Chapter 4

Challenges for defence procurement

4.1 Defence projects for the acquisition of major capital equipment face an array of internal and external forces and influences that generate uncertainty about the extent to which they will meet their objectives.[1] High levels of unpredictability give rise to risk.[2] In this chapter, the committee examines the main challenges to the success of an acquisition project. It looks at the sources of uncertainty relating to the procurement of major capital equipment both in a world-wide context and more specifically in Australia. In this context, the committee looks at recent literature on risk management in defence procurement and its emphasis on the central role that such practices have in successful acquisition.

Large, complex and costly undertakings

4.2 The acquisition of major defence capital assets is of a scale and complexity that presents 'formidable and ever-increasing challenges'.[3] The recent UK Ministry of Defence's strategy for procurement reform noted that 'acquisition isn't easy'.

> It involves running large numbers of projects, many of them big and complex. Many are also at the leading edge of technology and innovation.[4]

4.3 Australia's experience is no exception. Indeed, according to a study by the Helmsman Institute, defence projects in Australia are of a level higher in complexity than projects in Australian organisations in other sectors.[5] It found further that defence projects are not only more complex but that generally Defence is managing a higher number of these complex projects during any given period compared to others in Australia:

> Most corporate and government organisations may have one or two 'Organisationally Complex' project[s] underway at any one time, and once

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1 All organisations face internal and external factors that pose a risk to their objectives. See Standards Australia/Standards New Zealand, *Risk Management—Principles and guidelines*, AS/NZS ISO 31000:2009, p. iv.

2 Paul Francis, Michael Golden and William Woods, Statement before the Subcommittee on Defense, Committee on Appropriations, House of Representatives, 'Defense Acquisitions: Managing Risk to Achieve Better Outcomes', 20 January 2010, p. 3.

3 Ministry of Defence (UK), *The Defence Strategy for Acquisition Reform*, Presented to Parliament by the Secretary of State for Defence, February 2010, Foreword by Lord Drayson.

4 Ministry of Defence (UK), *The Defence Strategy for Acquisition Reform*, Presented to Parliament by the Secretary of State for Defence, February 2010, paragraph 1.3, p. 6.

5 The DMO engaged the Helmsman Institute to assess the complexity of major Defence acquisitions. Helmsman evaluated 32 projects and delivered its final report in December 2009.

> every five to ten years a sector may have a 'Nationally Complex' level project.
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> Defence will have numerous 'Organisationally Complex' projects, several 'Nationally Complex' projects in any year, and may start one that is 'Nationally Significant' every ten to fifteen years.[6]

4.4 This degree of complexity is part of a continuing trend which is expected to increase. The study found:

> For some of the more complex projects, such as the Air Warfare Destroyer, LHD and the new Submarine, the projects are in early phases and will continue to be a focus of Defence over the next planning horizon.[7]

4.5 Thus, complexity is unavoidable and risk inherent in any major Defence acquisition project.[8] Technology is a key source of complexity.

Advances in technology and the importance of integration

4.6 The central role of technology and the constant quest for improvements pose significant challenges for defence procurement.[9] The 2009 White Paper enunciated the government's objective of developing and maintaining a capability edge. It stated that, 'giving our forces a capability advantage is both desirable and necessary if it prevents conflict, or allows us to prevail in conflict, and minimises our casualties and materiel losses'.[10] The paper reasoned that military modernisation, particularly in the Asia-Pacific region, and the proliferation of advanced military technologies will mean that Australia's ability to maintain a capability advantage will come under increasing pressure.[11] It recognised the need for Australia to maintain its necessary strategic capability advantage:

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6 The Helmsman Institute, *A Comparison of Project Complexity between Defence and other Sectors*, public release version, p. [3]. ANAO also referred to this study when it acknowledged that major Defence capital acquisitions can be significantly more complex than large civil projects.

7 The Helmsman Institute, *A Comparison of Project Complexity between Defence and other Sectors*, public release version, p. [6].

8 See also comments by Dr Andrew Davies, about risk being a constant factor in Defence procurement. Mark Thomson, Andrew Davies and Chris Jenkins, 'Three views of risk: Selecting and acquiring military equipment', ASPI Special Report, November 2011, issue 42, p. 5.

9 ibid. See for example, Tzvi Raz and David Hillson 'A Comparative Review of Risk Management Standards', *Risk Management: An International Journal,* 2005, vol 7, no. 4. p. 53.

10 Department of Defence, *Defending Australia in the Asia Pacific Century: Force 2030,* Defence White Paper 2009, paragraph 8.53.

11 Department of Defence, *Defending Australia in the Asia Pacific Century: Force 2030,* Defence White Paper 2009, paragraph 8.56.

> Superiority in combat and other forms of military operations will hinge on continual advances in military technology…[12]

4.7 Sonartech Atlas noted that the rate of change in technology can be an issue in itself when trying to determine complexity, maturity and risk.[13] Dr Richard Brabin-Smith also observed that science and technology in defence-relevant fields continues to develop, 'often at breath-taking speeds, especially in anything that is touched by electronics and computing'.[14] Witnesses also noted the importance to Australia's national interests of maintaining a technological advantage at least in the areas of capability that are central to Australia's security. According to Dr Brabin-Smith, if it is accepted that Australia's strategic circumstances will become more demanding, Australia needs 'to ensure that Defence is close (or at least closer) to the leading edge of what is technically or technologically achievable—both at the time of acquisition and through in-service upgrades'.[15]

4.8 As a consequence, Defence will look to acquire capabilities that provide a competitive edge by anticipating tomorrow's technology. Sometimes Defence try to do this all at once with multiple 'new' and untried elements rather than incremental change. Keeping pace with these rapid advances adds yet another layer of complexity for Defence and the uncertainty of future advances increases the risk of 'things going wrong'.

Integration

4.9 At a time of rapid advances in technology, newly acquired assets or upgrades are intended to keep the nation's capabilities at the forefront of such developments. In this environment, integration presents significant challenges. Incorporating or assimilating sophisticated equipment into larger systems increases the degree of complexity. Mr Bruce Green, seven years as Deputy Secretary of Defence (Acquisition) for New Zealand, noted that large expensive military capabilities are a mixture of complex systems that need to come together to deliver the desired outcome. He explained that they can take years 'to develop and mature to a point where there is confidence that on any given day it is going to function as required'.[16]

4.10 Defence cannot escape this trend toward increasing complexity. According to one industry representative, Australia is 'increasing the net centricity' or interconnectedness of its capabilities. He was of the view that Australia is 'rapidly heading down the path where almost everything on the battlefield must be properly

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12 Department of Defence, *Defending Australia in the Asia Pacific Century: Force 2030*, Defence White Paper 2009, paragraph 17.1.

13 *Submission 13*, pp. 4–5.

14 *Submission 2*, pp. 3–4.

15 *Submission 2*, p. 3.

16 *Submission 20*, pp. 4–5.

interfaced or integrated'.[17] He estimated that 39 other programs in the DCP are connected in some way to the LHD's capability ranging from helicopter through to communications, command and control, and medical equipment projects.[18] The need to have joined up capabilities of projects that are themselves highly sophisticated adds to the complexity and increases risk of problems emerging. A chartered professional engineer with over 30 years experience in project management observed:

> …increased risk is frequently reflected in the number of issues that arise when new command and support system capabilities, often associated with different platforms, are brought together and expected to work seamlessly. It is unresolved interface issues and the delays caused by the increased complexity of defence projects that have largely led to criticism of the management and governance in defence projects.[19]

4.11 DSTO concurred with the view that systems integration for defence projects—having them knit together smoothly—is a major challenge for both industry and Defence.[20] It should be noted, however, that on occasion Defence unnecessarily compounds things. The integration of MU90 on the AP3 was achievable as suitable interface 'boxes' existed. Defence decided to set its target being a joint integration of the Joint Air-to-Surface Standoff Missile (JASSM) as well as MU90. The delays to selecting JASSM and compounding impacts of having multiple suppliers and regulators involved made the task almost impossible and it was finally cancelled for the AP3.[21]

Changing geo-strategic environment

4.12 Advances in technology are also taking place in a world of shifting geo-political and strategic situations. For example, the 2009 White Paper stated:

> The ADF will be required to operate in an environment which is increasingly complex, as more potential adversaries will have access to a wider range of capabilities which are comparable to ours, or will be able to exploit vulnerabilities in ours.[22]

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17 *Committee Hansard*, in camera.

18 *Committee Hansard*, in camera.

19 Ed F. Blow, CPEng, Senior Associate and Managing Director Nielsen-Wurster Asia-Pacific, 'Managing Risks on Defence Projects Through the Use of CPM Scheduling–A Better Way', *Communiqué*, vol. 1.4, October 2006, http://www.nielsen-wurster.com/Email_Announcements/NW_Communique/NW_Communique_2006_OCT.html (accessed 2 February 2012).

20 Information conveyed during committee's visit to DSTO Edinburgh.

21 Private briefing.

22 Department of Defence, *Defending Australia in the Asia Pacific Century: Force 2030,* Defence White Paper 2009, paragraph 17.2.

4.13 The principal drafter of the White Paper, Mr Michael Pezzullo, explained that in preparing the paper, the authors had to be aware of change over time—strategic environment, fiscal circumstances and the nature of technology.[23] Dr Brabin-Smith similarly referred to the imponderables of potential changes to geo-strategic circumstances over which Australia itself has little direct control. Australia also has no influence over the way emerging technology might alter aspects of warfare.[24] In his view:

> These factors imply that, at least in some areas of defence capability, there will necessarily be greater technical and therefore acquisition risk: cost, schedule, and perhaps the level of capability that in practice proves to be achievable.[25]

4.14 Thus, Defence is required to make decisions about future acquisitions and the upgrades of existing assets without full knowledge of the threats or budgetary constraints it is likely to face. This uncertainty is yet another source of risk to the successful performance of a Defence major acquisition project. Dr Brabin-Smith argued that as a consequence of this uncertainty there is 'a clear need for a robust and thorough approach to risk management: at the conceptual phase; during procurement; and in through-life support'.[26]

Conspiracy of optimism

4.15 In this environment, defence organisations, with an eye to future developments and striving to maintain a technological edge, are drawn naturally to the latest in technology and to what might be possible. Mr Bruce Green suggested that contractors can at times exaggerate their ability to deliver complex systems. [27]

4.16 Unwarranted confidence in the ability of industry to produce a capability is not, however, confined to the defence industry. Mr Green observed that an acquisition entity, without understanding the risks, can allow 'good ideas' for capability enhancement to become part of the procurement.[28] In this regard, Mr King referred to a culture in the whole Western world, whereby defence organisations and the nation want the latest capability they can get, as soon as possible and at the least expense. He

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23 *Committee Hansard*, Estimates, 3 June 2009, p. 105. See also Department of Defence, *Defending Australia in the Asia Pacific Century: Force 2030*, Defence White Paper 2009, paragraph. 1.11.

24 Richard Brabin-Smith, attachment to *Submission 2*, 'Defence and the Need for Independent Policy Analysis', *Security Challenges*, vol. 6, no. 2 (Winter 2010), p. 10.

25 *Submission 2*, p. 3.

26 *Submission 2*, p. 3.

27 *Submission 20*, p. 4. See also, Mark Thomson, Andrew Davies and Chris Jenkins, 'Three views of risk: Selecting and acquiring military equipment', ASPI Special Report, November 2011, issue 42, p. 10.

28 *Submission 20*, p. 4.

explained that industry sometimes inadvertently feeds that desire by suggesting that very advanced technologies may come sooner than is really practical—a situation described as a conspiracy of optimism.[29]

4.17 The temptation to overreach may be further encouraged by the predisposition to 'gold-plate' the operational requirements.[30] The Australian Association for Maritime Affairs attributed this tendency to the view that 'there probably won't be another similar building program for up to 20 years'.[31] Australia is not spared from this over confidence in industry's ability to deliver unproven capability and Mr King stated that 'we need to do as much as we can to stop it'.[32]

4.18 There are numerous safeguards against over optimism including having suitably qualified and experienced people critically analyse a proposed solution and identify risks associated with its acquisition. Another measure is to engage experienced project hardened individuals to review a project at critical stages of its development. These are discussed later in the report.

Long term ventures and extended timeframes

4.19 Moreover, decisions about these highly complex acquisition projects take place not only in a dynamic and uncertain technical and strategic environment but over an extended period. The time it takes from identifying a capability need or deficiency to when a decision is made on procurement and actual delivery spans many years.[33] As an example, Defence referred to project SEA 4000—Air Warfare Destroyer worth over $8 billion—which took Defence around six years to develop the proposal.

4.20 In an age where technology is constantly changing, this long-term process, from identifying a capability need to developing and delivering it, means that science and technology priorities may no longer be current at the time of completion. Babcock stated that, given the complexity of defence projects, it is inevitable that definition of

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29 See also *Committee Hansard*, 5 October 2011, p. 35.

30 See for example, Mark Thomson, Andrew Davies and Chris Jenkins, 'Three views of risk: Selecting and acquiring military equipment', ASPI Special Report, November 2011, issue 42, p. 10.

31 *Submission 17*, p. 6. Two researchers looking at the UK's DoD also noted that 'an underlying assumption or a corporate conspiracy of optimism exists that the largest projects, either public or private, will not be cancelled despite poor project performance'. Young Hoon Kwak and Brian Smith, 'Managing risks in mega defense acquisition projects: Performance, policy, and opportunities', *ScienceDirect*, International Journal of Project Management, vol. 27 (2009), p. 819.

32 Joint Committee of Public Accounts and Audit, Defence major projects report, *Committee Hansard*, 28 February 2011, p. 11 and Foreign Affairs, Defence and Trade References Committee, Naval shipbuilding in Australia, *Committee Hansard*, 18 August 2006, pp. 5—51.

33 Department of Defence, *Defending Australia in the Asia Pacific Century: Force 2030*, Defence White Paper 2009, paragraph 1.3.

the contract deliverables will evolve over the project's duration.[34] In this regard, another company, Sonartech Atlas, cited changes in computer software which can have substantial effects on procurement outputs and outcomes over longer term schedules. It noted:

> When considered against the 10 year procurement lifecycle, the underlying technology may have undergone four possibly five iterations, from the time the project was included in the DCP up until the Government approves it at 2nd Pass, let alone introduction into service.[35]

4.21 While in many cases advances in technology warrant changes to initial plans, there is also the increased risk of 'scope creep'. For example, Mr Green noted that a contractor or the military may suggest 'some new and emerging technology that may be a useful enhancement to the capability'. In his view, sometimes the change may be 'unavoidable' or simply a case where 'a component of a system may be a new model with enhanced performance'. He suggested that in this situation there are risks 'especially if the new model has not been fully tested or integrated into like capabilities'.[36]

4.22 ANAO also noted the extended timeframe for procurement of major Defence capital equipment projects and the uncertainty generated by reforms that are implemented after a project has started. It cited the Lightweight Torpedo project which began just after the 1997 Defence Efficiency Review and was managed by the Defence Acquisition Organisation and then its successor, DMO. The project's management and review arrangements passed through the formation of Systems Program Offices (SPOs) and different phases of the project were subject to different approval processes, the most recent phases passing through the post-Kinnaird Review strengthened two-pass approval process.[37]

4.23 Sonartech Atlas explained that longer schedules for acquisition can have a marked influence on the efficiency and effectiveness of the procurement activities, or 'more precisely the longer the exposure the greater the likelihood of an issue'.[38] The long lead time for complex projects also has implications for staff continuity with extended project schedules inevitably resulting in staff turnover which can disrupt the project's progression and, in some cases, its direction.[39]

4.24 In this context of timeframes, defence organisations must also consider the through life operation and sustainment of an acquisition. The Australian Association for Maritime Affairs noted that an operational capability that has taken many years to

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34 *Submission 15*, p. [1].

35 *Submission 13*, pp. 4–5.

36 Mr Bruce Green, *Submission 20*, p. 5.

37 *Submission 22*, paragraph 10.

38 *Submission 13*, p. 2.

39 *Submission 13*, p. 3.

deliver may then have to remain in service for a further 20-30 years. It observed further that throughout this period 'the surrounding operational environment continues to evolve'. The Association also pointed out that government consideration takes place in a changing domestic political, foreign policy and economic environment where scientific and technological developments continue at a rapid pace.[40]

4.25 Clearly, as the length of an acquisition period grows the more difficult it can be to define and manage the procurement activities. Rapid advances in technology, staff turnover, reforms to the procurement process and shifting government policy and funding priorities add to the complexity of defence acquisition. There are ways of managing these extended timeframes such as having and adhering to specified timelines and striving for incremental increases in capability with lower complexity, risk and cost.

Self-sufficiency for Australia as a medium sized country

4.26 An important consideration that relates to Australia's security interests is the extent to which the nation should be self-reliant in providing for its own defence capabilities. The 2009 White Paper recognised that total self-sufficiency in defence industries would be impractical for a state the size of Australia. The government, however, has stated its commitment to ensuring that certain strategic capabilities remain resident in Australia.[41] Thus, not only does Australia seek to be at the forefront of technology but must decide whether it wants to be self sufficient in the design, or build or maintenance and upgrade of a particular capability. The White Paper stated that in the current environment, 'Australia's self-reliant scientific and technological capabilities will become a relatively more critical element of our strategic capability advantage…'[42]

4.27 A critical and important decision for government is to identify the areas in which it wants the country to be self-reliant. In its report on Naval shipbuilding and repair, the committee noted the challenges for Australia in endeavouring to reconcile its desire for self-sufficiency in areas deemed to be a national security priority with the practical limitations imposed by cost and technology.[43] Furthermore, the Helmsman

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40 *Submission 17*, pp. 2–3. See also Richard Brabin-Smith, 'Defence and the Need for Independent Policy Analysis', *Security Challenges*, vol. 6, no. 2 (Winter 2010), pp. 10, attachment to *Submission 2*.

41 Department of Defence, *Defending Australia in the Asia Pacific Century: Force 2030*, Defence White Paper 2009, paragraph 16.20.

42 Department of Defence, *Defending Australia in the Asia Pacific Century: Force 2030*, Defence White Paper 2009, paragraph 17.4.

43 Standing Committee on Foreign Affairs, Defence and Trade, *Blue water ships: consolidating past achievements*, December 2006, paragraphs 12.28–12.30. In this report, the committee considered the range of views about the connection between the need to construct a platform in Australia and the acquisition of the necessary knowledge, skills, experience and resources to support it throughout its life.

Institute referred to the government's policy on local manufacture. It noted that, in order to deliver the capability platform, many projects create local manufacturing capability which increases project complexity, in many cases 'quite significantly'.[44] The challenge then is for government to ensure that Australia with its small defence industry and limited budget has, at hand and in country, the skills and resources deemed essential to secure the national interest. The underestimation of industry's capacity in the Melbourne shipyards for the AWD is such an example, as is the predicted skills needed for the new submarines (see paragraph 13.7–13.10).

Marketplace developments

4.28 Largely outside Defence's control, the global defence market is another source of risk to a defence acquisition program. The increasing demands for improved capability at an affordable cost have produced dramatic shifts in the industry. For example, in many maritime nations, there has been a trend over many years towards consolidation from a larger industrial base with shipbuilders amalgamating to a few in number. The same cost pressures have resulted in increasing mutual interdependence among prime companies and also among major sub-prime contractors.[45] The committee found in 2006 that:

> This trend toward business consolidations, partnerships and alliances cuts across industries and national borders as countries are finding that, especially with highly complex systems, they cannot be self-sufficient in all aspects of a ship's design and construction.[46]

4.29 In its submission, Defence noted that its procurement takes place in a constrained marketplace which 'is changing in important ways that will impact future equipment acquisitions'. It explained:

> Australia's major allies are increasingly developing single lines of development for complex platforms through spiral acquisition processes that require very early Australian engagement if our specific needs are to be taken into account. Highly complex and integrated weapons systems such as the F-35 fighter aircraft cannot be purchased and then developed to suit Australian needs within reasonable cost or risk parameters and there is no other suitable fifth generation fighter to choose from. While providing opportunities for Defence to be involved in the early stages of major new allied capabilities, this type of international acquisition process limits choice, and limits our ability to influence cost and the timing of equipment delivery.[47]

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44 The Helmsman Institute, *A Comparison of Project Complexity between Defence and other Sectors*, public release version, [p. 10].

45 Standing Committee on Foreign Affairs, Defence and Trade, *Blue water ships: consolidating past achievements*, December 2006, paragraphs 2.9–2.12.

46 Standing Committee on Foreign Affairs, Defence and Trade, *Blue water ships: consolidating past achievements*, December 2006, paragraph 2.12.

47 *Submission 21*, p. 5.

4.30 As mentioned above, this situation is compounded by 'substantial consolidation in the global defence industrial base since the Cold War'. Defence observed that as the majority of Australian defence companies are subsidiaries of major foreign defence suppliers, Australia's defence industrial base is caught up in this international trend.[48]

4.31 These developments create significant challenges especially for Defence's ability to retain skill sets required to be a smart customer.

Managing risk

4.32 Overall, defence acquisition is informed by a complex and changing strategic environment with key decision-makers keeping an ever-watchful eye on likely future developments.[49] This dynamic context, coupled with acquisition projects that span lengthy timescales, means that at the time a capability enters into service, it may no longer meet strategic imperatives.[50] Moreover, the current environment continues to present major difficulties for defence procurement—evolving requirements, increased emphasis on systems integration, globalisation, prolonged life cycles and rapid advances in technology.[51] Drawing together a number of the factors that can influence the performance of a defence acquisition project, the Helmsman Institute found that given the trends that underlie the current complexity; it would 'comfortably predict that the future projects will increase in complexity'.[52]

48 *Submission 21*, p. 6.

49 See for example, Bernard Gray, *Review of Acquisition for the Secretary of State for Defence*, October 2009, p. 64.

50 See for example, Bernard Gray, *Review of Acquisition for the Secretary of State for Defence*, October 2009, p. 66. A 2006 review by the Canadian Chief Review Services noted that the acquisition of capital equipment by the Department of National Defence, Canada, took in the order of 15 years–'a fact that has not changed in over 30 years despite continuous modifications to the acquisition system'. It noted further that Canada's allies also take the same amount of time. Chief Review Services, Canada, *Perspectives on the Capital Equipment Acquisition Process*, June 2006, no. 1258-150, p. i.

51 See for example, Fomin, Pavel, Mazzuchi, Thomas A. Dr; and Sarkani, Shahram Dr, 'Incorporating Maturity Assessment into Quality Functional Deployment for Improved Decision Support Analysis, Risk Management, and Defense Acquisition', *Proceedings of the World Congress on Engineering and Computer Science 2009*, vol II, WCECS 2009, October 20–22, 2009, San Francisco.

52 The Helmsman Institute, *A Comparison of Project Complexity between Defence and other Sectors*, public release version, p. [6].

Self-inflicted complexity

4.33 Clearly, there are many sources of often-unpredictable change that generate significant risks, particularly for large and complex defence acquisitions.[53] Indeed, the risks to the successful procurement of major defence assets are considerable and wide-ranging. Some countries, however, have recognised that projects for acquiring major capital equipment not only fall short in meeting those challenges but that their own practices add to or compound the problems. Unrealistic requirements, a lack of early systems engineering, acceptance of unreliable estimates based on overly optimistic assumptions about costs and timelines and the failure to commit adequate funding and poor contract management all contribute to poor outcomes.[54] A breakdown in just one area of a major capital procurement can have serious implications for the success of the project. The US Government Accountability Office (GAO) noted that unwarranted risks can undermine an acquisition in a number of ways. It found:

> A poorly conceived acquisition is doomed from the outset, while a poor contract selection or an inadequate workforce can weaken the government's ability to manage and oversee the acquisition. Therein lies the challenge: it takes many things for an acquisition to succeed, while only one source of unmanaged risk can cause a poor outcome.[55]

4.34 Many defence organisations worldwide acknowledge their own failings in their major acquisition projects. For example, the Canadian Auditor General found that for two major projects—the purchase of the Cyclone and the Chinook helicopters—National Defence had underestimated and understated the complexity and developmental nature of the intended aircraft. Further it had not developed full life-cycle plans and costs in a complete or timely way and had not fully complied with the oversight and approval framework established in its Project Approval Guide.[56] The United States (US) has also raised concerns about its procurement performance. The 2010 US *Quadrennial Defense Review Report* recognised that shortcomings in Defence's acquisition process placed the Department 'at risk of being unable to deliver the capabilities it needs, when it needs them, and at acceptable costs'.[57] Noting the importance of 'a healthy acquisition process', it stated:

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53 See for example, Rita Creel and Bob Ellison, *System-of-Systems Influences on Acquisition Strategy Development*, Carnegie Mellon University, 2008, https://buildsecurityin.us-cert.gov/bsi/articles/best-practices/acquisition/981-BSI.html (accessed 4 January 2012).

54 Paul Francis, Michael Golden and William Woods, Statement before the Subcommittee on Defense, Committee on Appropriations, House of Representatives, 'Defense Acquisitions: Managing Risk to Achieve Better Outcomes', 20 January 2010, p. 2.

55 Paul Francis, Michael Golden and William Woods, Statement before the Subcommittee on Defense, Committee on Appropriations, House of Representatives, 'Defense Acquisitions: Managing Risk to Achieve Better Outcomes', 20 January 2010, pp. 1–2.

56 Office of the Auditor General of Canada, *Report of the Auditor General of Canada to the House of Commons, Chapter 6 Acquisition of Military Helicopters*, 2010, pp. 2–3.

57 United States of America, Department of Defense, *Quadrennial Defense Review Report*, February 2010, p. 93.

> The Department and the nation can no longer afford the quixotic pursuit of high-tech perfection that incurs unacceptable cost and risk. Nor can the Department afford to chase requirements that shift or continue to increase throughout a program's life cycle.[58]
>
> …we must not embark on programs with artificially low cost estimates, immature designs and technology, fluid requirements, excessive technical authority certification requirements, unstable budgets, and unsustainable procurement profiles.[59]

4.35 The US Department of Defense noted that over recent decades and across multiple administrations, the Pentagon's acquisition system had developed major problems that hampered its ability to acquire critical platforms and capabilities in a timely manner and at acceptable cost. They include:

- the requirements for new systems are too often set at the far limit of current technological boundaries;
- the Pentagon's acquisition workforce had been allowed to atrophy, exacerbating a decline in the critical skills necessary for effective oversight; and
- the system of defining requirements and developing capability too often encourages reliance on overly optimistic cost estimates.[60]

4.36 In many ways, the Australian Defence organisation is susceptible to the same shortcomings as its counterparts.[61] The decision to integrate the MU90 torpedo onto the AP-3 Orion combined with JASSM integration is a notable example. The Helmsman Institute found that Australia's defence's projects were not only highly complex but a number of them indicated that 'Australia had taken on development challenges for solutions that more other defence forces had either given up on or had failed to deliver'.[62] The report found:

> While most observers interviewed understood the need to invest in solutions that would stand the test of time (in some cases a considerable life span), a number of projects raised concerns that the complexity was so high that the project was placed at risk of never delivering the required

58 United States of America, Department of Defense, *Quadrennial Defense Review Report*, February 2010, p. 76.

59 United States of America, Department of Defense, *Quadrennial Defense Review Report*, February 2010, p. 93.

60 United States of America, Department of Defense, *Quadrennial Defense Review Report*, February 2010, pp. 75–77.

61 The new submarine project is such an example, see chapter 3, paragraphs 3.2–3.5.

62 The Helmsman Institute, *A Comparison of Project Complexity between Defence and other Sectors*, public release version, p. [10].

> capability, and failing to work. Some projects had to re-architect the solution midway into development at considerable expense and delay.[63]

4.37 Indeed, in chapter 2 the committee detailed many of Defence's projects that have experienced self-inflicted problems—inadequate planning and scoping of the project, failure to appreciate the developmental nature of the project or complexity with integration, poor project management, underestimation of defence industry capacity, lack of skilled workforce, inadequate contracting arrangements, insufficient consideration of through-life support, and a breakdown in the relationship between the relevant service, DMO and the contractors. Organisationally, all these factors are fundamentally important. As one witness observed, 'In short, Defence/DMO have been able to keep Navy tied up in port to an extent not achieved by any enemy force'.[64]

4.38 The recurring nature of the shortcomings is particularly concerning and suggests that lessons from previous troubled projects are yet to be learnt and that inadequate risk management may be at the heart of the problem. In the following chapters, the committee seeks to understand the factors behind poor performance and what can be done to change behaviour rather than process. To do so, the committee explores the fundamental components underpinning good governance and sound decision-making—risk management, adherence to policy and guidelines, accountability, contestability and the skills and experience of those engaged in defence acquisition including the quality of their analysis.

63 The Helmsman Institute, *A Comparison of Project Complexity between Defence and other Sectors*, public release version, p. [10].

64 Air Commodore (retired) Bushell, *Submission 3*, p. 8.