conducted

	Procurement expenditure 2007/08 A\$ Millions	Potential savings/ productivity gains* Percent	Potential savings/ productivity gains A\$ Millions
Building maintenance	488	14–21 **	66–103
Travel	471	10–18	47–83
Fuel***	411	3–5	12–21
Explosive ordnance****	318	3–7	10–22
Professional services	314	10–20	31–63
Health services	230	10–12	23–28
Training	210	15–35	32–74
Removals	162	7–20	11–32
Hospitality, catering, food	146	14–25	20–37
Utilities	143	5–15	7–21
Clothing***	125	10–15	13–19
R&D	117	0–5	0–6
Security services	115	12–19	14–22
Freight and storage	65	7–20	5–13
Other garment support	63	3–7	2–4
Advertising	62	10–15	6–9
Cleaning	57	10–18	6–10
Grounds maintenance	34	0–5	0–2
Office supplies	25	15–35	4–9
Waste management	19	15–35	3–7
Stores management	19	3–7	1
Office furniture	12	18–37	2–4
Other	390	3–7	12–27
	3,999	8–15	326–616

* High end of typical savings achieved on 1,104 procurement improvement programs from January 2008 to September 2008

** Weighted average of 15–25% saving on 'routine' building maintenance and 10–13% on construction services/maintenance works

*** DMO spend categories included in analysis as non-equipment spend

**** DMO spend category, savings estimate based on savings achieved in past program with a European Defence Force

Source: Roman, Boris, DMO management accounts, Defence and DMO interviews, McKinsey analysis

Three categories of expenditure (clothing, removals and travel) were then investigated in more detail to better understand existing procurement practices, and to provide a 'bottom-up' confirmation of the top-down savings estimates. The review of clothing, removals and travel found a number of reforms have already been implemented and some important savings opportunities were identified.

- **Clothing.** The reforms from the 2006 Clothing Review have been implemented and include: separating the 'Clothing Group' from the 'Soldier Modernisation Group' to create a separate Clothing Systems Program Office (SPO); and hiring textile experts, engineers and industry contractors. The SPO has identified future opportunities for reform and savings, including consolidating suppliers, greater standardisation of uniforms, and moving to lower cost suppliers.
- **Removals.** DSG has established a process of evaluating the total cost of ownership for removals. The group has also identified a potential opportunity to tender for joint purchasing of relocation administration services and removals brokerage services by a single service provider.
- **Travel.** DSG has negotiated directly with airlines to obtain discounted fares, established a 'best fare of the day' policy, and introduced low-cost air carriers

into Defence's travel strategy. Other savings initiatives have been implemented on hire cars, and a dedicated formatted data exchange between Diners Club and vendors has been implemented.

'Bottom-up' analysis confirmed that, despite the initiatives already taken, savings opportunities exist for each of the three categories. The analysis also confirmed that two of the three categories were at the higher end of the benchmark range used for the 'top-down' sizing (Exhibit 98). The main opportunities are listed below.

Exhibit 98

Bottom-up analysis confirmed saving opportunities in these 3 categories within or exceeding top-down range estimates

Summary

Category	Spend base, 2007-08 A\$ Millions	Benchmark savings potential Percent	Identified savings potential* Percent
Clothing	125	10-15	18-26
Removals	162	7-20	15-20
Travel	471**	10-18	11-12**
Total	759	9-18***	13-16***

* Identified by 'bottom up' analysis

** Only \$368m spend was able to be analysed as the balance was categorised as "other" and unable to be further broken down. Percentage saving is on \$368m

*** Weighted average saving

Source: Roman data; DMO management accounts, Bonis (actuals), Interviews, McKinsey analysis

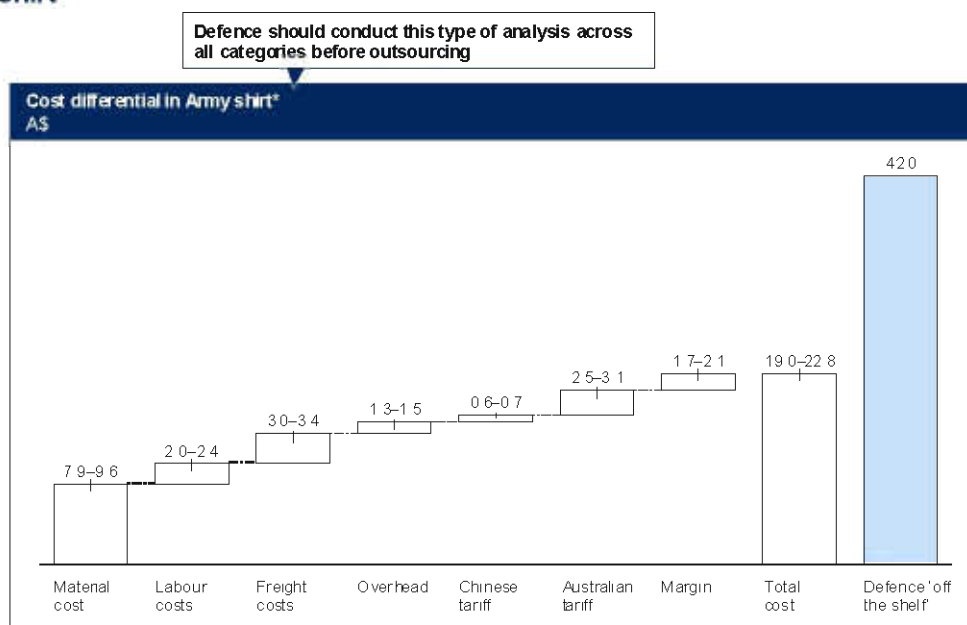
- **Clothing.** Savings in the range of 18 to 26% were identified, comfortably exceeding the benchmark range of 10 to 15%. Two of the biggest opportunities include increasing the use of global sourcing and consolidating the local supplier base, neither of which would affect the internal customer. If 30% of clothing was sourced directly from low cost countries, Defence could save between \$9 and \$20 million pa.⁷⁴ Clean sheet costing analysis suggested that Defence could be paying a premium of up to 50% on a polyester garrison

⁷⁴ Without compromising quality, as the same quality materials were used for costing examples.

wear shirt (Exhibit 99). Both global sourcing and supplier consolidation are examples of a potential saving where Defence personnel believe they are constrained by Government policy or direction, and do not feel able to fully pursue the opportunities.

Exhibit 99

Defence may be paying a premium of ~50% on a polyester garrison wear shirt



* Care should be taken in choosing a low cost country's supplier who can meet Defence's quality requirements
 Source: Chinese industry expert interviews, China Labour Statistical Yearbook, exchange rates quoted as at 17 October 2008, China customs, McKinsey analysis

A third major saving in clothing would come from standardising clothing ranges. For garrison wear, replacing polyester uniforms with disruptive pattern uniforms, similar to the UK and Canadian armed forces, would save an additional \$7 to \$8 million pa.⁷⁵ This would need to be agreed by the Services, rather than by the SPO. It is also an example of where greater cost transparency, and allowing the Services to reinvest some of the savings, could help drive greater efficiencies.

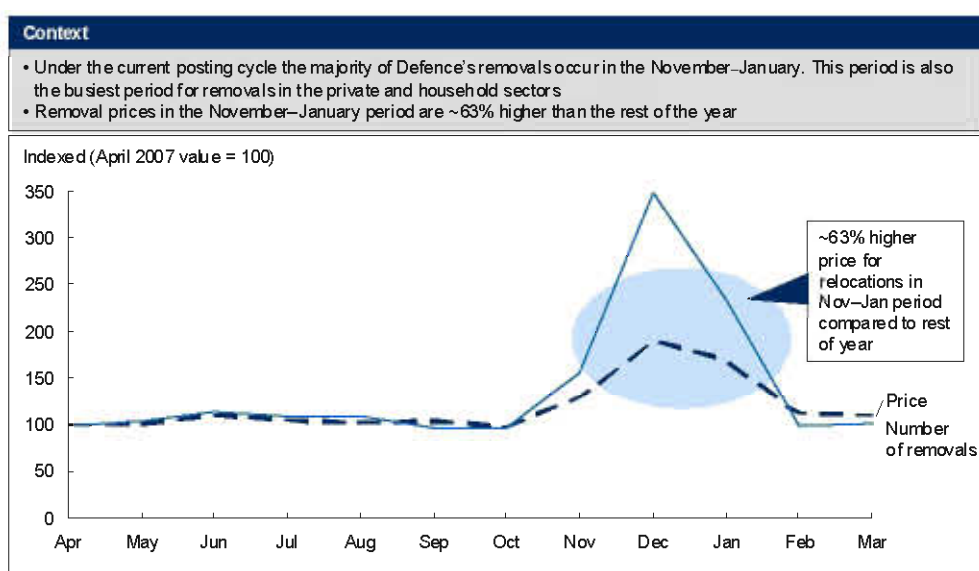
- **Removals.** Savings in the range of 15 to 20% were identified, at the higher end of the benchmark range of 7 to 20%. Savings on the purchase price through more informed negotiations could save \$4 to \$7 million. Spreading removals of single Australian Defence Force (ADF) members throughout the year (rather than during November to January when removal costs are on

⁷⁵ Based on 2007/08 Clothing SPO purchases of garrison wear.

average 63% higher) would generate further savings (Exhibit 100). Spreading out the relocation of only 25% of single employees would save \$4 million pa.⁷⁶ The biggest potential saving is extending the posting cycle. While the current posting cycle policy is based on a 3-year posting, the number of moves annually implies an average member moves every 2 years. If only 25% of members are moved every 3 years, while the other 75% of staff move at current levels, this would save ~\$14 million pa.

Exhibit 100

Number of Defence relocations and average price



Source: DSG relocations and removals data, McKinsey analysis

Additional savings would require changing the level of service currently provided to staff (such as the amount of time items can be left in storage), or the provision of premium packing and unpacking services.

- **Travel.** Savings in the range of 11 to 12% were identified, at the lower end of the benchmark range of 10 to 18%. The travel category was further divided into air travel, car hire, hotels, meals, incidentals and 'other'. We note that just over 20% of the \$471 million category had to be classified as 'other' and

⁷⁶ This excludes Navy employees who are already moved throughout the year.

the travel department is currently conducting analysis to identify the major components.⁷⁷ The biggest opportunities identified were:

- **Air travel.** Increasing the use of Defence's existing video-conferencing facilities, which currently have ~71% spare capacity,⁷⁸ would have environmental benefits and save up to \$10 million pa by reducing 'rogue spending',⁷⁹ eliminating ATM cash withdrawal fees and claiming back GST.
- **Hotels.** Defence has no preferred national contracts or even direct contracts with hotels. Negotiation of volume discounts on hotels could yield savings of \$6 million pa.⁸⁰
- **Cash and allowances.** Travelling employees currently receive cash and/or allowances for meals, incidentals and accommodation and do not have to submit receipts for these expenses. Replacing cash allowances with a Diners Card, and implementing a receipt system where employees are required to submit receipts would save up to \$22 million pa (Exhibit 101).⁸¹

⁷⁷ \$368 million of the \$471 million spend was analysed. The balance was categorised as 'other'. The 11 to 12% saving is calculated on the \$368 million base.

⁷⁸ Defence has more than 180 secret and top secret video conference facilities, in addition to many unclassified facilities (the number of which is not tracked).

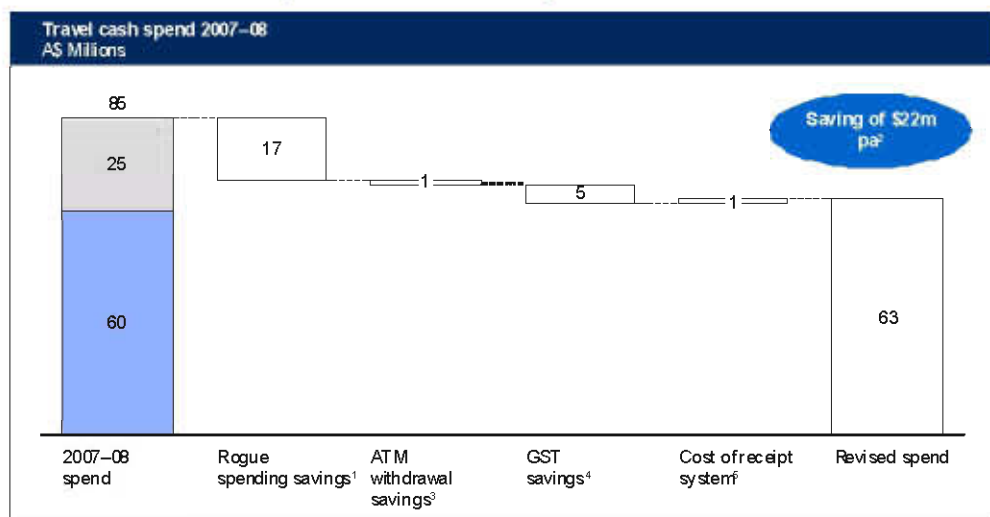
⁷⁹ 'Rogue spending' refers to allowances or cash received by Defence personnel for travel-related expenses that is kept and not spent.

⁸⁰ A hotel brokerage arrangement does exist with 'LIDO', but Defence has no direct contracts.

⁸¹ A sample of these receipts would be spot-checked to ensure compliance with travel policies.

Exhibit 101

Savings from replacing cash and allowances with a Diners Card and receipt reimbursement system



1 Previous travel analysis estimated a 10-30% reduction in spend will occur across all cash spend from the implementation of receipt and reimbursement system. Mid-point is applied. 20%

2 Savings in fringe benefit tax is not quantified

3 Assumed that the 2-3% cash advance fee on the \$47m withdrawn from ATMs in 2007-08 is eliminated

4 Assumed 7% GST saving—it is assumed that 30% of spend is on items where GST cannot be claimed back (i.e. non-refundable items or overseas spend). GST savings is applied to spend base reduced for 'rogue spending' saving

5 Assumes 20 people hired at \$50,000 pa to perform 'spot checks' on submitted receipts

Source: Travel data, Diners Club Midway analysis

The purpose of the 'bottom-up' analyses was to validate that the potential for significant savings exist (estimated at \$326 to \$616 million) and not to endorse any particular initiative. We also understand, however, that realising these savings, particularly at the upper end of the range, will require demand management (changing the specifications of what is required) and better negotiations or joint cost reduction. Realising the savings from demand management will require more proactive and collaborative discussions between internal customers and the support groups tasked with procurement.

Achieving the high end of the savings range on every one of 22 savings categories (and an 'other' category that counts for ~10% of the baseline) will be challenging:

- It is operationally challenging to address so many categories comprehensively
- Given the number of unknowns in any top-down analysis, the probability of reaching the high end of the savings estimate on every single category is reduced with every category added.

In December 2008 and January 2009, Defence conducted preliminary work on the savings it believes can be realised in each of the categories of non-equipment procurement expenditure. In some categories, Defence believes it can exceed the high end of the audit team's estimate (for example, travel and other garrison

support). In other categories, Defence believes it will be unable to achieve the high end estimates (for example, building maintenance and health). When fully implemented, Defence's plan reaches \$518m in savings pa, which is 84% of the high end of the audit team's savings range.

Based on our experience helping clients achieve procurement savings in similar situations, we believe that banking 80 to 90 percent of the high-end of the range is a reasonable position, and that the current Defence plan is appropriate. A figure of \$518 million has been agreed as the target figure for Defence.

9.2 CAPTURING SAVINGS CATEGORY BY CATEGORY

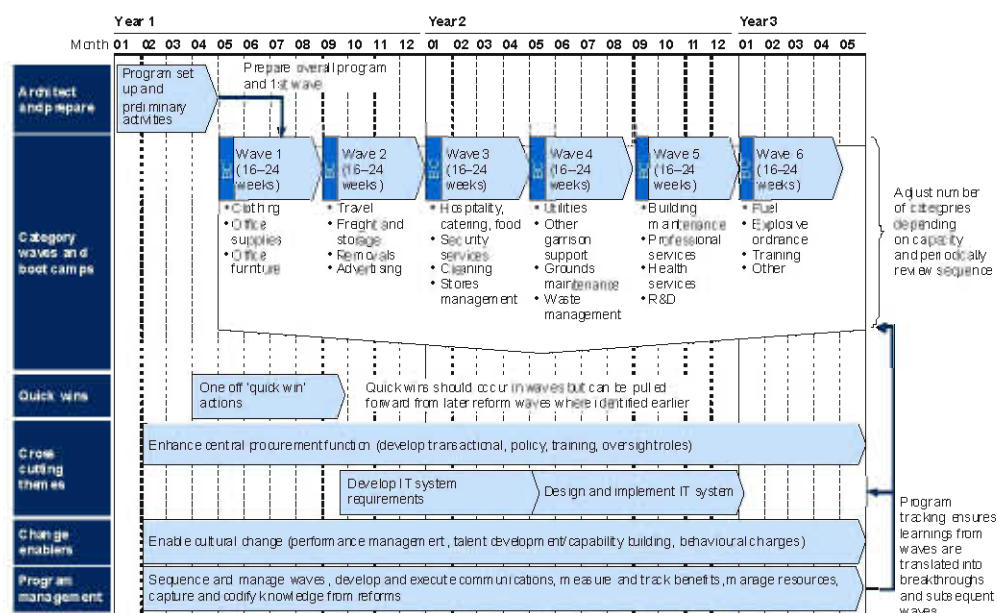
A 3- to 4-year dedicated, non-equipment procurement program should be launched to capture savings in the range of \$326 to \$518 million. The program should be based on a series of 16- to 24-week 'waves', with each wave focusing on 3 to 5 categories at once (Exhibit 102). There are savings opportunities in a number of organisational groups, including the Services, DSG, DMO and VCDF. Each will have multiple internal customers from different groups and Services. One procurement improvement program should run across the different procurement groups to:

- Ensure a common set of methodologies and capabilities are developed and used.
- Create a systematic and structured way of engaging internal customers on savings opportunities, especially through demand management.

Exhibit 102

Potential structure of a 3–4 year procurement program

EXAMPLE



* Boot camp to train participants on implementing procurement best practices and develop category-specific strategies

Source: McKinsey analysis

We recommend a non-equipment procurement improvement program be implemented across Defence, to pursue savings opportunities in a series of ‘waves’ over a 3- to 4-year period. The performance improvement program should: (1) identify and track savings category-by-category; (2) identify broader improvement opportunities to processes and systems across the organisation; and (3) build the internal capabilities to enable continuous improvement.

The sequence in which individual categories should be targeted should be made by Defence, based on an assessment of the size and ease of savings (including existing contractual arrangements). We would, however, encourage an early focus on categories that allow ‘quick wins’ that can quickly make the program self-funding.⁸²

⁸² We note that the Commonwealth has initiated a whole of Government procurement initiative, which will address expenditure including travel (air travel and car rental), telecommunications/ICT, and office machinery, paper and stationery. There will be opportunities for Defence to benefit from this initiative, but the scope of expenditure reviewed in this section is much larger than those covered by the Commonwealth’s program. Hence Defence should initiate its own program to address these and other areas, and leverage the Commonwealth’s initiative where applicable.

9.3 CREATING A MORE PROFESSIONAL PROCUREMENT FUNCTION

The group responsible for the largest portion of the expenditure reviewed in this section is DSG. DSG created a central procurement group—the Business Services, Procurement and Contracting Branch (DSGBS)—18 months ago to support relevant divisions with procurement. An assessment of the DSGBS was conducted to identify existing strengths and areas for improvement. The interview was conducted using McKinsey’s Global Purchasing Excellence survey, which has been used with over 300 organisations internationally to benchmark procurement capabilities.

Strengths identified include:

- The DSGBS is proactively involved in strategic decisions (such as supplier selection and ‘in-house versus outsource’ decisions) for many categories.
- Request for quotation processes are standardised and open to all suppliers (old and new) as per Commonwealth guidelines.
- A fact base is built before going to tender for many major categories.
- High aspirations to generate savings, with evidence of a ‘can do’ attitude and positive mindsets.

Areas for improvement include:

- **Developing category-specific strategies to realise efficiencies.** This includes: basing category sourcing decisions on a comprehensive fact base (for example, accurately estimating supplier cost bases); implementing explicit demand management guidelines for all important categories (for example, policies on video conferences versus air travel); and making cost/benefits of current policies and practices explicit (for example, relocations at year end).
- **Creating a more highly skilled, centre-led procurement function.** Procurement is a good example of the theme of specialisation which is discussed Chapter 7. Procurement, especially cost estimation and contract negotiation, is a specialist skill. Creating a specialist centre-of-excellence which leads, rather than supports, major procurement decisions will help with supplier management (price negotiation and joint cost reduction) and identifying new opportunities to reduce cost through demand management. Skill development should be encouraged through talent management (training staff on the use of best practice procurement tools, such as clean sheet costing, and establishing clear career paths) and performance management

(with comprehensive KPIs on cost, quality, service and innovation for each category).

We recommend that DSG increase the scope of its procurement function, to lead the savings program over the next 2 years, and to drive continuous improvement in non-equipment procurement in perpetuity.

- **Improving knowledge management.** This can be achieved by codifying organisational knowledge on specific categories and suppliers in a central and accessible knowledge repository. This should occur at the end of each wave.
- **Improving information management.** Data to support the types of analysis that will drive savings is difficult to obtain at present. Examples include the 20% of travel costs that could not be categorised, and the lack of a readily available breakdown of building maintenance expenditure at a base level. Defence will need to increase the quality of information and make more effective use of IT systems to create greater transparency on purchases.

10 Reducing the cost of major equipment procurement

The second major type of input cost we examined is the cost of major equipment procurement. This section discusses three ways to reduce these input costs. First, moving to a portfolio with a greater portion of Military Off The Shelf (MOTS) technology. Second, increasing the level of competition for major equipment contracts. Third, reviewing the cost/benefits of local sourcing.

10.1 PURCHASING A LOWER-COST PORTFOLIO WITH A GREATER PORTION OF MOTS

As noted in Chapter 5, the current Defence portfolio⁸³ is heavily weighted towards Developmental and Australianised projects. MOTS projects are only 14% (by number of projects) or 12% (by value) of the current projects.

MOTS is typically cheaper than Developmental or Australianised systems. As we discussed in Chapter 5, there is a lower risk of schedule delays (which result in additional costs, such as carrying project overheads for longer) and a lower risk of cost escalation. Here, we observe that the purchase price of Developmental and Australianised systems (without any cost escalation or delays), is typically greater than MOTS systems.

The additional cost of Developmental systems

Developmental platforms can carry a cost premium of 50 to 100% over existing MOTS platforms or alternative options. Examples include:

- The Wedgetail Airborne Early Warning & Control aircraft, which was ~50% more than the Japanese 767 AWACS.
- The C-130J Hercules was 60% more than the older C-130H variant (although the J model is cheaper to operate).
- The Australian variant of the Sea Sprite Helicopter was 100% more expensive than the variant purchased by New Zealand (prior to the cancellation of the Australian project).

⁸³ As per the March 2008 Acquisition Overview Report.

- The JASSM missile, at an early stage of acquisition, is currently 20% more than the SLAM-ER alternative.

The additional cost of Australianised systems

Platforms are typically ‘Australianised’ (modified to meet unique Australian requirements) for three reasons:

- **Regulatory requirements** to make the system comply with Australian regulations. Examples include changing the lights on the Tiger ARH helicopter, and life-rafts and anti-ice systems on the MRH-90 Helicopter. Some modifications are the result of differing regulatory requirements between states (for example, axle loadings vary by state which affects the Overlander trucks and trailers project). Regulatory requirements typically add ~2 to 3% to the acquisition cost (and can include internal technical regulations as well as external regulatory requirements).
- **Integration requirements** to enable the equipment to operate with other Australian and allied equipment. Examples include radio equipment on the ARH and MRH helicopters and Rigid-Hulled Inflatable Boats, and the combat system on the LHD ships. Integration requirements typically add ~2 to 10% to the acquisition cost—sometimes more.⁸⁴
- **Capability requirements** are upgrades in capability beyond what the MOTS platform offers. Examples include: enabling the ARH Tiger helicopter to fire laser-guided Hellfire missiles; the integrated helmet and sand filters installed on the MRH-90 Helicopter; and the electric turret and stowage added to the ASLAV armoured vehicles. Capability requirements typically add 5 to 20% to the acquisition cost.

It would be worth reviewing internal technical requirements and exploring ways to reduce the regulatory burden on Defence (which will involve agreement with the States, most likely through the Council of Australian Governments (COAG) process). The potential savings could be up to \$50 million pa for external regulatory requirements. We have assumed no savings can be realised from lowering integration requirements.

⁸⁴ As the ADF is increasingly ‘networked’, which is in itself a capability, integration requirements are likely to increase.

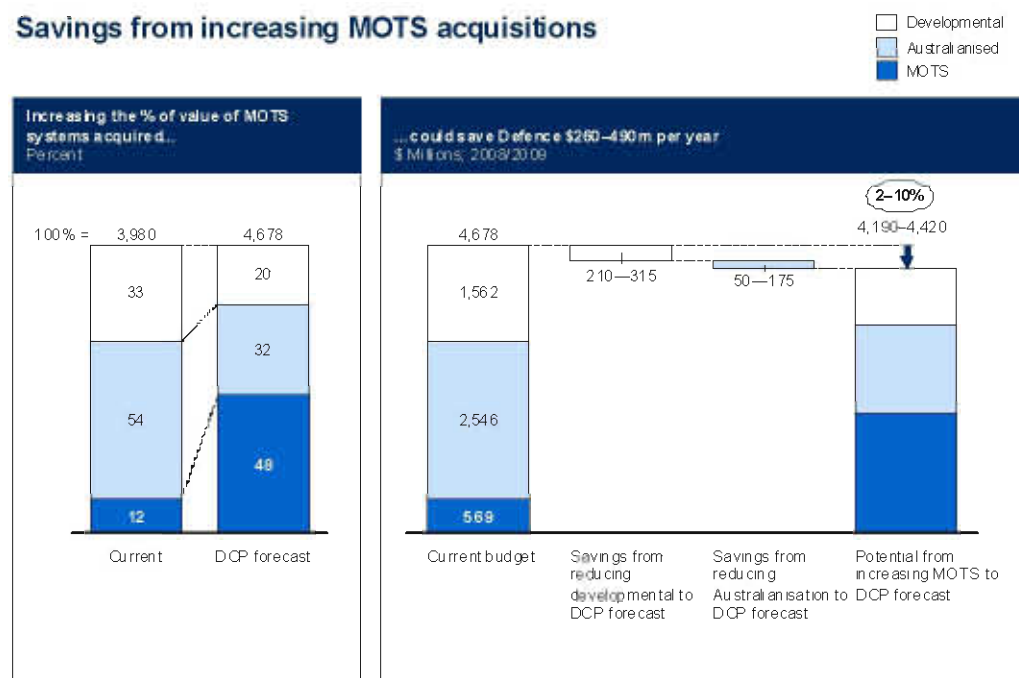
Defence needs to hold firm on new MOTS strategy

The biggest opportunity to lower input costs is to reduce the proportion of Developmental projects and the amount of Australianisation driven by ‘capability requirements’.

A major shift in Defence thinking has led to it already planning to capture this benefit. The most recent Defence Capability Plan (DCP)⁸⁵ is forecasting a much higher proportion of MOTS than the current acquisition portfolio: 48% rather than 12%. Applying the ranges above⁸⁶ to estimate the difference in the purchase price between portfolios with 48% MOTS and 12% MOTS shows the additional cost of the low-MOTS portfolio is \$260 to \$490 million pa (Exhibit 103).

Exhibit 103

Savings from increasing MOTS acquisitions



* Assumes developmental premium of 50–100%

** Assumes Australianisation premium on top of regulatory and integration requirements of 5–20%

Source: DMO, PBS, McKinsey analysis

This is not a ‘bankable saving’ but an illustration of the importance of disciplined adherence to plan. If, as projects move closer to approval, the proportion which

⁸⁵ DMO analysis of DCP 09-19, dated 18 November 2008.

⁸⁶ Assuming the proportion of Australianised and developmental projects remain the same relative to each other, and that Australianised projects add a ‘capability requirement’ premium of 5 to 20%, and developmental project add a premium of 50 to 100% over the cost of a MOTS option.

are genuinely MOTS starts to decrease, and the cultural bias toward Developmental/Australianised projects starts to drive unnecessary increases in capability and cost, then the cost of the future portfolio will increase significantly—compromising the ability to afford these or other projects. Therefore, we reiterate from Chapter 5:

- We endorse the Mortimer Review recommendation that, “[a]ny decision to move beyond the requirements of an off-the-shelf solution must be based on a rigorous cost-benefit analysis of the additional capability sought against the cost and risk of doing so. This analysis must be clearly communicated to Government so that it is informed of the decision-making process.”
- To increase transparency on the rationale for ‘Australianising’ a MOTS option, we recommend that Defence should classify any modifications required to an existing platform into four categories: (i) external regulatory requirements; (ii) internal technical regulations; (iii) integration requirements; and (iv) capability enhancements. The rationale for, and the cost, benefit and risk of, each type of modification should be specified. This assessment should form part of the first pass and second pass documentation.

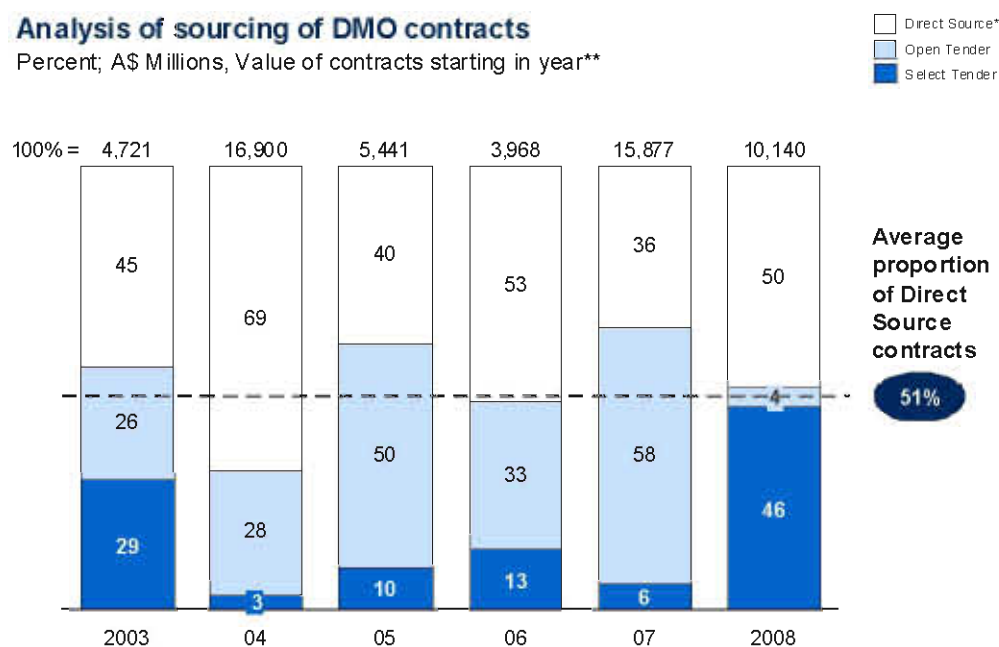
10.2 INCREASING THE LEVEL OF COMPETITION FOR MAJOR EQUIPMENT ACQUISITION AND SUSTAINMENT CONTRACTS

An important lever to reduce acquisition and sustainment costs is competition. There is significant scope to increase this competition. Of all the contracts commenced since 2003, with a contract value of more than \$1 million, 50% are direct sourced—they have not been subject to either an open or selective tender (Exhibit 104).

Exhibit 104

Analysis of sourcing of DMO contracts

Percent; A\$ Millions, Value of contracts starting in year**



* Sole-source, Foreign Military Sales (FMS) and Direct Source
 ** Contracts greater than \$1m value

Source: Interim Defence Contracts Register, McKinsey analysis

Introducing competition to contracts has been shown to lower the cost of procurement. A Rand Corporation study in 2001 showed 70% of missile and ship projects and 90% of electronics projects achieved savings in competitive situations.⁸⁷ Indeed, half of all competed electronics projects achieved savings of greater than 30%. The authors found that introducing a second competitor is sufficient to realise cost savings.

Similar findings were made in a study of the effects of competition on the components of 14 missile systems, with savings of 20% typical.⁸⁸ The author found that introducing a competitor reduces informational asymmetries (that is, both parties know the costs and risks of supplying the item in question) between suppliers, which leads to more aggressive bidding. Further, there is evidence that dual sourcing has the indirect effect of enhancing the competitiveness of subsequent winner-takes-all auctions. As well as reducing price, the existence of a

⁸⁷ Birkler, J et al (2001), "Assessing Competitive Strategies for the Joint Strike Fighter: Opportunities and Options," RAND MR-1362-OSD/JSF. See also "The Benefits of Competition in Australian Defence Industry," CRA International, October 2005.

⁸⁸ Lyon, Thomas P, "Does Dual Sourcing Lower Procurement Costs?," *Journal of Industrial Economics*, Vol 54, No 2, pp 223-252, June 2006.

competitor gives the buyer (Defence) more leverage over suppliers, particularly on dimensions of product quality that are inherently difficult to specify in contractual terms.

We reviewed a sample of 25 direct source major contracts (each worth more than \$5 million) signed in 2008, to assess whether these contracts could have been competed. Based on this sample:

- 25% of the direct sourced contracts could have been competitive. However, the ability to make these projects competitive is contingent on: improved Defence planning to prepare for tenders prior to contract expiry; consideration of regulations; and changing an existing mindset that favours extending an existing contract over competition. ‘Lack of time and resources’ was a common reason given for not competing these contracts.
- 50% of the direct contracts were for goods or services where an alternative supplier existed, but the contract was not able to be competed. In many cases, this is due to the classified nature of equipment, or because there are significant regulatory barriers to entry. In some cases, the original equipment manufacturers retain intellectual property rights that restrict the ability to compete work, especially at the prime contractor level. In some cases, urgent military requirements meant that there was not time to conduct a tender process.
- 25% of the direct contracts are from the only available provider, and it would not be possible to introduce competition—in many cases, because it is a ‘Foreign Military Sale’ and only the US Government can sell the equipment; in other cases because no other supplier exists, and IP restrictions or Australia’s relatively small scale requirements prevent the introduction of a second supplier.

The ability to compete future contracts is partially dependant on the type of equipment the DMO is required to acquire and sustain. A simple extrapolation to the current baseline suggests a saving of \$85 to \$170 million is possible, but we have not treated this as ‘bankable’.⁸⁹

We recommend that the DMO reduces the portion of sole sourced contracts.

⁸⁹ Our analysis showed 50% of contracts are sole sourced, and 25% of those contracts could be competed. Applying a 10 to 20% saving on the 12.5% of contracts that could be competed to the baseline of \$6.9 billion, suggests a saving of \$85 to \$170 million is possible. This baseline does include sustainment contracts, and some of the benefits of greater competition would come from contractors employing leaner practices (which we have included in the savings estimate in Chapter 6). Savings exclude the cost of tendering, to both the DMO and suppliers (who, arguably, will pass it back in tendered price).

Defence should consider retaining the Design Authority on capabilities that are either of such importance that to outsource responsibility for their ongoing capability would expose Defence to excessive risk (for example, submarines, special forces equipment) or capabilities where the main task is to integrate electronic systems, and manage sub-contractors to achieve that end (for example, many projects in Electronic Systems Division). This would enable Defence to mandate greater competition in ‘first tier’ and ‘second tier’ contracts than is currently the case.

For capabilities that Defence need not be the Design Authority, competition at the ‘second tier’ should be the norm and reflected in contracts with prime contractors.

On contracts which cannot be competed, the DMO should increase the use of its Financial Investigation Service, to conduct cost analysis and ensure Defence receives fair value.

10.3 REVIEWING THE PORTION OF LOCAL SOURCING

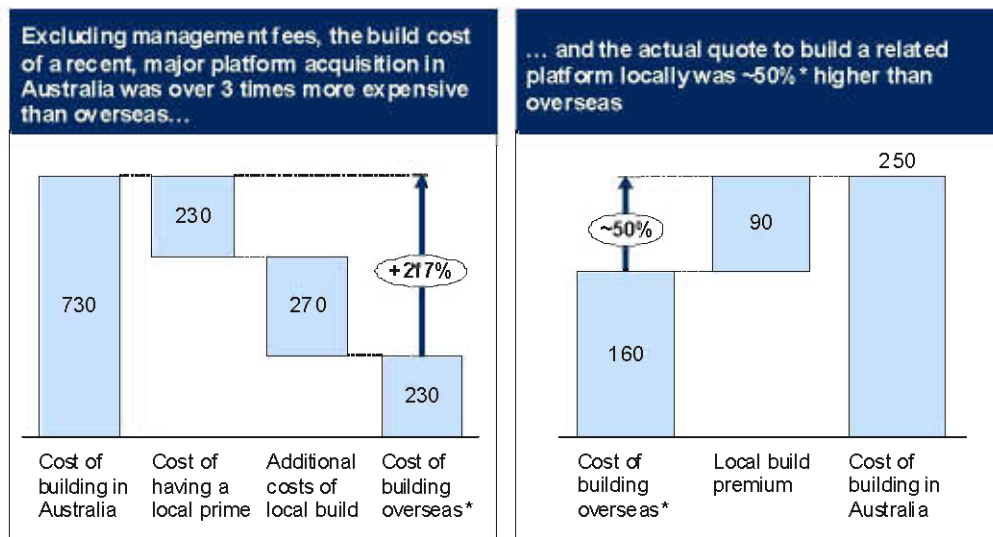
The final input cost lever we examined was global sourcing of military equipment, because building military equipment in Australia can cost a significant amount more than having the same equipment built overseas. In the one case we were able to gather evidence on, the cost was between 50 and 200% more (Exhibit 105). The analysis we examined suggested the Australian naval shipbuilding industry receives higher levels of assistance than other industries (Exhibit 106). In addition, we also note there can be significant opportunity costs from diverting resources from other areas, especially infrastructure projects that increase productive capacity or major export industries.

Exhibit 105

Comparison of local and overseas build costs

EXAMPLE

A\$ Millions

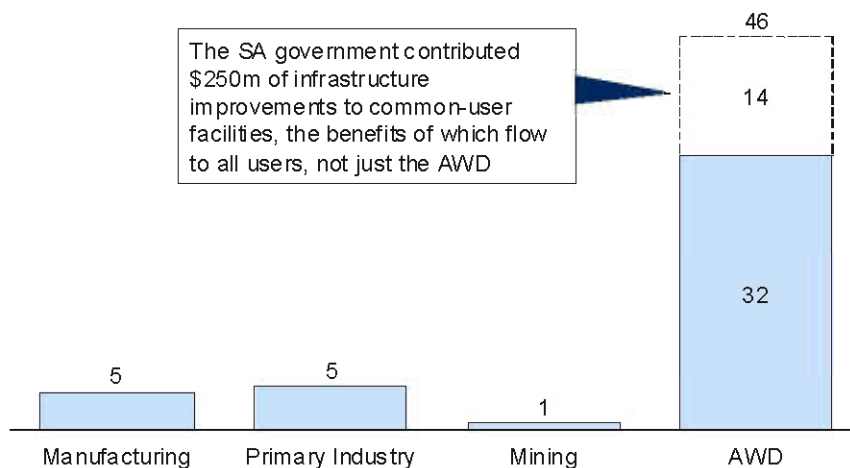


* Does not include increased cost of quality oversight
Source: ADAS project manager

Exhibit 106

Industry comparison of Effective Rate of Assistance

Percent; Effective Rate of Assistance (ERA)*



* The ERA expresses the combined level of tariff and budgetary assistance to an industry as a proportion of unassisted value added. It is equal to the assisted value minus the unassisted value added divided by the unassisted value added.
Note: The LHD ERA was predicted to be between 70 and 190% for a complete local build, but no figures are available for the ERA of the actual portion of the LHD to be built in Australia, and so the LHD ERA has been omitted from the comparison.
Source: Assistance measurement: Australian Naval Shipbuilding, CRA 2006

Cost is not the only issue here. There are some good strategic reasons why Australia should maintain a local Defence industry. These include:

- **National sovereignty**, when it is important to have proprietary and unique knowledge and systems, for capabilities like cryptography.
- **Developing valuable knowledge**, when specialist understanding in a particular field is regarded as unique or especially valuable by allied nations, and encourages greater sharing of information.
- **Guaranteed supply** to ensure that suppliers have Australia's national interests ahead of other nations, and create a shorter supply chain. This rationale is often used with respect to munitions.
- **Ability to maintain or upgrade in Australia** for critical capabilities.

We have heard other, less convincing arguments for local sourcing which include:

- **Leverage**: that local sourcing gives equipment an advantage over like-type platforms. This could be achieved just as effectively, if greater capability is required, by negotiating a variant with greater capability through a foreign manufacturer.
- **Local knowledge**, of specific Australian needs and requirements. There may be good cases for this, but we caution it is an easy argument to make without proper appreciation of the true cost (to Defence and the opportunity cost to the broader economy) of local sourcing.

The 2007 Defence Policy lays out guidance stating that strategic requirements and competition should be the primary drivers of local sourcing. A clearly articulated local industry policy is important, and **we recommend that the 2009 industry policy statement make explicit that:**

- **The cost of local sourcing in comparison to other options must be determined prior to government approval, and presented to Government with the option set.**
- **Local sourcing should only be considered where it is a strategic priority or where it is competitive with other options, and if local sourcing is chosen outside this criteria, that the rationale be clearly articulated.**

11 Developing a flexible surge model with expanded use of Reserves and deployable contractors

The cost of combat capabilities was the final area of Defence input costs we examined. We believe Defence should take a more strategic view of how Reserves can provide surge capacity. This would require significant organisational and operational changes to the current Reserves model. Our analysis suggests there is potential for Defence to save \$50 million pa from using Reserves for surge capacity. Further investigation of the potential opportunity, and the implications for capability and deployability, is warranted. Identifying opportunities to use contractors selectively in deployed roles would likely drive additional savings by making a larger part of the workforce variable, but has not been sized as part of this review.

11.1 OPPORTUNITY FROM USING RESERVES FOR SURGE CAPACITY

Reservists enable Defence to retain critical surge capability while costing significantly less to sustain during continuous peacetime. Over the past 10 years, the Australian Defence Force (ADF) has paid ever-increasing recognition to Reserves' ability to deliver stand-alone military capability. For example, the Air Force has a relatively well developed reservist model which treats Reserves as a core component of the force to meet low-cost capability requirements. In the Army, up to 2,000 Reserves have been deployed on operations at any one time since 1999, in roles as diverse as third-line cooks and frontline commandos.

In many cases, however, the use of Reserves has been in response to need, rather than following a clearly defined strategy. Our analysis suggests there is a significant opportunity to manage the relative size of Regular and Reserve forces more strategically to deliver effective capability at lower cost.

In some trades, the size of the regular force is currently greater than what is needed to meet a combination of short notice to move, work-up and respite

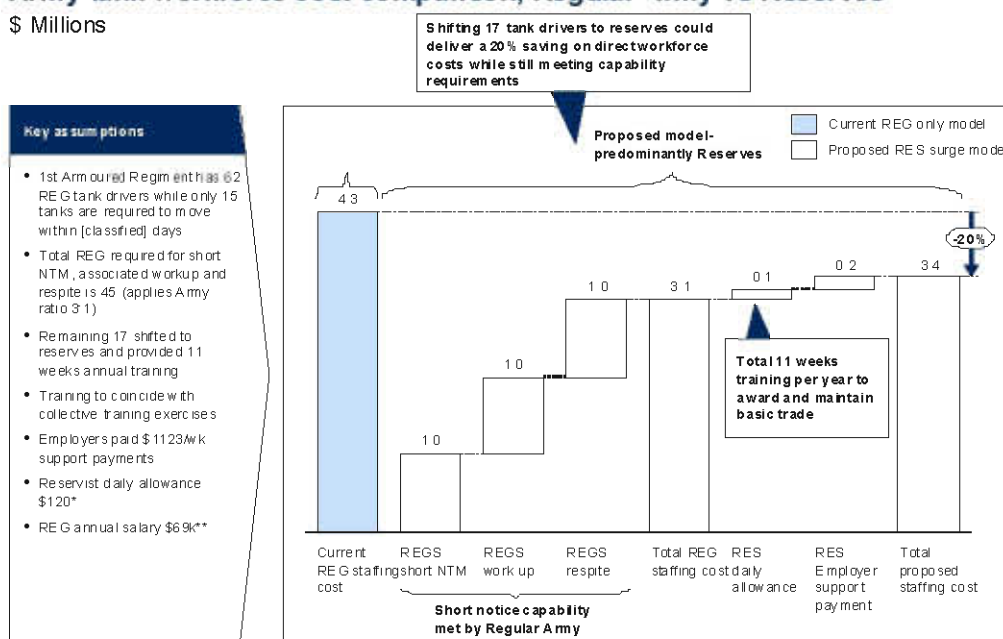
requirements. Essentially, these trades have been sized to meet ‘surge’ requirements and staffed largely (or in some cases entirely) with regulars. By retaining sufficient regulars to meet short notice to move, work-up and respite needs, deployed capability can be maintained while shifting the surge capacity to lower-cost Reserves.

We conducted a cost-benefit analysis of two example Army trades: artillery gunners and battle-tank drivers. This analysis shows that shifting surge capacity into Reserves can deliver direct workforce savings from 20% (tank drivers) to 40% (artillery gunners) (Exhibits 107 and 108).

Exhibit 107

Army tank workforce cost comparison, Regular Army vs Reserves

\$ Millions

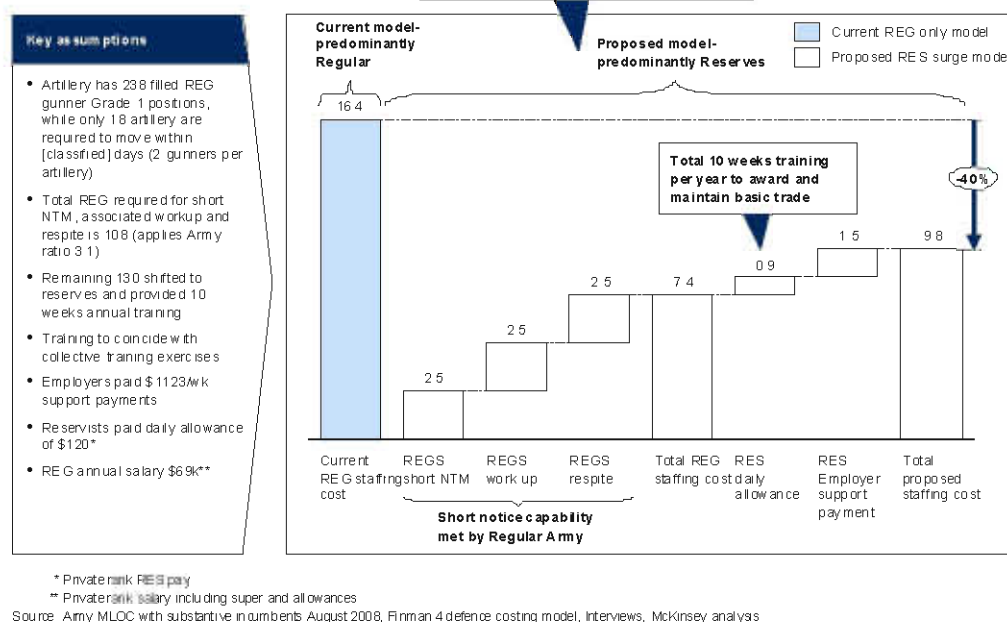


* Private rank RES pay
 ** Private rank salary including super and allowances
 Source: Army MLOC with substantive incumbents August 2008, Finman 4 defence costing model, interviews, McKinsey analysis

Exhibit 108

Army artillery workforce cost comparison, Regular Army vs Reserves

\$ Millions



These savings are driven from figures showing it costs ~75% less during peacetime to maintain current skills in a Reserve—including daily allowance and employer support payments—than regular personnel (personnel costs on deployment are roughly equal). In some circumstances, work-up costs for a Reserve may be greater, but these can be recovered through the no-win-no-loss funding agreement with Government, which we recommend in Chapter 2 should be a key feature of any future Defence funding model.

To size the overall opportunity in the Army, we looked at the universe of 225 different trades, and found that on average 32% of personnel are currently Reserves. While a detailed analysis of every trade was beyond the scope of this review, targeting just the 20 largest trades with Reserve ratios below 32%, and bringing them up to average, would convert roughly 1,000 Regulars to Reserves and save ~\$50 million pa.

We believe analogous opportunities exist in the Navy and Air Force, although the total opportunity is probably smaller. For example, the Navy has opportunities to draw on Reserves to fill more crew positions; however, this would require more frequent fly-in-fly-out, and the Air Force already makes somewhat greater use of Reserves within its model. For the purposes of this review, we have not attempted

to size the opportunities in the Navy and Air Force separately, and have conservatively estimated the total opportunity as roughly \$50 million pa.

We recommend that Defence pursues opportunities to increase the use of Reserves to provide surge capacity as described above, in trades where there is an opportunity to do so.

11.2 REQUIREMENTS TO ENABLE ENHANCED RESERVIST MODEL

Increasing the use of Reserves for surge capacity will require a cultural shift to recognise Reserves as a core capability rather than a supplementary force.

Beyond this, significant organisational and operational changes will be required if the model is to be successful. Organisationally, several enablers are needed:

- **Integrating Regular (REG) and Reserve (RES) command structures, career management, training and remuneration.** The current parallel REG and RES structures make coordination difficult. An integrated structure would assist in creating the ‘one Army’ approach that has been a long-term aspiration. In Chapter 14, we recommend Service Chiefs are no longer subject to FTE guidance, which will further assist with this task.
- **Resizing regular and reservist trades and ranks.** To produce a more strategic Reserve force, individual trades and ranks must be reviewed and either grown or downsized as needed to create and maintain a balanced REG/RES Army. Difficulties and costs associated with growing a larger Reserve Force can be mitigated by redirecting current Reserves instead of relying solely on new recruits to grow high-priority trades. While there would be a one-off cost associated with this strategy, it would deliver significant ongoing savings.
- **Selectively using standby Reserves.** Use of standby Reserves may be a viable way to supplement ranks with low retention and go some way to mitigating the effects of Army hollowness.
- **Increasing the use of contractors for extended Operations.** The flexible surge model may not adequately sustain operational commitments for lengthy periods of deployment; however, in these situations demands can be better addressed through greater use of deployable contractors. This is discussed further in section 11.3.

Operational changes needed include:

- **Refining the approach to reservist training.** Reserve training periods should coincide with collective training exercises to ensure the Reserve force is adequately prepared for possible deployment. In addition, Reserves should be provided access to the latest equipment and training techniques for readiness requirements, and to discourage treating them as second class members of the force.
- **Maintaining an operational skills database.** Reserves offer a rich source of current skills and trades that may not be readily obtainable through the regular Army—for example, trauma surgeons, town planners, accountants and carpenters. Maintaining an accurate record of Reserve capabilities (including skills and qualifications from civilian training) is critical to enabling effective deployment. For example, in 2006 the Army Reserves group was unable to provide the Chief of the Defence Force (CDF) with a timely assessment of carpentry capability in response to Tropical Cyclone Larry, hence reducing the effectiveness of the response.
- **Accessing Defence resources.** To be effective, Reserves should have increased access to critical Defence resources, including the Defence Restricted Network (DRN).

We recommend that Defence implements these organisational and operational changes to enable greater use of a Reserves model.

Finally, as part of the shift to greater use of Reserves, **we recommend Defence builds a robust preparedness versus cost model of Reserves that can inform the White Paper planning process, and provide alternative options to deliver capability through a larger, significantly more strategic active Reserve force.**

11.3 INCREASING THE USE OF DEPLOYED CONTRACTORS

While the scope of this review did not include a detailed analysis of the opportunity to use contractors in place of military personnel in deployed situations, we note that several NATO allied forces have used this model to achieve more cost-effective deployed forces. For example, the US Department of Defense's ratio of contractors to military in operational deployments was ~1:1 in 2008, up from ~1:3 in 2003. For the UK Ministry of Defence, the ratio of contractors to military personnel in Iraq during 2003 to 2008 averaged ~1:2. Typically, such roles are limited to logistics support, and are only deployed once the region in question is considered stable. Following the success of the allied forces, the ongoing Combat Service Support Force Structure Review has planned extensive use of contractors to minimise the requirement of Defence personnel deployment. We encourage further efforts of this nature.

Where long deployments are contemplated, we recommend Defence conduct further analysis of the potential cost benefits of more extensively deployed contractors as part of the reform implementation process.

12 Consolidating estates into an efficient scale superbase model

Once Defence has embarked on capturing the productivity savings from its current business model, it needs to examine sources of future productivity improvement. We see that opportunity coming from Defence, consolidating its estate into an efficient superbase model.

Today, Defence has a large and fragmented estates footprint with more than 350 properties and another 350 leases.⁹⁰ While Defence has begun to rationalise its property holdings (with 350 property disposals since 1991), there have been very few major base closures.⁹¹ The strategic relocation of the armed forces to the north of Australia, and the decrease in the size of the Australian Defence Force (ADF) since the early 1980s, have not been accompanied by commensurate base consolidation. As a result, many small bases and offices remain—just over half the 76 bases with staff permanently attached have fewer than 500 personnel; another 15 have fewer than 1,000; 22 bases have more than 1,000; and only the Russell offices have more than 5,000.

12.1 MOVING FROM A HIGH-COST FRAGMENTED ESTATE TO AN EFFICIENT SUPERBASE MODEL

The current base configuration is a complex and costly historical legacy, and this fragmented estate drives:

⁹⁰ Many of these properties are associated with the Reserve and cadet capabilities, and have a minimal number of personnel and facilities; these therefore make a minimal contribution to the cost of Defence. In fact, the 76 bases capture approximately 85% of Defence personnel and facilities (by value). These 76 bases are the major contributors to the cost of Defence.

⁹¹ Smaller base closures which have occurred include HMAS Platypus in 1999, North Head School of Artillery in 1998, and Ingleburn Army Camp in 2000.

- Higher base costs—multiple small bases prevent Defence from realising economies of scale on costs such as garrison support⁹² (for example, security, cleaning and catering) and facilities maintenance
- Higher travel and relocation costs
- A more complicated supply-chain network.

In addition, the estate is ageing and annual capital invested in maintenance has decreased since the 1980s. The Estates Companion Review commissioned a significant body of work to estimate the useful life and gross replacement value (GRV) of the Defence estate. This work reviewed the amount provisioned for maintenance, repair and replacement of the estate against various benchmarks

[REDACTED]

[REDACTED]

[REDACTED]

Before any further major capital investments are committed to the current estate, we believe Defence should develop a plan to move to a far more efficient basing estate model. The economics of estate configuration are non-linear—efficiencies only become significant when a very small number of bases remain. Therefore, to create a substantially more efficient estate model—especially one that will generate savings large enough to justify the capital investment required—the end-state must comprise the smallest feasible number of bases. In practise, for the ADF this means moving to a ‘superbase’ model, which is attractive for a range of reasons:

- **Co-location of services.** Superbases build on the current practice of co-locating units from different Services, especially when the units typically operate together (for example the Air Lift Wing of the Air Force should be co-located with a major Army base). This is a cost-effective way to increase inter-service familiarity and capability by enabling better joint training.
- **Modern facilities.** Creating superbases will require a substantial capital investment, but will provide a unique opportunity to increase capability by upgrading the quality of facilities—these currently vary substantially across bases. A refurbishment of this magnitude would be much harder to justify economically if the current base footprint is retained.
- **Simpler supply chain.** As discussed in Chapter 6.3, estates consolidation would enable a much simpler supply-chain network.

⁹² For example, the garrison support costs at the smaller Borneo barracks, Cabarlah and Woodside barracks are 84% and 100% higher, per ADF member, than at the larger Gallipoli barracks, Enoggera.

- **Scale benefits.** Significant economies of scale would enable savings in areas including garrison support, facilities maintenance, health and ICT. In some cases (for example, health) the services provided at a superbase could be more comprehensive than that possible on subscale bases.
- **Significant reduction in the number of relocations.** By creating bases with enough positions to allow Service members to rotate between work-up, high-readiness/deployable and reconstitution/respice postings without relocating, disruption to families is minimised (for example, spousal employment and schooling). This should have significant benefits for long-term personnel retention, as well as reducing the cost of removals and relocations.
- **Co-location with training facilities.** Where possible, superbases should be located close to major training facilities to reduce the cost and time taken to move large numbers of people and equipment for exercises.
- **Industry integration.** Defence receives significant support from private industry, which can also realise efficiencies from consolidating or modernising facilities and locating them at/near superbases.⁹³

The model proposed by the Estates Companion Review proposes that [REDACTED] bases should be considered for closure. [REDACTED]

[REDACTED] This will deliver operational savings and help address the unfunded liability problem. However a number of larger bases still remain, [REDACTED]

[REDACTED]. It is recommended that Defence should go further and consolidate a greater number of these larger bases to more fully capture the economic benefits of moving to a superbase model. [REDACTED]

[REDACTED]. Five key principles guided the development of this footprint:

- Creating a basing structure that meets Defence's strategic requirements⁹⁴
- Moving Defence into fewer, larger, multi-user bases (co-locating wherever possible)
- Ensuring the Services are able to raise, train and sustain their forces, which includes:

93 [REDACTED]

94 Including but not limited to: maintaining mounting bases in the north, north east and west; providing quick incident response to major population centres; supporting small ship activities in the northern waters; and maintaining sustainment functions proximate to urban centres and transportation hubs.

- ‘Family friendly’ base locations (to enable retention and recruitment, reduce posting turbulence, and ensure adequate employment and educational opportunities)
- Proximity to training areas with adequate capacity
- Clustering near strategic infrastructure and industry.⁹⁵
- Force projection—maintaining adequate mounting bases and co-locating training areas with mounting bases where possible
- Maintaining the Reserve capability.

The [REDACTED] criterion to ‘maintain a balanced national urban and regional distribution’ was not retained in this exercise—as this could result in a footprint which is inefficient and reduces the potential to create benefits for Defence members and their families (such as better spousal employment opportunities).

[REDACTED]

⁹⁵ Industry will need to be near population centres to attract and retain a workforce, but over a long timeframe, with sufficient certainty, industry will locate to support its customers.

Exhibit 109



Exhibit 110



[Redacted text block consisting of four horizontal bars of varying lengths]

Exhibit 111



Some bases and infrastructure will need to be retained to support the Reserve, but the number of full-time military staff posted at these locations should be kept to the minimum required.

We recommend that Defence moves to the smallest number of superbases that is consistent with strategic requirements and the ‘raise, train, sustain’ mission of the three Services, over the next 20 to 30 years.

12.2 THE ECONOMICS OF ESTATE CONSOLIDATION

We modelled the economics of moving to the superbase footprint by creating two financial scenarios:

- **High case scenario:** which assumes savings are at the higher end of the ranges (peaking at \$1,050 million in 2035) [REDACTED].
- **Low case scenario:** which assumes savings are at the lower end of the ranges (peaking at \$700 million) [REDACTED].

In developing these cases we used the following key assumptions:

- Consolidation starts in 2010 and is completed in 2034.
- Capital costs range from [REDACTED], based on [REDACTED] estimates of removals, relocations and land decontamination costs.⁹⁶
- Savings begin to offset capital costs in 2012 and peak in 2035 at \$700 to \$1,050 million.
- Cost of capital used in Net Present Value (NPV) calculations is a 10-year historical average of 10-year Australian treasury bonds—5.70%.

[REDACTED]:

- [REDACTED]
- [REDACTED]

Exhibit 112



96 [REDACTED]

The effect of this new configuration on Defence's annual budget is shown in Exhibit 113. Defence would incur increased annual costs up until 2034, then see a benefit of ~\$700 to \$1,050 million in 2035, before tapering off to an annual ongoing saving of \$400 to \$650 million by 2095 as the saving from avoided maintenance declines.

Exhibit 113



A more detailed description of the modelling approach taken and the assumptions applied is annexed in Appendix 4.

These ranged savings reveal the potential for this project to dramatically lower Defence's operating costs.

We recommend that Defence establish an Estates Review Committee, comprised of representatives of the three Services—the Defence Support Group and the People Strategy and Policy Group (PSPG)—to:

- **Prepare a 'superbase' master plan, which will finalise the recommended base footprint and develop a fully costed strategic business case.**

- **Develop new operating models which will enable the Services and Groups to capture the improvements in efficiency and effectiveness that estates would enable.**⁹⁷
- **Create a transition plan articulating which bases would close, where they would move to, and when. This plan should consider the age and state of existing facilities (and seek to avoid additional capex on facilities which will be closed), and the combination of units required to support new operating models.**

This committee should complete its work within 12 months.

12.3 CHALLENGES IN MOVING TO A SUPERBASE MODEL

The Estates Review Committee will also need to solve the following challenges:

- **Developing complex and rigorously costed business cases** for each tranche of bases that would close. An independent commission may be best placed to oversee and validate these costings and business cases (see below).
- **Designing new operating models for many Groups**, which would require innovative thinking and challenging established ways of conducting business (for example, combining facilities such as Q-stores, offices and messes or making educational training tri-service).
- **Embarking on a large scale construction program**, which provides significant management challenges and will require significant private sector expertise. Further, the acquisition of additional land will likely involve Government and some compulsory acquisitions.
- **Restructuring the supply-chain network** to match the future basing footprint will require immediate planning so significant time, effort and capital is not invested in areas unsuited to a superbase footprint.
- **Integrating industry** into the new superbase footprint. Defence should work with industry to minimise the significant capital costs and maximise the operational savings associated with their consolidation around Defence's superbases.
- **Assessing the strategic risks** of moving to a smaller footprint. Military strategy may need to be reviewed to align to the new basing footprint.

⁹⁷ Examples would include: consolidating Q-stores into one warehouse serving the whole base; consolidating maintenance facilities; and sequencing rotations of units through the work-up/ready/respice cycle to allow personnel to remain at one location unless deployed away from standard bases.

- **Managing the potential recruitment challenges** that result from a smaller geographical footprint by placing superbases and ensuring sufficient spousal employment opportunities are created.

12.4 DRIVING CONSOLIDATION THROUGH AN INDEPENDENT COMMISSION

Consolidating estates will inevitably create some political challenges for Government, given the potential impact on individual electorates. An independent commission would help overcome some of the political constraints that can stymie attempts to consolidate.

As an example, the US has used the independent Defense Base Closure and Realignment (BRAC) Commission to allow the Secretary of Defense to recommend base closure and realignments to the commission. The BRAC then draws its own conclusions and makes its own recommendations, which must be approved or rejected in its entirety by the President. If approved by the President, Congress has 45 legislative days to enact a joint resolution of disapproval or the recommendations stand.⁹⁸ The Department of Defense then has 6 years to implement the approved BRAC recommendations. Four BRAC rounds since 1989 have seen 97 major base closures and over 400 smaller realignments, closures and other actions. The net savings from consolidation were estimated at US\$29 billion (1990 to 2003) and US\$7 billion pa thereafter.⁹⁹ A fifth round of BRAC closures is currently underway.

Clearly, the US model represents only one approach to an independent commission, and the approach chosen by Defence should reflect the specific political environment in Australia.

Government should also identify alternative uses for vacated land, which could include social/affordable housing or sustainable developments, to better assess the long-term impact of base consolidation on local communities and Government policy priorities.

⁹⁸ If the President does not approve the recommendations, the BRAC commission may revise the submission and resubmit it.

⁹⁹ United States General Accounting Office.

We further recommend that Government establishes an independent commission, with an eminent, non-partisan public figure as chair.¹⁰⁰ The commission should:

- **Receive the Estates Review Committee's proposal.**
- **Engage relevant stakeholders, including Defence, industry, community groups, ADF personnel, Government and other Government agencies, in a consultative process.**
- **Test and refine the proposed master plan.**
- **Verify and publish costs and savings estimates.**
- **Recommend tranches of base consolidations and a timeline for implementation.**

¹⁰⁰ A possible composition of the Commission is an ADF representative, an economist and two members from the private sector with experience in delivering large infrastructure projects. The commission should be supported with appropriate expertise including financial analysts and engineering teams.

Part D. Driving deep reform in Defence

Defence has the opportunity to create a strategic and national advantage by managing a tighter budget process and driving a Defence productivity agenda. To achieve that advantage, Defence needs to establish two programs:

- **A deep reform program** aimed at fundamental changes in the way Defence conducts business. The program will be built on:
 - Challenging targets and establishing a clear vision to be the world's most productive defence force
 - Establishing strong line ownership and leadership
 - Fundamentally redesigning the way work is done
 - Creating expert commercial and high-level executive capability.

Deep reform inevitably takes time because it requires not just process change but also culture change. A realistic timeframe for this type of program is 3 to 5 years.

- **An outputs-driven budget management model.** This will create the management framework needed to support the reform program, and provide the incentives for sustained productivity improvement even after the reform program has ended.

The model creates clear accountability for the Service Chiefs to deliver defence output required by the CDF Preparedness Directive, while also substantially increasing their authority to manage their budget and operations. At the same time, the support functions are given clear accountability and authority to drive down their overhead costs by moving to more efficient service models, while also driving down the cost of their services by negotiating lower input prices.

13 A deep reform program

A deep reform program is needed for Defence to capture opportunities from tightening the whole budget process and increasing productivity. To achieve this, fundamental changes in the way Defence operates are required.

13.1 CHALLENGING TARGETS AND A CLEAR VISION

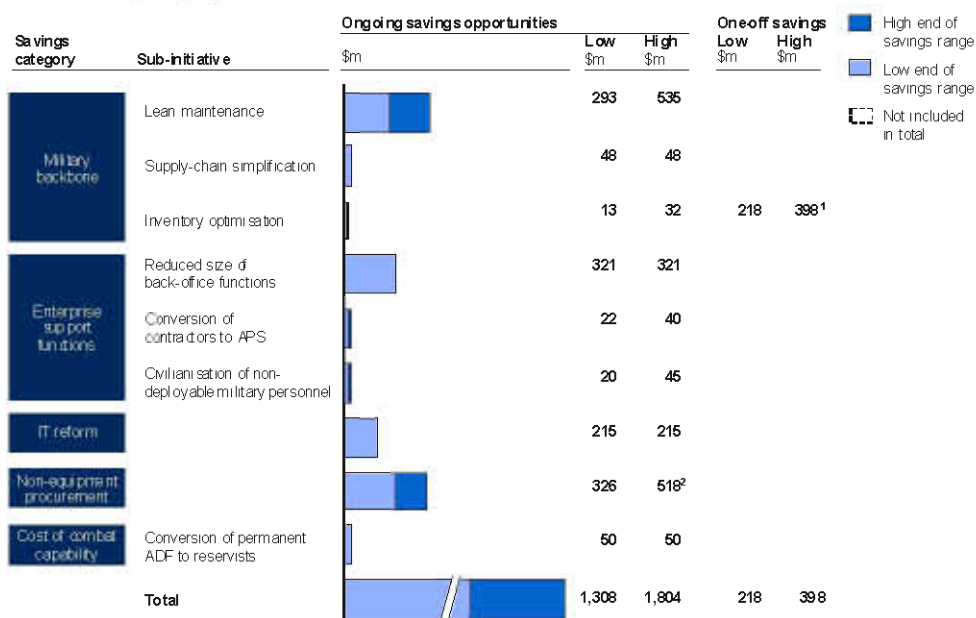
Deep reform begins with challenging targets, which are:

- **Necessary**, they are what will enable Defence to stay ahead of the cost pressures and to develop the capability Australia requires.
- **Possible**, having observed best practice and the opportunity for improvement.
- **Constructive**, as they ensure the focus is on fundamental change and not on incremental modifications to today's practices.

These targets need to be sufficiently stretching so they can only be achieved through fundamental changes in the way work is done, rather than through incremental modifications to today's practices. Equally, based on analysis and experience from other reform efforts, the targets must be achievable or there is a risk that capability will be compromised. In Exhibit 114 we provide a set of targets based on the analysis in Part B. As noted in those chapters, to ensure we developed appropriately challenging targets our analysis used both top-down and detailed bottom-up analysis. This included extensive consultation with Defence.

Exhibit 114

Total savings opportunities



¹ \$393 million over the first decade, and an additional \$5 million in first year of second decade

² Defence has agreed to reach savings of \$518m (84% of DBA top down estimate of \$616m), which is a reasonable position that the DBA supports

The pursuit of such substantial targets requires that the political, civilian and military sides of Defence articulate a single, clear, compelling and concrete vision of the Australian Defence Force (ADF) and the Department of Defence they wish to create.

13.2 LINE OWNERSHIP AND LEADERSHIP

Deep reform to the way work is done and managed in Defence will be best achieved through a combination of line ownership and committed senior leadership.

Reform of this scale needs to be the responsibility of the organisation's leaders: the Secretary and the Chief of the Defence Force (CDF). Practically, the Secretary and CDF will need to appoint Reform Program leaders to assist them to:

- Create the overall architecture
- Ensure accountability for the delivery of targets
- Ensure the change is genuine reform and not incremental improvement
- Remove organisational barriers to the major change

- Ensure there are sufficient resources requirements
- Provide the regular, visible, in-the-field championing of the frontline efforts.

We recommend that the Reform Program is co-lead by a senior ADF officer (2 or 3 star) and an equivalent civilian supported by a small team of 2 to 3 full-time senior, high performing ADF and Australian Public Service (APS) personnel.

The type of skills the Reform Program leaders and team members need include: experience successfully leading major change in the way Defence conducts its business; substantial general change management capability; very strong analytic skills; proven major project management skills; and substantial experience of operations outside Defence.

While this strong senior leadership is needed to design and drive the program, it will only succeed if the actual change is owned and delivered by line leaders and managers. Line leaders cannot be the implementers of detailed recommendations designed by a central team. They must be committed to the targets themselves and integrally involved in designing and implementing the change. This type of line ownership requires:

- **Accountability for outcomes.** To create this accountability we recommend:
 - Overall performance improvement targets are broken down into half yearly measurable outcome targets and are cascaded to supervisor level. It is important these are outcome targets—for example, a decrease in the average number of days for an R3 maintenance check of Hornets; net number of personnel civilianised; and percent reduction in the acquisition of uniform costs.
 - A clear accountability model is established so that if 6-monthly targets are missed twice, the person with the target is moved from that role.
- **Incentives to pursue the effort.** Strong incentives for those responsible for driving change are essential. In Defence, the most effective incentive is to enable those who make savings to reinvest them in their area. Therefore, the budget management model outlined in the next chapter proposes a model that enables the Group head to reinvest savings they make by coming in under-budget in their area of Defence. We also **recommend that frontline units, which improve performance, should keep a proportion of the efficiency for reinvestment.** However, it will be for the Group head to decide the proportion, based on balancing priorities across the Group. The objective of this recommendation is to ensure incentives throughout the organisation, while recognising the need for Group heads to have the greatest possible managerial control over their part of Defence.

- **‘Seed capital’ to launch the reform initiatives.** Major change efforts such as this one do require up-front investment until they become self funding. These investments will range from the cost of personnel to manage the program and consultants through to costs associated with changing contracts, which significantly limit performance improvement opportunities. **We recommend Defence establish a Reform Program fund that can be accessed by Group heads and the Defence Materiel Organisation (DMO) CEO subject to an appropriate business cases.** We have not sought to determine the quantum of this fund but **recommend that an appropriate quantum should be determined based on the reform agenda that emerges from this report and the companion reviews.**
- **Capability required to design and deliver fundamental change.** The approach needed to ensure this capability exists is discussed in the next section.
- **Authority sufficient to make the fundamental changes.** To ensure sufficient authority, some important changes in the management model will be required. We deal with this in the Chapter 14.

13.3 A CHANGE PROGRAM AND CAREER STRUCTURE DESIGNED TO BUILD CAPABILITY

A central requirement for a successful line-owned reform program is the need to address the development of appropriate capabilities. As discussed in Part B, the need for increased capabilities is critical if many of the opportunities identified are to be realised. Without capability building as a central focus for the reform program, there is a high risk that change will be incremental and unsustainable. There is also the risk that benefits from continuous improvement extending beyond the program will not be captured and the organisation will be unduly reliant on external support.

There are two broad types of capability gap that need to be addressed: (i) increased expert commercial capabilities in areas such as lean maintenance and non-equipment procurement; and (ii) the executive capabilities to manage central support functions.

In the next section we recommend an approach to increase both types of capability.

Increasing expert commercial capabilities through the reform program

As Chapter 3 highlighted, to deliver the reform program there is a need to build and sustain a higher level of expert commercial capability in the areas of:

- Supply chain and inventory management
- Lean maintenance
- Applying lean practices to the shared service processes in human resources, finance and IT
- Non-equipment procurement
- Project costing
- Procurement project management.

For the initial task of building these capabilities **we recommend that a pilot and participate, replicate, roll-out model is used to deliver the reform agenda in the areas where capability building is needed.** In Chapter 6, we discuss creating a lean backbone by providing an example of how this model could be used to deliver a lean maintenance reform.

The basic structure of the model we recommend begins with Defence selecting a partner to help them build their capability, followed by a program built around three broad stages:

1. **Pilot and participate.** An initial area of the business for improvement is selected as a pilot. These are normally areas that are: of a manageable scale; where improvement will deliver increased operational effectiveness as well as efficiency; and where there are few barriers outside the project to capturing the improvement. The basic structure for the pilot is:
 - The commercial partner provides an initial training program for a core group of Defence personnel in the improvement technique
 - The Defence personnel then work with the commercial partner to deliver the improvement
 - Lessons from the pilot are learnt and modifications to the improvement approach are made
 - The pilot's successes are widely shared to help build belief in the possibility of major change.

This sort of pilot will normally require an upfront investment, but the program should aim to be increasingly self-funded from the end of the second stage.

2. **Replicate.** Two more areas are selected for the improvement effort. In this phase:
 - Defence personnel from these areas are selected to participate in the program for their areas
 - Defence personnel from the first program co-teach the introductory training with the commercial provider
 - Defence personnel, with coaching support from the commercial partner, lead the effort in these two new areas
 - Lessons from these applications are captured and modifications to the approach are made
 - Successes are widely communicated.
3. **Roll-out.** Defence personnel from the first three programs are selected to become core faculty for the initial training programs. They receive further development from the commercial provider—this will ensure they achieve a sufficient level of expertise required to teach the introductory training program with ever decreasing levels of support. These expert faculty members become leaders of the improvement efforts in the other areas of the business. The only other role of the commercial provider in this phase is to provide coaching to program leaders.

The type of partner required for the program may vary with each reform initiative—they may include consultants, engineering firms or expert suppliers—but they should bring tried and tested expertise which has been applied with successful commercial outcomes.

Institute a multi-track career model, including a clear expert track, to sustain the required level of expert capability

As an integral part of the reform, we propose a new career model to help develop deeper Defence expertise. Once the reform program has finished, there will be a need to sustain and grow the expert capabilities developed during this period. Without a change program that can rapidly develop capabilities, these will otherwise need to be built in the normal course of a Defence career. Such development is best achieved by employees undertaking extensive hands-on experience in a professional discipline with range-ranging activities (such as supply-chain management or maintenance, and the experience gained through working at different levels of seniority). According to skills development experts, however, it takes approximately 10 years to develop a professional level of skill in these disciplines. This expertise is also perishable because of the rapid development in these professional areas.

There was a time when a generalist Defence career model could develop the people needed to run the department's various support functions. The expertise now required to run these support functions well means that time has passed. Therefore, we recommend developing a multi-track career model within Defence, including a clear expert track.

A multi-track career model is a major reform that requires substantial work for it to be developed, and it is beyond the scope of this exercise to do that. Broadly, what should be explored is a multi-track career model that will:

- Create a separate career path for developing a generalist ADF officer and developing expert capabilities in the ADF and APS
- Identify those expert career paths that should belong solely in the APS because they are non-deployable roles (such as project costing or non-equipment procurement)
- Enable career changes for generalists and expert, and clearly map the career implications of such changes
- Revise the rotation model for generalists to accommodate the reduced need for them to master expert areas, and the reduced number of places for them to rotate through when they are not deployed
- Develop a clear 'promote or depart' model for senior ranks in the generalist career track. This will be needed to keep the force structure in an appropriate shape; especially given there will be fewer senior expert roles for generalists to occupy, and a need to continue bringing talented young officers through the ranks.

As challenging as this reform is, developing and sustaining deep expertise is vital for the future effectiveness and efficiency of the ADF.

Increasing executive capabilities

Defence is fortunate to have some very effective senior executives; however, successfully implementing the deep reform agenda will require a substantial further increase in general executive capability and in expert capability in enterprise-wide and Defence support functions in particular.

The workforce reforms proposed in Chapter 7 are based on moving to a corporate model for all those aspects of the support functions that are parallel to corporate functions—for example, financial accounting and payroll. While a corporate model for these support services requires fewer people, it also requires more skilled executives and senior managers. These executives need to be able to manage larger spans of control, integrate more areas of the operation, and manage

more projects simultaneously.¹⁰¹ To put this model in place **we recommend Defence restructure the senior levels of the support functions in line with the type of contemporary corporate models we have described in Chapter 7 and recruit executives from the corporate sector for some of these roles.**

Recruiting from the corporate sector will require use of the full freedom that exists to determine APS pay and conditions. The consequence will be some significant variations in packages across the senior ranks of the APS in Defence and some non-alignment between APS and ADF pay at senior levels. These represent important departures from current philosophy and practice. However, without the ability to attract and retain the type of executives capable of making a corporate support services model work, there is a significant risk that workforce reforms could compromise the effectiveness of Defence and a much more modest agenda would need to be pursued. Therefore, **we recommend developing a new framework to manage senior talent in Defence to ensure appropriately capable senior executive capability can be attracted and retrained for key executive roles. The framework should also ensure that Defence's existing executive talent is clearly identified and retained.**

¹⁰¹ Several defence personnel observed that the spans of control in Defence are much wider than other public service departments. We have not assessed this, but we do note that they are behind comparable commercial practices.

14 Creating an outputs-driven budget management model

To achieve a successful deep reform agenda, the Defence management model needs to evolve so that each of the Services and Groups has sufficient incentive and authority to change the way Defence operates.

As highlighted in Part C, establishing many of the significant reforms for a lean backbone requires changes in the Services practices. For example, capturing the benefits of lean maintenance will require alterations to maintenance schedules, and capturing the benefits in non-equipment procurement areas will require changes to management practices (such as using video-conference facilities rather than air travel for some meetings). Making these types of reforms will be very difficult unless the Services change their practices and arrangements are in place to ensure the support functions change the way they provide their inputs. Equally, it is critical that support functions have the incentive to drive down their own overhead costs and the input costs for Defence.

14.1 THE DEFENCE BUSINESS MODEL

For the purposes of defining the model to support the reform agenda, we have found it helpful to understand the business model of Defence in the following terms:

- **Output definition.** The Strategy function working in conjunction with other Defence groups and Government is accountable to define Defence's output.
- **Output provision.** Army, Navy, Air Force and Intelligence groups are accountable to provide Defence's output (meeting preparedness levels and providing resources for operations). Joint Operations Command is responsible for Operations.
- **Capability acquisition.** The Capability Development Group (CDG) and the Defence Materiel Organisation (DMO) are accountable to specify, acquire and commission the military equipment needed to provide Defence's output.
- **Military support.** The DMO's sustainment function, Joint Logistics and part of the Chief Information Office Group (CIOG) are responsible for the direct support of Defence's war-fighting capability, and the Defence Support Group (DSG) is accountable for providing Defence support services to sustain the delivery of Defence's output. The Defence Science and Technology

Organisation (DSTO) is responsible for both direct support of Defence's war-fighting capability and support of the DMO's acquisition function.

- **Enterprise support.** Finance, Professional Service Providers (PSP) and part of CIOG are accountable for managing Defence's business enterprise.

14.2 OBJECTIVES FOR THE DEFENCE BUDGET MANAGEMENT MODEL

The model to manage the Defence budget needs to achieve five objectives:

1. Create accountability for outcomes and cost management as part of a commitment to managing Defence on the basis of contemporary management techniques. This point has been widely made, most recently by the Proust and Mortimer Reviews.
2. Create transparency on cost and performance, and provide the incentives, responsibility and accountability needed to drive substantial reforms in the way Defence operates.
3. Capture the scope and scale advantages of being an integrated Defence force.
4. Develop a culture of continuous improvement to enable savings in the Defence budget, to fund the major remediation tasks in the next decade within the existing planned funding envelope.
5. Manage the uneven profile of major military equipment purchases.

14.3 RATIONALE FOR BUDGET MANAGEMENT MODEL THAT DRIVES REFORM FROM THE SERVICES BACK INTO THE SUPPORT FUNCTIONS

There are two broad models to achieve the objectives of cost management and reform to the way Defence operates:

- **Drive reform from support functions forward into the Services.** In this model, the support functions have prime accountability for driving those costs down through changes in the way Defence operates. The support functions are given a clear, tight budget to deliver specific services and their role is to deliver within budget. Any savings made are passed back to the centre.
- **Drive reform from the Services back into the support functions.** In this model, the Services are given the accountability to deliver their required outputs within a budget, but are given freedom to vary their arrangements with their input providers. Within the budget they are given, the Services have significant discretion about how they manage the business. Their only

constraints are that they need to acquire their inputs from the support functions and that any capital reinvestment they want to do must fit within the agreed Defence capex plan.

It is important to note that in the second model, the DMO, in its acquisition role, is also given discretion, within its budget, to acquire the level of inputs it requires from other support groups.

We recommend this second model because:

- It is the model most commonly used to drive management innovation, which will be a critical part of the reform agenda.
- The substantial reforms that we outline in Part B are primarily driven by changes in the way the Services operate and therefore they need a strong incentive to pursue these changes.
- The model provides the clearest accountability for Defence outputs because those providing the outputs have a very substantial ability to shape their inputs.

We highlight that this is a very substantial model change from today's operation of Defence and a substantial shift from the standard public service management model. The nature and degree of change is illustrated in Exhibits 115 and 116, which contrast the control of budget spends today and in the new model.

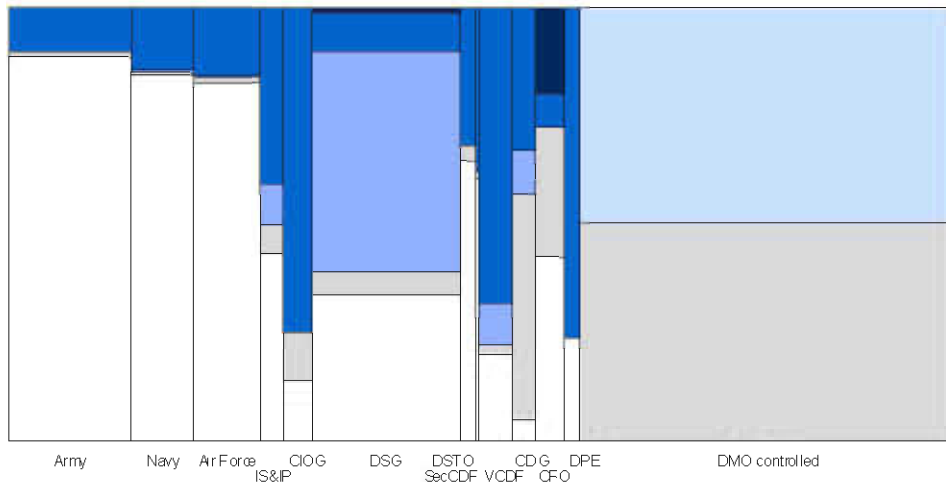
Exhibit 115

Budget allocations under current model

Budgeted 2009 cash payments
\$ million (area = proportion of budget)

- Financing
- Other operating
- Facilities and infrastructure
- DMO sustanment
- Capital acquisitions
- Employees

100% = \$23,347



Source: 2008-09 Portfolio Budget Statements, DMFP (Milestone 205)

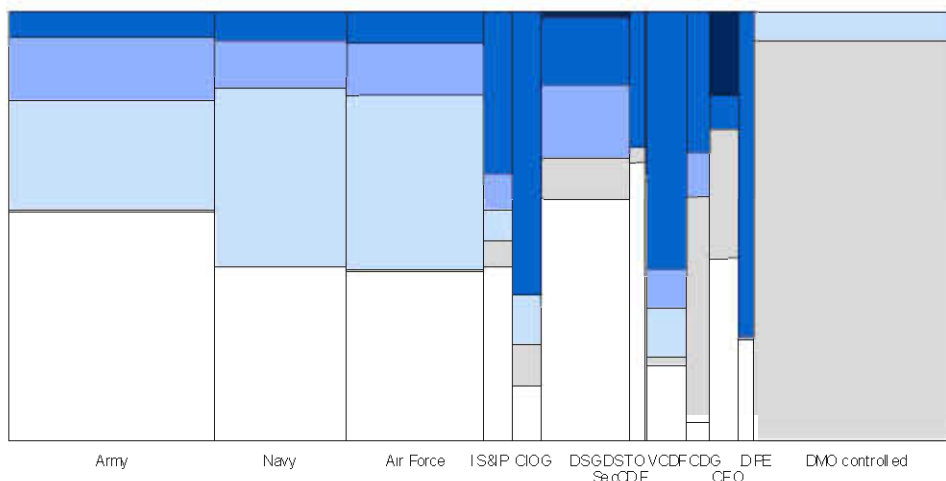
Exhibit 116

Indicative budget allocations under recommended model

Budgeted 2009 cash payments
\$ million (area = proportion of budget)

- Financing
- Other operating
- Facilities and infrastructure
- DMO sustanment
- Capital acquisitions
- Employees

100% = \$23,347



* Defence-wide capital acquisitions
Source: 2008-09 Portfolio Budget Statements, DMFP (Milestone 205), Long-term cost modelling tool

14.4 BUDGET MANAGEMENT MODEL TO CREATE INCREASED ACCOUNTABILITY, TRANSPARENCY AND INCENTIVE FOR REFORM

In this section we set out the budget management model to drive reform from the Services back into the support functions. We have chosen to recommend these as model changes, rather than detailed process change prescriptions, because detailed work on essential implementation issues is outside the scope of this audit. Some features of the model remain unchanged from existing arrangements, but the overall operation of the model is very different to today's model.

We recommend the following budget management model:

1. The budget management model is based on today's requirement that Defence deliver its defined outputs within the funding guidance provided by Government. The next evolution of today's requirement should be a tighter, more quantifiable and measurable specifications of the outputs along with greater reporting of the extent to which they have been achieved. This next iteration should also involve a reduction in the number of outputs through a clearer definition of the critical outputs required to meet strategic guidance.
2. The Chief Finance Officer Group (CFOG) allocates the budget into six categories:
 - Capital for military equipment acquisitions needed to deliver output required by the Defence Capability Plan (DCP) in the current year.
 - Capital required for major equipment acquisitions in future years (when capital funding exceeds the requirements in the current year).
 - Funding required for the agreed remediation programs. This as an amount that should grow in line with an acceleration of the reform program in the various Defence functions.
 - An allocation for the overhead operating and capital costs of running the Defence output support functions and the business enterprise.
 - Funding for operations (and funding for the overhead operating costs of the Joint Operations Command (JOC)).
 - A global funding number for each Service to produce their elements of the Defence output by: managing their own resources; using services provided by the Defence support functions; and capital expenditure on non-military equipment. The purpose of this global allocation is to provide each Service

with the management freedom to define the most effective way of providing their required output within their budget.

3. Each Service has to negotiate Service Level Agreements (SLAs) or Materiel Sustainment Agreements (MSAs) with the Defence Support functions and the DMO to enable them to deliver the Defence outputs for which they are accountable.

To be clear, in order to satisfy the budget management objective to take advantage of the scope and scale of being an integrated Defence force, the Services and DMO cannot create functions to provide services that are currently provided by the Defence Support functions, nor can they purchase these services from a third party.

The agreements which the Services and DMO negotiate will need to provide, wherever possible, a clear cost for consumption and to be structured to enable reduced consumption to result in reduced cost. When the SLAs and MSAs are established or revised, the Defence Support functions and the DMO need to provide options on how different levels or types of service provided could alter the cost, and provide transparency about what drives the cost. This will assist the Services to develop new approaches for delivering their required outputs more efficiently, by allowing informed trade-offs between different services and service levels. For example, a specification change such as not having training aircraft available on weekends may not affect a Service's ability to provide Defence output, but will free up resources for other activities that are needed to deliver the required output.

Where Defence Support functions are providing a shared service to numerous groups across Defence—such as garrison support or removal services—then it is their responsibility to design SLAs that capture scale benefits, acknowledging that this may limit their ability to provide offerings tailored to each of the services. Where possible, the level and type of service provided under these shared arrangements should be negotiated collectively between the Service groups and support functions. Flexibility in the structure of SLAs should also extend to the length of the agreements, which should not be limited to 1 year if it prevents the realisation of scale or other shared benefits.

Once this process is complete both the Services and the support functions will effectively have agreed on the budget needed to deliver these services. For the Services, the purpose of this budget is to give them transparency and control over their variable input costs. Within the life of the SLA or MSA they are accountable for these costs. If through reduced consumption they come in under-budget then they are able to use these funds for other purposes. Equally,

if they exceed their consumption rates they have to fund these costs out of their budget.

Under this model, the Service Chiefs and DMO CEO are accountable for the proportion of the budget covered by the SLAs and MSAs. The support functions are accountable for their overhead costs and KPIs to reduce or contain the growth of the per-unit cost of the services they provide.

This model requires that all inputs are costed accurately. These costs should be accounted for using accrual accounting that is aligned with the budget categories rather than any form of transfer pricing.

This model will also require some transfer of capability and budget from the support functions to the Services, to assist them function as effective clients in negotiating SLAs and MSAs.

4. Once the SLAs and MSAs are agreed there should be an agreement between the Services, the DMO CEO and the support functions about the non-equipment capital expenditure program. In relation to DSG, this should be done on a national basis rather than on DSG's current regional model. Aware that they are responsible for overall Defence outputs, the Services and the DMO should be able to reduce their capital expenditure and shift those funds to items in their operating budget and vice versa. However, once the capital expenditure plan is agreed then the support functions are accountable for on-time and on-budget delivery.
5. For this model to work the Services and DMO need to be given the maximum freedom to manage their budgets. Practically, this means removing all forms of FTE and salary guidance, to be replaced by the Service Chiefs and the DMO CEO having clear accountability to deliver their required Defence outputs within their global budget.

The model may also require Service Chiefs to have slightly larger central functions, to enable them to effectively exercise their expanded management responsibilities.

6. The CFOG has an important role in this model to manage overall performance by:
 - Allocating the global budgets.
 - Setting the growth rate to build up the remediation funding based on their estimation of the reform program efficiency gains.
 - Differentially adjusting the effective contribution of the Services (including Intelligence) to remediation funding, based on the performance of a Group's reform program.

- Constraining the overhead operating and capital costs of the Defence support functions.
 - Calling attention to over- and under-performance across the Defence budgets.
 - Bringing to attention for action, issues of cost overrun that threaten the Defence budget.
7. Importantly, for this model to operate effectively there needs to be clear consequence management where either: defence outputs are not provided or not provided within budget; or SLAs or MSAs are breached or overhead cost budgets are not met. Cases of sustained failure to meet these requirements should, as a minimum, lead to the removal of the person accountable from their role.
 8. To provide performance transparency, Defence should provide a yearly report on the performance of all the output agreements, and MSAs and SLAs relative to the past 3 years, and a description of the remedial action being taken to address any underperformance.

14.5 MANAGING THE ACCUMULATION OF SAVINGS FOR REMEDIATION AND UNEVEN MAJOR CAPITAL EQUIPMENT EXPENDITURE

The budget model requires that Defence accumulate funds for remediation and peaks in the major capital equipment expenditure program, where the cash demand exceeds the annual appropriation. Defence has already established a very useful vehicle—the Defence Strategic Investment Reserve (DSIR)—to help address this challenge.

The DSIR was established in mid-2008 as a vehicle for quarantining certain funding within the Defence Management and Finance Plan (DMFP). The driving principle behind its establishment is that any internally-generated savings, unallocated real growth in funding, or similar items, should be managed centrally and used for priority long-term remediation or capital funding requirements.

The funding available for the DSIR in any given year is the difference between the net cash received from Government and the total cash allocated to Groups/Services and the DMO within the DMFP. This difference can be used in two ways: as a cash payment from the DSIR in the same year, or as a ‘reprogramming’ of appropriation funding into later periods, which effectively

results in Defence spending less cash than the annual appropriation in that year.¹⁰² Reprogrammed funding is returned to the Public Account, with a commitment for reappropriation in future years, in addition to the budgeted appropriation for that year. The currently planned DSIR provision totals ~\$30 billion over the DMFP period, and has been largely funded from three main sources:

- The compounding effects of the Non-Farm GDP Implicit Price Deflator (NFGDP-IPD) ‘windfall’ received in 2008–09.
- The unallocated portion of the 3% real growth in funding committed to the budget up until 2018.
- The savings identified from the Groups’/Services’ budgets as part of the \$10 billion savings program over the decade. It should be noted, however, that not all of these savings have been harvested from the groups.

The 2008 White Paper is looking to this initial DSIR provision as a source of funding, and currently plans to allocate the full amount. Items being considered for funding include:

- Additional DCP funding to meet Force Structure Requirements
- Additional Net People and Operating Costs (NPOC) funding to address the ~\$6 billion shortfall over the DMFP period
- Additional (non-White Paper related) capability requirements
- Other funding pressures (for example, fuel supplementation).

It is also planned that savings from the Defence Reform Program will be allocated through the DSIR to fund priority remediation items (for example, Estates and ICT).

There are a number of mechanisms in place to govern the flow of funding to and from the DSIR. Apart from an annual allocation of \$50 million, which can be spent at the discretion of Secretary of Defence and the Chief of the Defence Force (Sec/CDF), all allocations of funding into and out of the DSIR must have ministerial approval. This will ensure the transparency of DSIR transactions. Additionally, there is an audit trail for all funding allocations, such that all inflows and outflows can be clearly identified and tracked.

We consider that, with an independent approval process and an audit trail of all funding allocations, the DSIR provides both Defence and Government with an

¹⁰² Funding can be, and has previously been, reprogrammed without the DSIR. However, the DSIR provides increased transparency for this process, and additional flexibility regarding how the reprogrammed funding will be spent.

appropriate mechanism for managing fluctuations in Defence's annual cash requirements.

We recommend that the DSIR be retained, for the reasons that:

- It provides a valuable tool for managing the lumpy nature of Defence expenditure
- It creates transparency and discipline regarding the use of funding for long-term remediation and capital requirements:
 - The allocation of DSIR funding to specific items provides transparency regarding how the funding will be used.
 - Ministerial approval for the allocation of DSIR funding ensures its disciplined use.
- The identification and prioritisation of long-term capital and remediation funding requirements represents good capital planning:
 - There is currently a detailed plan for how DSIR funding will be allocated and spent over the next 10 years.

APPENDICES

APPENDIX 1: FURTHER EXPLANATION OF LABOUR PRODUCTIVITY CALCULATIONS AND SOURCES

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APPENDIX 2: WHAT IS LEAN?

Lean is a way of working that focuses on (among other goals) the continual reduction of seven forms of ‘waste’. It is inspired by the manufacturing production methodologies developed in Japan (most famously through the Toyota Production System) and brought to the West in the early 1980s. By eliminating waste substantial productivity improvements are made: quality is improved, available time is increased, and cost is reduced.

The Toyota Production System (TPS) was developed in the 1940s and 1950s by Taiichi Ohno at Toyota. In postwar Japan, Toyota was faced with severe challenges, with productivity at one-ninth that of US car manufacturers and limited access to capital. The TPS introduced many key concepts at the heart of Lean Manufacturing and enabled Toyota to sustain significant ongoing improvement in both productivity and quality. As a result of these sustained operational improvements, Toyota went on to become Japan's number one exporter in the 1970s, and soon became the world's number one auto manufacturer by market capitalisation.

Lean seeks to eliminate seven forms of waste. These forms of waste and an example of their application to Lean in the maintenance environment are:

- **Over-production:** maintaining equipment and repairable items beyond required levels (for example, testing of electronic items that are not used prior to required re-testing)
- **Waiting time:** delays in the flow of maintenance activities necessary to complete repair of a repairable item or platform (for example, vehicle waiting to be processed in grit facility due to bottleneck)
- **Transportation:** movement of the actual repairable item or platform (for example, moving a vehicle between facilities for specific maintenance activities)
- **Over-processing:** conducting maintenance activities that do not contribute to required level of regulatory and operational safety and performance (for example, polishing of metal components, unnecessary paint work prior to final paint)
- **Inventory:** holding excess levels of consumables, repairable items, or work-in-progress (for example, ‘buffers’ of vehicles at various parts of the workshop, none of which are being worked on)

- **Motion:** movement of maintainers and tools to complete task (for example, moving around the hangar to locate required tools)
- **Rework:** defects in production the customer will not accept. In application to Lean maintenance this involves re-work (for example, where work execution does not meet required standards and needs to be repeated)

Waste can be directly targeted, and can also be removed as the ‘outcome’ of process improvements through application of Lean thinking:

“[Lean thinking] provides a way to specify value, line up value-creating actions in the best sequence, conduct these activities without interruption whenever requested, and perform them more and more effectively.”¹⁰⁵

McKinsey believe that Lean can be best delivered through combining a focus on waste, with efforts to reduce variability and reduce inflexibility in existing processes. In a maintenance context this is exemplified by transformation from a static to a pulse repair line for platforms and sub-assemblies. In a pulse line production system, the total maintenance activity is divided into a series of equal packages, the aircraft or item is then physically moved or ‘pulsed’ from one pulse area within the hangar to the next.¹⁰⁶

A comprehensive approach to Lean involves optimising the ‘technical system’ (planning and execution of maintenance) and ‘management infrastructure’ (including performance management, spare parts provisioning, and contract support), as well as and ‘mindsets and capabilities’ (including skill building, coaching, and accountability). Experience suggests that most Lean implementations which fail (improvements are not sustained) do so because organisational ‘belief’ in Lean thinking is not truly embedded—early examples of the positive impact of Lean, and continued leadership commitment are therefore critical components of this approach.

Sources: Womack and Jones, *Lean Thinking*, 2003; ‘*Transforming Logistics Support for Fast Jets*’, National Audit Office (UK), 2007; McKinsey & Company

¹⁰⁵ Womack and Jones, *Lean Thinking*, 2003

¹⁰⁶ ‘*Transforming Logistics Support for Fast Jets*’, National Audit Office (UK), 2007

APPENDIX 3: AN EXAMPLE OF LEAN IN DEFENCE

“The Ministry of Defence (the Department) is transforming the provision of maintenance, repair and overhaul activity for Harrier and Tornado fast jet aircraft... The Department has significantly changed arrangements for logistics support for fast jets. The Department and industry previously carried out four levels of repair and overhaul on fast jets at multiple locations but has rationalised repair into two organisational structures: ‘forward repair’ is undertaken at each operational squadron; and the Department has rationalised the number of ‘depth repair’ locations to a single depth hub at which aircraft are maintained, repaired and overhauled.

In designing the repair processes and associated support at the depth hubs, the Department has applied Lean techniques to introduce more efficient repair processes, introducing ‘pulse lines’ for aircraft, engines and sub assemblies, similar to a motor car production line. Upgrade work has been integrated within the depth repair process utilising pulse lines, including the major upgrade programme for Harrier from GR7 to GR9 variants, and the Department has significantly extended the number of flying hours for Tornado and Harrier aircraft between scheduled maintenance.

There are promising signs that logistics transformation is becoming self-sustaining. The RAF is taking ownership of transformation, is adopting the Lean techniques pioneered by depth organisations, and the Defence Logistic Organisation’s Lean Teams have helped establish a culture of continuous improvement at station level.

The Tornado Integrated Project Team’s costs have reduced from £601 million in 2001–02 to £258 million in 2006–07. The cumulative savings over the period amount to £1.3 billion. The Department projects that the annual cost will fall further, to £250 million by 2010–11. The Harrier Integrated Project Team’s costs have reduced from £110 million in 2001–02 to £70 million in 2006–07, excluding the capital cost of the upgrade programme. The cumulative savings over the period amount to £109 million. The majority of the cost reductions have been achieved through working with industry to reform traditional contracts, as the Department prepared for and introduced the Harrier Joint Upgrade and Maintenance Programme in November 2004, and the Tornado Combined Maintenance and Upgrade pulse line for the Tornado GR4 in December 2005. Over the same period, the Department has maintained a broadly similar level of flying hours and the cost per flying hour has reduced for both aircraft fleets.”

All text taken directly from "*Transforming logistics support for fast jets*",
National Audit Office (UK), 17 July 2007

APPENDIX 4: APPROACH TO DEVELOPING SUPERBASE COST ESTIMATES

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Exhibit 117

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Terms of reference

Aims

3. The aims of the Audit are to:
 - (a) Advise Ministers on the efficiency and effectiveness of and future risks associated with the Defence budget; and
 - (b) Recommend to Ministers improved arrangements for managing the Defence budget

Scope of Audit

Section in report

4. The Audit, to encompass budget, funding and financial management, will:

- a) examine the state of the Defence budget and report on the following:

i) current funding levels	Chapter 2
budgeting, management and governance arrangements of the key business elements of the Defence budget,	Part B
in particular the “unapproved” and “approved” major capability plan,	Chapter 3, Chapter 4.1
workforce and personnel management,	Chapter 7
Australian Defence Force (ADF) preparedness,	Chapter 3
Information and Communication Technology (ICT),	Chapter 8
administrative support,	Chapter 7.3
base disposition and management;	Chapter 12

ii) the major cost drivers of each key Defence business element, including the outlook and risks associated with those drivers;	Chapter 1, Chapter 2.5
iii) the extent of any existing affordability risks including Net Personnel and Operating Costs (NPOC) associated with the Defence Capability Plan (DCP);	Chapter 4
iv) the potential for efficiency gains and reinvestment opportunities; and	Part C
v) lessons learned from managing the Defence budget since the 2000 Defence White Paper.	Chapter 2.3
Develop a cost model that will inform the basis for future budget discussions and the development of the 2008 Defence White Paper	Provided separately to the report. Referred to in Chapter 4
As capability scenarios in a draft 2008 White Paper are developed, assess the risks and pressures to the budget associated with elements of each as they evolve and report on:	
i) the budgetary implications of ideas emerging from the structures developed through the White Paper process;	Chapter 1
ii) options for a long term funding model for Defence; and	Chapter 2.4
iii) improvements to governance and decision making processes associated with the key business elements.	Part B

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Mr Matthew McKeon	Major General Craig Orme
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Air Marshall Geoffrey Shepherd	Mr Chris Wallace
Dr Jim Smith	Dr Ian Watt
Captain Mike Smith	Mr Paul Watson
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Mr Mark Sweeney	Professor Hugh White
Mr Brian Symons	Mr Shannon White
Dr Paul Taloni	Dr Ian Williams
Mr Guy Taylor	Mr Jon-Paul Williams
Vice Admiral Matt Tripovich	Mr Peter Williams
Mr Peter Wylie	Mr Domonic Zaal

Defence establishments visited

The following is the list of Defence establishments (and associated contractor facilities) visited by various members of the Audit team and external experts:

ASC shipyards, Adelaide
BAE shipyards, Henderson, WA
Defence Imagery and Geospatial Organisation, ACT
Defence Intelligence Organisation, ACT
Defence Signals Directorate, ACT
DNSDC Moorebank, Sydney
HMAS Cerberus, Victoria
HMAS Harman, ACT
HMAS Kuttabul (Fleet Base East), Sydney
HMAS Stirling, WA
MPAC CN, NSW
Puckapunyal, Victoria
RAAF Amberley, Qld
RAAF Darwin, NT
RAAF Richmond, NSW
RAAF Williamtown, NSW
Victoria Barracks, Melbourne
Wadsworth Barracks (Bandiana), Vic

Acronyms and abbreviations

Acronym	Detail
ACAT	Acquisition Category
ADF	Australian Defence Force
AIMS	Advanced Inventory Management System
AMCIP	Approved Major Capital Investment Program
AMS	Australian Military Strategy
ANAO	Australian National Audit Office
AOR	Acquisition Overview Report
APS	Australian Public Service
ASC	Australian Submarine Corporation
ASD	Aerospace Systems Division
AWD	Air Warfare Destroyer
	Defense Base Closure and Realignment Commission
BRAC	
CDG	Capability Development Group
CFO	Chief Finance Officer
CFOG	Chief Finance Officer Group
CIO	Chief Information Officer
CIOG	Chief Information Officer Group
COMSARM	Computer Systems Armaments
COSC	Chiefs of Service Committee
COTS	Commercial Off The Shelf
CPI	Consumer Price Index
DCIC	Defence Capability and Investment Committee
DCC	Defence Capability Committee
DCP	Defence Capability Plan
DCS	Defence Capability Strategy
DEMS	Defence Estate Management System
DIDS	Defence Integrated Delivery System
DMFP	Defence Management and Finance Plan
DMO	Defence Materiel Organisation
DNSDC	Defence National Storage and Distribution Centre
DPG	Defence Planning Guidance
DSG	Defence Support Group

Acronym	Detail
DSIR	Defence Strategic Investment Reserve
DSR	Demand Satisfaction Rating
DSTO	Defence Science and Technology Organisation
ESD	Electronic Warfare Systems Division
EMA	External Maintenance Availabilities
EO	Explosive Ordnance
EOQ	Economic Order Quantity
ERL	Extended Repair Line
FEG	Force Element Group
FC	Fundamental Inputs to Capability
FFG	Guided Missile Frigate
FOT	Force Option Testing
FSD	Force Structure Development
GRV	Gross Replacement Value
GSI	General Stores Inventory
ICT	Information and Communication Technology
IOC	Initial Operating Capability
IS&IP	Intelligence, Security & International Policy
IMS	Integrated Material Support
JLC	Joint Logistics Command
JLCR	Joint Logistics Companion Review
JLU	Joint Logistics Unit
JOC	Joint Operations Command
LHD	Landing Helicopter Dock Amphibious Ships
LSD	Land Systems Division
LOT	'Life of Type' Inventory
MSA	Material Sustainment Agreement
MOTS	Military Off The Shelf
MSD	Maritime Systems Division
NFGDP-IPD	Non Farm Gross Domestic Product Implicit Price Deflator
NPOC	Net People and Operating Costs
NPV	Net Present Value
OEM	Original Equipment Manufacturer
PBS	Portfolio Budget Statements
PM&C	Department of Prime Minister and Cabinet
POC	Personnel and Operating Costs
POs	Purchase orders
PPI	Producer Price Index
PSP	Professional Service Providers
PSPG	People Strategy and Policy Group

Acronym	Detail
RSQ	Reserve Stock Quantity
Sec/CDF	The Secretary of the Department of Defence and the Chief of the Defence Force
SLA	Service Level Agreement
SME	Specialised Military Equipment
SMI	'Slow moving' inventory
SPO	Systems Program Office
TAT	Turnaround Times
TLSA	Through Life Support Agreement
TRA	Technical Risk Assessment
UAV	Unmanned Aerial Vehicle
VCDF	Vice Chief of the Defence Force
WMS	Warehouse Management System
WPI	Wage Price Index

Glossary

Term	Explanation
Capability	The combination of military equipment, personnel, logistics support, training, resources, etc. that provides Defence with the ability to achieve its operational aims.
Capability Manager	A Capability Manager is responsible for raising, training and sustaining in-service capabilities through the coordination of fundamental inputs to capability. Capability Managers include the Service Chiefs, the Chief of Joint Operations and the Chief Information Officer.
Flow Line	A flow line or pulse line is a method of conducting maintenance operations where the total maintenance activity is divided into a series of equal packages, the aircraft or item is then physically moved or 'pulsed' from one pulse area within the hangar to the next
Force Element Group	A grouping of force elements with an appropriate command and control structure for a specified role or roles (for example, the Navy Submarine Group).
Force Option Testing	Is the method for testing the number and specification of capabilities/platforms required to achieve a military outcome
Garrison Support Services	Include a range of base support services including: grounds maintenance, hospitality, training area management, base security, transport, air support and fire-fighting and rescue services.
Infrastructure	Items owned, leased or otherwise under the control of Defence in support of activities on land and within buildings. Infrastructure includes items such as runways, roads, car parks, parade grounds, ovals, lighting, water, sewerage and other general service related items. It does not include land upon which, or within which, it is constructed or those fixed items integral to, and under, buildings.

Inventory	Inventory is comprised of consumable stores and supplies, fuel and explosive ordnance used in the delivery of Defence services. These are items which are consumed in normal use, lose their identity during periods of use by incorporation into, or attachment upon, another assembly, as a result of wear and tear, cannot be reconditioned because their design does not make it possible or their specific values do not justify it.
Lead Time	In an inventory context, refers to the total time elapsed between when a demand for an item of stock from a supplier is generated and when it is receipted into warehouse
Life of Type	Stock which is purchased in bulk because future supply of the product is not guaranteed
Materiel Acquisition Agreements	Agreements between Defence (CDG) and the Defence Materiel Organisation for the acquisition of both major and minor capital equipment.
Materiel Sustainment Agreements	Agreements between the Capability Managers and the Defence Materiel Organisation, they cover the sustainment of current capability, including services such as repairs, maintenance, fuel and explosive ordnance.
Mean Time Between Failure	Is the average time for which a component or piece of equipment remains serviceable before requiring additional maintenance
Platforms	Refers to air, land, surface or sub-surface assets that are discrete and taskable elements within the ADF.
PMKeyS (Personnel Management Key Solution)	Defence's personnel management system for the administration of ADF and civilian staff.
Professional service providers	Individuals with specialist skills contracted to fill a line position.
Q-Stores	Warehouses situated on Defence bases orientated towards the supply (and reverse logistics) of dependent Army units
Reliability Centred Maintenance	A process by which components are analyzed to determine characteristics of failure and develop maintenance plans, ensuring appropriate system reliability at acceptable levels of risk
Requirements Determination Tools	A computer program that provides a recommendation on appropriate stocking levels and ordering strategy, based upon stock historical demand profile and calculations of the economic order quantity

Reserve Stock Quantity	Stock which is specifically held in larger quantities than necessary to meet daily demand, to account for 'reserve' or 'warstock' requirements
Slow Moving Inventory	Inventory which is not requested frequently by end users. If inventory has negligible or no historical demand, a computer generated stock holding recommendation can suggest that no stock is held, however in many circumstances there is a practical 'risk orientated' rationale for holding some
Specialised Military Equipment	Items of a specific military nature and that are not available through the normal external market in their current form to other than government military purchasers. It includes the prime military equipment plus the direct support items associated with the equipment.
Standard Defence Supply System (SDSS)	A key information system for the financial management of inventory, general stores, repairable items and other assets associated with Defence's logistic capability.
System Program Office	The DMO organisational units that deliver sustainment support to platforms
Turnaround Time	Represents the total time between when a platform or piece of equipment is made unavailable due to maintenance requirements, and when it is made available again. Turnaround time therefore incorporates more than just time in maintenance; it also includes time taken to transport the object, or waiting for other critical inputs
Visual Management	Within lean, this refers to simple visual displays to represent or measure progress of work flows—this facilitates tracking of individual performance, but can also be used to 'balance' workloads more effectively to complete a task in the shortest possible time.