

Chapter 4

AWD—Project of concern

4.1 When announcing the limited tender for the new supply ships, the Minister for Defence made a direct link between the decision to restrict the tender to two overseas shipbuilders and the productivity of local shipyards. Indeed, he cited the 'current low productivity of shipbuilders involved in the AWD program and value for money considerations' as two of three reasons for proceeding with the limited tender.¹ At that time, he made his meaning clear when he said 'Australian industry must be internationally competitive and meet international productivity benchmarks'.² References to poor productivity in Australian shipyards also cast a shadow over an Australian build for the future submarine and, indeed, for the future of Australia's naval shipbuilding industry.

4.2 There is no doubt that a number of Australia's major naval ship acquisitions have experienced serious problems leading to cost and schedule overruns, many of which should have been avoided, or at the very least anticipated and managed better.³ Indeed, both the sustainment of the Collins Class Submarines (added November 2008) and AWD (added June 2014) are on the projects of concern list. Projects of concern are those acquisition projects or sustainment activities identified as having very significant risks or issues relating to schedule, cost and capability.⁴ In this chapter, the committee's main focus is on the performance and productivity of Australian naval shipyards in particular on the AWDs. But firstly, the committee provides a brief update on productivity improvements in the Collins Class submarine sustainment program.

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- 1 'Minister for Defence—Boosting Australia's maritime capabilities', Media Release, 6 June 2014, <http://www.minister.defence.gov.au/2014/06/06/minister-for-defence-boosting-australias-maritime-capabilities/> (accessed 4 August 2014).
 - 2 'Minister for Defence—Transcript—Naval shipbuilding announcement, CEA Technologies, Canberra', 6 June 2014, p. 6, <http://www.minister.defence.gov.au/2014/06/06/minister-for-defence-transcript-naval-shipbuilding-announcement/> (accessed 4 August 2014).
 - 3 The Senate Foreign Affairs, Defence and Trade References Committee chronicled the history of poor performance of a number of Defence's major acquisitions. See Foreign Affairs, Defence and Trade References Committee, *Procurement procedures for Defence capital projects*, Final Report, August 2012, chapter 2.
 - 4 Department of Defence, Departmental Procurement Policy Instruction NO 14/2011, 23 August 2011, http://www.defence.gov.au/dmo/multimedia/dppi_14_11-9-3995.pdf (accessed 1 May 2015). It notes that 'Where a project has been identified through the Early Indicators and Warnings framework and has undergone a diagnostic Gate Review, a submission may be made to Government recommending that the project be listed as a Project of Concern. The decision to identify an acquisition project or sustainment activity as a Project of Concern is a decision made by Government'.

4.3 In its second report, the committee noted the poor performance record of the sustainment program for the Collins Class submarine but also the significant improvements that have been made. Evidence taken since then confirms that improvements in this program continue. According to Mr Andy Keough, ASC:

Prior to Coles [Mr John Coles undertook a review of the sustainment of the Collins Class] there were concerns about productivity and outcomes of submarine performance. Even before Coles came in there was a lot of work done. We engaged with DMO to bring in an expert consultant to assist us. It was jointly funded by ASC and the DMO. He shone a light on some of the issues we had there, particularly in terms of low labour utilisation. From that point of time seeing those problems, we then started addressing some of those issues through clarifying the roles and responsibilities, and Coles then built on the back of that through further changes to the roles and responsibilities and setting up an enterprise arrangement where the Navy, ASC and DMO came together under the submarine enterprise to improve the outcomes of the program.

...

Coles in his report in March 2014 noted the remarkable turnaround. We are on track to obtain what he defined as being world-class benchmark performance in the 2017 time frame. The major enabler for that was a change to the maintenance routines for the submarines. We moved from a shorter operating period to now a 10-year operating cycle with a two-year deep-level maintenance activity. Prior to Coles those deep-level maintenance activities had been greater than three years, and now we are halfway through delivering the first submarine under that new operating regime for a two-year time line. We are currently just ahead of schedule on that.⁵

4.4 The committee also mentioned in its second report some of the changed work practices and investment in infrastructure that has produced much improved performances. Indeed, Mr Keough stated that much of the 'remarkable turnaround' with the program being on track to achieve world-class benchmarks in 2017 had been achieved through capital investment.⁶

4.5 The construction of the maintenance tower was one of the most significant innovations. This infrastructure has enabled the deep level maintenance of the Collins to be done much more effectively and much more quickly.⁷ According to Mr Keough the level of investment for the maintenance support tower and the diesel test facility was in the order of \$20 million.⁸ ASC has also relied on engineering delegations, as Mr Keough explained:

5 *Proof Committee Hansard*, 14 April 2015, p. 7.

6 *Proof Committee Hansard*, 14 April 2015, p. 9.

7 *Proof Committee Hansard*, 14 April 2015, p. 13.

8 *Proof Committee Hansard*, 14 April 2015, p. 13.

We have done an engineering review of the maintenance periodicity, which in some cases meant that we were doing a job every 12 months, and we have showed through analysis that we can safely extend the period for those tasks from 12 months to 15 months. The 24-month tasks we have shifted to 30 months. The 60-month tasks we have moved to 72 months. They are things that do not relate to people's idea of productivity, but ultimately they allow us to optimise the maintenance whilst maintaining the reliability and the capability of the submarines and achieving better outcomes for the program.⁹

4.6 Without doubt, these reforms have produced significant improvements in productivity in the sustainment of the Collins Class submarine. In recent months, however, attention has been on the performance of the AWD project. In the following section, the committee provides some context taken from its first report before considering recent developments with the AWDs.

AWDs

4.7 The AWD project is being delivered through an alliance-based contracting arrangement between ASC AWD Shipbuilder Pty Ltd, Raytheon Australia Pty Ltd and the government, represented by the DMO. This project—to acquire three Hobart AWDs and their support system—is one of the largest Defence procurement projects in Australia and is intended to form a critical element of the ADF's joint air warfare defence capability. It received first pass approval in 2005 and second pass in 2007. The three ships are being built in Australia.

4.8 In 2010, signs of trouble surfaced in this key acquisition program. At this time, difficulties were encountered in relation to the engineering and construction of some of the first AWD hull blocks. To address this problem, block work was reallocated between BAE, Forgacs and Navantia and the Alliance Operational Schedule was amended. On 6 September 2012, following stakeholder review and support for the time-line extension and resource considerations, the then Minister for Defence announced that the AWD schedule would be re-baselined.¹⁰ This measure would extend the period of work for the Alliance and its partners, including the shipyards in Adelaide (ASC) and Newcastle (Forgacs). According to the minister the revised project plan would:

- reduce peak demand on project critical resources and facilities and project risk;
- not increase the cost of the project nor result in the loss of any jobs; and

9 *Proof Committee Hansard*, 14 April 2015, p. 13.

10 Australian National Audit Office, Report No. 12 2013–14, *2012–13 Major Projects Report*, December 2013, p. 153, http://www.anao.gov.au/~media/Files/Audit%20Reports/2013%202014/Assurance%20Report%2012/AssuranceReport-2013-2014_12.pdf (accessed 6 August 2014).

- very importantly, help retain skills in the naval shipbuilding industry.¹¹

4.9 The re-baselined construction schedule was intended to help the Navy reduce the demands and risks associated with accepting into service two major capabilities (LHDs and the AWD) at around the same time.¹²

4.10 It is worth noting that at this time one of the challenges for the contractor was starting production for the AWDs from a cold start and with a reduced workforce. Further, the Melbourne BAE Systems shipyard was stretched, working on two major projects at the same time—steel blocks for the AWDs and the superstructure and integration of the LHDs.¹³

4.11 Mr William Saltzer, BAE Systems, referred not only to the significant challenge presented by the cold start, but problems with the drawings from Navantia, which were produced to build ships in Spain. Firstly, he explained what the cold start meant in practice:

...in Adelaide you had a brand new shipyard that was created to produce AWDs and a workforce to be built. They had no previous history or experience in building warships in Adelaide, so they had to go at it from a cold start. In Williamstown, the last Anzac frigate was delivered in the early 2000s—I think it was 2004. We did not start building AWD blocks and LHD blocks until 2010. In the interim, we had only a couple of small patrol boats to build and our workforce went down to a very small number, so when it came to the amount of work we had to do on AWD and LHD, we had to ramp back up to about 1,300 people. That was the cold start concept. It means you have to bring in and rejuvenate a workforce, retrain people, get everybody used to working on ships again, get your planning processes down and go through a whole regeneration of the industry, essentially.¹⁴

4.12 Secondly, Mr Saltzer pointed to the difficulties encountered with the transfer of knowledge from the Spanish shipyard to Australia. He noted that drawings in any

11 'Minister for Defence, Minister for Defence Materiel and Minister for Finance and Deregulation—Joint Media Release—Air Warfare Destroyer update', 6 September 2012, <http://www.minister.defence.gov.au/2012/09/06/minister-for-defence-and-minister-for-defence-materiel-joint-media-release-air-warfare-destroyer-update-2/> (accessed 4 August 2014).

12 'Minister for Defence, Minister for Defence Materiel and Minister for Finance and Deregulation—Joint Media Release—Air Warfare Destroyer update', 6 September 2012. The re-baselined schedule meant that the delivery dates for the ships would be for HMAS *Hobart* (AWD01)—March 2016; HMAS *Brisbane* (AWD02)—September 2017 and HMAS *Sydney* (AWD03)—March 2019.

13 The Hon. Stephen Smith MP, Minister for Defence, Media Release, 'Changes to Air Warfare Destroyer Construction Program', MIN663/11, 26 May 2011, <http://www.defence.gov.au/minister/Smithhttp.cfm?CurrentId=11862> (accessed 2 January 2012). The minister stated clearly, 'The Melbourne BAE Systems shipyard remains stretched, working on two major projects at the same time—steel blocks for the Air Warfare Destroyers and the superstructure and integration of the Landing Helicopter Dock Ships'.

14 *Proof Committee Hansard*, 14 April 2015, p. 22.

shipbuilding program have to be customised, to be workable, according to the build strategy, the equipment and the levels of training and knowledge of the workforce that is going to actually build them. In his view:

One of the mistakes in AWD was that it was not built in to the very front end of the program—to have that kind of transfer of technology, that transfer of knowledge capability, built into the front end of the contract. If you are not careful, you are going to do the same thing on submarines and you are going to do the same thing on future frigate. You have got to get the shipyards in Australia that are going to be involved with those ships throughout their life involved from day one in the design, in the production and into the in-service support.¹⁵

4.13 Concerns about the project, however, did not abate.¹⁶ On 18 December 2013, the Minister for Finance announced that, since the Coalition had assumed government, he had received detailed briefings from key stakeholders associated with the AWD program. In his assessment, there were 'clearly issues associated with this important program' and he foreshadowed the establishment of an independent review.¹⁷ The review was intended to give government an independent perspective on all the issues with the program and to make some recommendations on the best way to proceed.¹⁸

4.14 On 25 February 2014, the Minister announced the appointment of former United States Secretary of Navy, Professor Don Winter, and former Transfield chief, Dr John White, to conduct jointly the independent review of the AWD program.¹⁹

4.15 While this review was underway, the Australian National Audit Office (ANAO) released its performance audit report on 6 March 2014 on the AWDs. The report, which was highly critical of the performance of the project, drew widespread

15 *Proof Committee Hansard*, 14 April 2015, pp. 22–23.

16 See for example, Sarah Martin, *The Australian*, 'Fears of further delays to the nation's biggest defence project', September 18, 2013, <http://www.theaustralian.com.au/national-affairs/policy/fears-of-further-delays-to-the-nations-biggest-defence-project/story-e6frg8yo-1226721296385> (accessed 6 August 2014).

17 'Minister for Finance and Minister for Defence—Coalition committed to the efficient delivery of the Air Warfare Destroyer programme', 18 December 2013, <http://www.minister.defence.gov.au/2013/12/18/minister-for-finance-and-minister-for-defence-coalition-committed-to-the-efficient-delivery-of-the-air-warfare-destroyer-programme/> (accessed 4 August 2014).

18 'Minister for Finance and Minister for Defence—Joint Press Conference—Review of the Air Warfare Destroyer program', 4 June 2014, p. 1, <http://www.minister.defence.gov.au/2014/06/04/minister-for-defence-and-minister-for-finance-joint-press-conference-review-of-the-air-warfare-destroyer-program/> (accessed 4 August 2014).

19 Senator the Hon. Mathias Cormann, Minister for Finance and Senator the Hon. David Johnston, Minister for Defence, Joint Media Release, 'Review of the Air Warfare Destroyer Program', MC 6/14, 25 February 2014, http://www.financeminister.gov.au/media/2014/mr_2014-06.html (accessed 4 August 2014).

media and industry attention.²⁰ It noted cost overruns and delays in shipbuilding aspects of the program. In respect of costs, the ANAO found that the current estimated cost in excess of the Target Cost Estimate stood at \$302 million. Moreover, the ANAO suggested that this estimate should be treated with caution and the cost increase was 'likely to be significantly greater'.²¹ Turning to delays, the ANAO reported:

The delivery schedule for the three DDGs was revised in September 2012 and is now some 15 to 21 months later than the original delivery schedule (for ship 1 to 3).²²

4.16 On 4 June 2014, the Minister for Finance and the Minister for Defence released a one-page summary of the findings of the Winter report, which listed the causes for cost and schedule growth, identified options for improvement and one key recommendation.²³

4.17 In the joint media release accompanying the publication of this summary, the Minister for Finance referred to the Auditor General's finding of a \$300 million cost overrun with the AWD project. The minister announced that the government would implement remedial action over the coming months designed to get the AWD program back on track. In the minister's words, the implementation of the proposed reform strategy would ensure that the AWD program 'delivers this vital defence capability

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- 20 See for example, Professional Engineers Australia, 'Minister must boost engineering capacity on the AWD and SEA1000 projects to stop cost blowouts', <http://www.professionalsaustralia.org.au/groups/engineers/advocacy/?id=3060> and Engineers Australia, 'Audit critical of Air Warfare Destroyer project', 6 March 2014, <http://www.engineersaustralia.org.au/news/audit-critical-air-warfare-destroyer-project> and HIS Jane's Weekly, 'Australian government auditor slams AWD programme management', 5 March 2014, <http://www.janes.com/article/34998/australian-government-auditor-slams-awd-programme-management> and *Financial Review*, 'Audit Slams \$8bn warship project', 6 March 2014, http://www.afr.com/p/national/audits_slams_bn_warship_project_KBbPO0n4lw02A79hEUQW-DN (accessed 6 August 2014).
- 21 ANAO, Audit Report No.22 2013–14, Performance Audit, *Air Warfare Destroyer Program*, Department of Defence, Defence Materiel Organisation, Australian National Audit Office, paragraphs 23 and 24, http://www.anao.gov.au/~media/Files/Audit%20Reports/2013%202014/Audit%20Report%2022/AuditReport_2013-2014_22.pdf (accessed 6 August 2014).
- 22 ANAO, Audit Report No.22 2013–14, Performance Audit, *Air Warfare Destroyer Program*, Department of Defence, Defence Materiel Organisation, Australian National Audit Office, paragraphs 23 and 24.
- 23 Media Release, Senator the Hon Mathias Cormann, Minister for Finance and Senator the Hon David Johnston, Minister for Defence, 'Putting the Air Warfare Destroyer Program Back on Track', MC 56/14, 4 June 2014, <http://www.financeminister.gov.au/media/2014/0604-air-warfare-destroyer-program.html> (accessed 14 May 2015).

effectively and efficiently'.²⁴ The findings of the Winter report initiated a second round of reforms to improve productivity.

The Winter report

4.18 In its first report, the committee recommended that the government make the Winter report public but the government disagreed, arguing that the release of the report:

...could damage the commercial interests of the Commonwealth, as its contents relate to a range of sensitive commercial negotiations that are currently underway. The Government considers the report is highly sensitive in relation to current and future shipbuilding tenders and negotiations.²⁵

4.19 The committee also wrote to the minister on 27 October 2014 requesting access to the report. The committee explained to the minister that it believed the Winter report would assist it in its inquiry into the future of Australia's naval shipbuilding industry. Indeed, as spelt out in the committee's first report, although the information on the Winter report released by the minister was sketchy in detail, it was used to damage the reputation of ASC and, overall, Australia's naval shipbuilding industry. A thorough understanding of the findings would not only have helped the committee in its deliberations but have provided industry with a vital source of information. In this regard, Mr Christopher Burns, Defence Teaming Centre, stated:

Until the report is released and the statistics are tested, it has no validity and should not be used by the government as a means to question the productivity of Australia's shipbuilding industry. The industry is keen to understand and address the issues raised in the White-Winter review. The government should release the report as a matter of priority.

Apparently the White-Winter review claims massive cost blow-outs in the project. The most reliable figure quoted—a guesstimate—in the media is \$360 million over budget in an \$8.5 billion project. That is a little over four per cent. As the minister has highlighted, well-established shipyards overseas regularly experience cost blow-outs of 50 to 60 per cent on first of class construction of new designs.²⁶

24 'Minister for Finance and Minister for Defence—Joint Press Conference—Review of the Air Warfare Destroyer program', 4 June 2014, <http://www.minister.defence.gov.au/2014/06/04/minister-for-defence-and-minister-for-finance-joint-press-conference-review-of-the-air-warfare-destroyer-program/> (accessed 4 August 2014).

25 Australian Government, Australian Government response to the Senate Economic References Committee report: Part I—Inquiry into the Future of Australia's Naval Shipbuilding Industry Tender Process for the Navy's New Supply Ships, p. [4], http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Economics/Naval_shipbuilding/Additional_Documents (accessed 24 May 2015).

26 *Proof Committee Hansard*, 14 April 2015, p. 26.

4.20 Mr Burns noted that the bulk of the AWD's productivity issues were 'directly attributable to the government's involvement in establishing the project and imposing delays on the project'. He then observed that while overseas colleagues were bemused by the Australian government's public criticism of the shipbuilding industry, the comments did 'nothing to enhance the morale of the workforce or the credibility of our industry in the global marketplace'.²⁷

4.21 The committee's request for access to the Winter report was not a whim. This report appeared to be a crucial factor shaping the government's decisions on the future of a number of major naval acquisitions. Understandably, the report may well contain commercial-in-confidence or other sensitive material. Appreciating the sensitivity of this information, the committee, when requesting access to the document, suggested that if the government were unwilling to provide a full and complete copy of the report, that the minister consider providing a copy of the report with classified information removed.

4.22 The minister has not engaged with the committee to reach agreement on making an abridged version available. It is also worth noting that a committee member, Senator Nick Xenophon, has made a number of requests, through the Senate, for the minister to produce the document but, again, to no avail.

4.23 Given the weight that the government attached to this report, particularly its implications for the future of naval ship building in Australia, the committee was staunchly of the view that defence industry deserved to know more about the details of, and analysis underpinning, the Winter report's findings. The committee again requests that the government provide the committee with a copy of this document.

Reform strategy

4.24 When announcing the findings of the Winter report, the government indicated that it would adopt its recommendations in principle.²⁸ Accordingly, the government intended to engage commercial and legal advisers immediately to assist in implementing the reform strategy, indicating further that:

We are committed to working collaboratively and constructively with all stakeholders to ensure we realise both the national security benefits as well

27 *Proof Committee Hansard*, 14 April 2015, p. 26.

28 'Minister for Finance and Minister for Defence—Joint Press Conference—Review of the Air Warfare Destroyer program', 4 June 2014, <http://www.minister.defence.gov.au/2014/06/04/minister-for-defence-and-minister-for-finance-joint-press-conference-review-of-the-air-warfare-destroyer-program/> (accessed 4 August 2014).

as the long term benefits of this program for the Australian shipbuilding industry in the most cost-effective and efficient way possible.²⁹

4.25 Within two weeks of this announcement, the Minister for Finance announced that, following a competitive procurement process, the government had appointed key expert advisers to assist with the implementation of a reform strategy. They were Greenhill & Co Australia Pty Ltd as commercial adviser and Ashurst Australia as legal adviser. They were to start without delay to ensure that the government's objectives for the AWD reform strategy were achieved.³⁰ To improve shipbuilding productivity at the shipbuilder ASC and its subcontractors BAE Systems, Forgacs and Navantia, measures under the reform strategy were to:

- insert an experienced shipbuilding management team into ASC urgently; and
- after augmented shipbuilding capacity has been put in place, pursue the reallocation of blocks between shipyards to make the AWD program more sustainable.³¹

4.26 The Minister for Defence noted that this proposed remedial action was the third remediation cycle for this program.³² In the minister's words, the implementation of the reform strategy would 'ensure that the Air Warfare Destroyer Program delivers this vital defence capability effectively and efficiently'.³³

Interim arrangements

4.27 On 9 December 2014, the minister also announced that BAE Systems, Navantia SA and Raytheon Australia would take on increased roles in the AWD

29 Media Release, Senator the Hon Mathias Cormann, Minister for Finance and Senator the Hon David Johnston, Minister for Defence, 'Putting the Air Warfare Destroyer Program Back on Track', MC 56/14, 4 June 2014, <http://www.financeminister.gov.au/media/2014/0604-air-warfare-destroyer-program.html> (accessed 14 May 2015).

30 Joint Media Release, Senator the Hon Mathias Cormann, Minister for Finance and Senator the Hon David Johnston, Minister for Defence, MC 60/14, 19 June 2014 <http://www.financeminister.gov.au/media/2014/0619-advisers-appointed-air-warefare-destroyer-program.html> (accessed 14 May 2015).

31 'Minister for Finance and Minister for Defence—Joint Press Conference—Review of the Air Warfare Destroyer program', 4 June 2014, <http://www.minister.defence.gov.au/2014/06/04/minister-for-defence-and-minister-for-finance-joint-press-conference-review-of-the-air-warfare-destroyer-program/> (accessed 4 August 2014).

32 'Minister for Finance and Minister for Defence—Joint Press Conference—Review of the Air Warfare Destroyer program', 4 June 2014, <http://www.minister.defence.gov.au/2014/06/04/minister-for-defence-and-minister-for-finance-joint-press-conference-review-of-the-air-warfare-destroyer-program/> (accessed 4 August 2014).

33 Joint Media Release, Senator the Hon Mathias Cormann, Minister for Finance and Senator the Hon David Johnston, Minister for Defence, MC 60/14, 19 June 2014 <http://www.financeminister.gov.au/media/2014/0619-advisers-appointed-air-warefare-destroyer-program.html> (accessed 14 May 2015).

program for an interim period. Their increased involvement was intended to 'drive immediate improvements in shipbuilding performance'. The minister explained further:

This focus on resolving outstanding productivity issues will ensure opportunities to improve performance for the duration of the project are maximised.

The outcomes of this interim period will also inform the Government's considerations on the Australian naval shipbuilding industry in the context of the 2015 Defence White Paper.

This interim period marks a turning point in the performance of ASC and its partners on this important project and will help renew confidence in the future of Australia's shipbuilding industry.³⁴

4.28 The AWD Alliance Industry Participants—ASC Shipbuilder and Raytheon—would continue to be responsible for the construction and delivery of the three destroyers. According to the ministers, they were:

...committed to working collaboratively and constructively with all stakeholders to ensure we realise both the critically important national security benefits of this program as well as its long term benefits for the Australian shipbuilding industry in the most efficient and effective way possible.³⁵

4.29 Ms Jane Halton, Secretary, Department of Finance, explained that the interim arrangements were to gain an understanding of the extent of financial exposure and to allow a re-baselining of the project.³⁶

4.30 As part of that reform process, the ASC board recruited Mr Mark Lamarre, as Interim Chief Executive Officer, ASC Shipbuilding. According to the minister, Mr Lamarre brought significant shipbuilding experience to Australia. He came from the United States naval shipbuilder Bath Iron Works and had 25 years of shipbuilding experience, in several senior management roles. In addition, contributors from BAE Systems, Navantia and Raytheon augmented the capability of the ASC. In the

34 Joint Media Release, Senator the Hon. Mathias Cormann, Minister for Finance and Senator the Hon. David Johnston, Minister for Defence, 'Additional Shipbuilding Expertise to be Inserted into the Air Warfare Destroyer Program', MC 133/14, 9 December 2014, <http://www.financeminister.gov.au/media/2014/1209-shipbuilding.html> (accessed 14 May 2015).

35 Joint Media Release, Senator the Hon. Mathias Cormann, Minister for Finance and Senator the Hon. David Johnston, Minister for Defence, 'Additional Shipbuilding Expertise to be Inserted into the Air Warfare Destroyer Program', MC 133/14, 9 December 2014, <http://www.financeminister.gov.au/media/2014/1209-shipbuilding.html> (accessed 14 May 2015).

36 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, pp. 60–61.

minster's view these measures have produced some improvements, 'in productivity and across various other indicators'.³⁷

4.31 In May 2015, Mr Lamarre referred to a five-point plan for improving shipbuilding in South Australia, which included increasing shipbuilding experience and some changes in senior management at ASC. He noted in particular the experience brought in from Navantia and BAE to provide 'specific short-term support, especially in the areas of engineering, planning, production, implementation and tests'.³⁸ Recognising the importance of having the right people in the right places, he noted:

We currently have the former director of planning from Bath Iron Works, who has 33 years' experience. The former vice president of operations is joining us in two weeks. He was at Bath for over 40 years. We have a gentleman who was the former VP of support systems at HII Ingalls, who is the other Egis shipbuilder in the United States. So we are really building the largest team of Egis experience shipbuilders that we have here in Australia.³⁹

4.32 As noted in the committee's first report, the government drew a connection between the findings of the Winter review and the decision to undertake a limited tender for the supply ships, which excluded Australian companies from tendering. It also used this report to warn Australian shipyards of the need to improve their performance.

Productivity

4.33 In its first report, the committee detailed at length the significant problems experienced during the construction the first AWD, which demonstrated the challenges building a first-of-class vessel especially starting with a depleted workforce. Two major reports—ANAO and the Winter report—as well as assessments of the then CEO of DMO, Mr Warren King, identified major failings with this project. Indeed, this project highlighted the complexity of building a first-of-class naval combat vessel, the over optimistic assumptions about the preparedness of the Australian shipyards to take on the project and unanticipated complications in knowledge transfer. As Mr Martin Edwards, ASC Shipbuilding Chief Operating Officer, explained:

It is fair to say that there were some ambitious elements of the program, and, as to the translation of the design, we have found that taking it from a European shipyard which had not exported a design before into a new

37 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, p. 21.

38 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, p. 21.

39 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, p. 21.

environment has had its challenges. The impact of that was underestimated from the beginning, and it has been the source of a number of challenges for us in a program sense. So it has been a contributing factor to the outcomes we see in AWD.⁴⁰

4.34 The reform strategy had only started in earnest by the time the committee was preparing its first report in August 2014. Even so, by that time, productivity improvements were already evident. Evidence provided since then continues to show significant improvements.

4.35 Indeed, as construction on ship 02 has proceeded, the experiences gained from the first ship have been applied to improve productivity performance on this second ship. For example, ASC now have a number of Navantia people working with personnel in the shipyard to help in the translation process. Mr Edwards explained further that was not just language translation:

...it is actually methods of work, processes and inferred knowledge they have in their shipyard and bringing that to the Australian context. So it has been one facet of the program. It is something we have had to deal with and overcome.⁴¹

4.36 In this regard, ASC brought in consultants to work out ways to ensure that tradespeople working on the ship have the right materials in the right configuration when they need them. According to Mr Edwards, with ship 01 ASC went through all the learning processes accompanying a first-of-class vessel—transitioning the design, mobilising shipyards around Australia, mobilising all the supply chain support elements and the workforce and learning the process of building these ships. He accepted that this learning process had taken a toll on productivity. With ship 02, however:

...we are seeing the improvement; we are seeing greater than 30 per cent cost performance improvement on the same stage of construction, and similarly we are seeing up to 15 per cent improvement on ship 3 when we compare the same stage of construction.⁴²

4.37 Applying the lessons and experience from ship 01, ASC was now bringing work forward in the construction phase—doing things earlier. Mr Edwards explained that ASC's engineering organisation was 'learning to make materials more available at the right stage of construction, supporting all the things earlier on—not dissimilar to how the automotive industry would work'. He explained further:

We are focusing on some productivity work in our shipyard similar to what we did on Collins, which is supported by Denkin. We look at our workforce utilisation—improving that, improving our work pack fill rate, which is the

40 *Proof Committee Hansard*, 14 April 2015, p. 14.

41 *Proof Committee Hansard*, 14 April 2015, p. 14.

42 *Proof Committee Hansard*, 14 April 2015, p. 8.

supply of materials to the construction areas and all those elements that feed all the work to be done. We are seeing the benefits of those...we are working closely with the team, the alliance, and the reform team to try and improve that situation and to give greater certainty and outcome from a cost and schedule perspective.⁴³

4.38 Mr Edwards detailed further the improved productivity with ship 02 and the changed work practices that are producing better performances:

...we install all the fittings, we install as much cabling and pipe as early as possible in the production process...getting to that earlier and in fact pushing that back to other areas of our supply chain in BAE and Forgacs. If that work is finished there it can be more efficient and effective.⁴⁴

4.39 ASC was employing a simple metric called 135 or 138, which, when applied in practice, means if an hour of work is delayed until later in a production process it ends up costing more. Mr Edwards stated:

An hour of work in the fabrication facility, if it is translated to the common user facility, could cost you three times that, and if you eventually do that work in the water, it is up to five times that. That is the challenge. For the shipyards and the mature shipyards we try and bring that work forward to early in the construction process. The comment about outfitting on ship 2 earlier all relates to that—getting the work done as early as possible so it can be more productive and more efficient, and to reduce cost, obviously.⁴⁵

4.40 Employing such improved work practices is paying dividends. Mr Edwards again referred to the boost in productivity, comparing work on ship 02 to ship 01 at the same stage of construction. Not only was ASC seeing a greater than 30 per cent improvement from a cost perspective with ship 02 but on top of that 'improvements in the order of 15 per cent at the same stage of construction' for ship 03.⁴⁶ He observed:

Added to that, we are getting the higher outfit levels which will give us benefit later on to actually see consistent performance and improvements in costs going forward. When we add to that the utilisation improvements we are making with our workforce which are about material availability, we now have that at greater than 85 per cent; our workforce utilisation has improved from around 30 per cent to 60 per cent; so we are seeing a doubling in those basic measures that demonstrate our workforce's capability to do the work. That is the benefit we see on ship 2, and now proceeding to ship 3.⁴⁷

43 *Proof Committee Hansard*, 14 April 2015, p. 8.

44 *Proof Committee Hansard*, 14 April 2015, p. 9.

45 *Proof Committee Hansard*, 14 April 2015, p. 9.

46 *Proof Committee Hansard*, 14 April 2015, p. 9.

47 *Proof Committee Hansard*, 14 April 2015, p. 9.

4.41 According to Mr Edwards, ASC had undertaken its own benchmarking in an endeavour to compare first-of-class for AWD with, for example, the Arleigh Burke program in the US. He informed the committee that:

We see a lot of similarities in cost profiles and the challenges on the program. So I am not entirely sure from where the source data comes for any comment about a premium or a 30 to 40 per cent premium. We are happy to work with DMO to compare that information. Invariably, there are start-up costs and mobilisation costs, and they are the things we see at the start of a program.⁴⁸

4.42 Mr Saltzer, BAE Systems, similarly acknowledged that there was room for improvement when it came to productivity with the AWD program. He insisted, however, that BAE had demonstrated 'a significant amount of improvement'.⁴⁹ He stated that, based on independent assessments, BAE had achieved 76 man hours on the AWD blocks and even better on the LHD. He explained further:

It is about 70 right now. And that is just one metric, by the way. There are many metrics for productivity in shipbuilding. The compensated gross tonnage is really a very high-level gross metric, and it is an indication, but it is not the whole story. Any good shipbuilder will be tracking a whole number of metrics: how many metres of cables that we pull and how many man-hours it takes to pull those cables; how many metres we are installing on this ship and how many man-hours it takes to do that. A whole basket of measures exist that we measure all the time to monitor and identify areas where productivity is not what it should be, so that is where we need to go, act and adjust our processes and improve our procedures to make that productivity increase.

...

...we are where we should be according to predictions of productivity experts that have been brought in to analyse programs like AWD and LHD with regard to where we are in terms of continuous production, with regard to where we are in terms of having first-class builds and with regard to where we are in the future outlook for the industry that we have at the moment.⁵⁰

4.43 In its first report, the committee referred to compensated growth tonnage as an indicator of the performance of Australian shipyards. It also noted the then Defence Minister's observation in June 2014 that the international benchmark was 60 man-hours per tonne, that Defence had set the benchmark for the AWD program at 80 man-hours per tonne, but it was running at 150 man-hours per tonne...⁵¹

48 *Proof Committee Hansard*, 14 April 2015, p. 13.

49 *Proof Committee Hansard*, 14 April 2015, p. 19.

50 *Proof Committee Hansard*, 14 April 2015, pp. 19 and 22.

51 'Minister for Defence—Transcript—Naval shipbuilding announcement, CEA Technologies, Canberra', 6 June 2014, p. 11.

4.44 Importantly, based on First Marine International's (FMI) report, the committee noted in August 2014 that BAE had made substantial improvements; ASC had shown no demonstrable or noticeable improvement despite its efforts; and Forgas had deteriorated.

4.45 Evidence shows that BAE has continued on its course of performance improvement. Indeed, in April 2015, Mr Saltzer explained that FMI, which had provided reports to the AWD Alliance every year on productivity, suggested that by the time BAE got to ship No. 3, it should be producing blocks somewhere in the range of 80 man hours per compensated gross tonne. Mr Saltzer informed the committee that, by BAE's calculations, it was operating below 80; and further, the last time he checked, BAE was at 76, 'which is better than where we should be on ship No. 3'. In his words:

Is it as good as they are in the US at the moment? No. Why? Because the US has been in a mode of continuous production for more than 30 years...Ever since Ronald Reagan was president, that shipyard has had a continuous flow of activity on submarines and aircraft carriers without one day of gap. Here in Australia, our shipyard in Williamstown right now is facing three or more years of gap. It is not viable.⁵²

4.46 Mr Saltzer also referred to the most recent FMI report on the AWD program which showed a 'drastic improvement' in productivity on pipe work going through the pipe shop. He explained that in this area and through a concentrated effort, BAE had improved productivity about five times over. He explained:

...by going into the pipe shop, completely reorganising it, revising all the processes that go through it, buying some new equipment so that we could have more efficiency out of the equipment that we were using, and training some of our people. We did a whole range of things, and it paid off in improvements in pipe productivity, to the point where we now are actually winning more pipe work on the AWD program, bidding it competitively to ASC and winning that work.⁵³

4.47 There can be no doubt that BAE Systems through a concerted effort has lifted its productivity significantly. More generally, it should also be noted, as made absolutely clear in its first report, that a ship build becomes increasingly more productive with economies of scale: that performance improves as construction moves from ship 01 through subsequent builds.

4.48 Witnesses took the opportunity to again impress on the committee the importance of taking this steady improvement into account. For example, the South Australian Minister for Defence Industries highlighted the fact that a build becomes more and more productive for the second and third ship. He informed the committee:

52 *Proof Committee Hansard*, 14 April 2015, p. 19.

53 *Proof Committee Hansard*, 14 April 2015, p. 22.

Those who would criticise the ASC and Australian industry and say that they are not sufficiently productive need to take into account that they were tooling up and gearing up to produce an air-warfare destroyer when we had not done something similar for a considerable period of time and we were, if you like, starting all over again, having closed the show up significantly many years before.⁵⁴

4.49 Mr Lamarre, Interim CEO, ASC Shipbuilding, also drew attention to the improvements that had already been achieved between AWD ship 01 and ship 02, which was better than a 30 per cent improvement. He explained that progress on ship 02 was better than 40 per cent along. In his words:

Those are real savings in the bank. We have a trajectory that is heading in the right direction. I am very optimistic about what is going on there—that the plan that we are implementing is having an effect. We have seen this sort of separation between ship one and two since about June of last year [2014], and we are now building on that to ensure that we can continue to bank those savings and build on that for the future.

Ship three, in the block stage, the early stage of construction is coming in at 15 per cent below ship two. We are really starting to see some very significant separation of costs that are consistent and I would say comparable against any other major service combatant shipyard here that I have been exposed to.⁵⁵

4.50 In his view, productivity on ship 03 was heading in the direction that would be comparable to other world-leading ships in the sense of costs.⁵⁶ He gave practical examples of where productivity gains had been made:

While we have a very keen and energised workforce who are driving for improvements, early on in the measurements we were finding that they were doing things that were compensating for management. So they were spending a lower percentage of their time basically doing productive work that is going to sail down the river with the ship. We have seen a 140 per cent improvement in that metric between July of last year [2014] to now.

We also measure discipline and performance to our plan of the week. What we found early on in the process is that only seven per cent of the time we were working the plan. For a variety of reasons you might work around the plan, because of availability of all those things that you need and you have to make an on-field call. Now that performance—actually working the plan that has been laid out—is up to 80 per cent, there is significant improvement in that metric as well. With work readiness, when it is time for tradesmen to conduct the work—do they have the correct paperwork, do

54 *Proof Committee Hansard*, 14 April 2015, p. 25.

55 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, p. 22.

56 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, p. 22.

they have everything that they need, is the ship in the position, is it ready for that work, has the predecessor work been done, and so on—we have gone from 48 per cent to 90 per cent on that metric. These are indicators that show that we are utilising our employees and supporting our employees much better than we have been in the past and as a result we are getting significant improvements.⁵⁷

4.51 Likewise, Mr Wardell used the LHDs to underline the 'enormous' productivity gains made with subsequent builds:

...on the LHDs from ship 1 to ship 2, just in two ships...there has been a dramatic improvement in the quality and cost of the second ship...and the benefit of it has been huge.⁵⁸

4.52 Mr Burns reminded the committee that the chosen AWD design had never been exported or built outside its home shipyard and then, to oversee the construction, an alliance was established that did not include the original ship designer.⁵⁹

4.53 Mr Lamarre also noted that the business at ASC had been split into two separate business units to allow the organisation to 'focus solely on the submarine business and have specific leadership for that and broad oversight—as well as the same for shipbuilding'.⁶⁰

4.54 On 14 April 2015, Mr Edwards, ASC, provided an update on progress with the AWDs. The first ship was more than 70 per cent complete, being prepared for launch and to undertake the final completion of its systems in readiness for sea trials. Seventeen of the 31 blocks for Ship 02 have been consolidated on the hardstand at the Common User Facility in Adelaide. Once ship 01 was launched, ship 02 would take its place to finalise its consolidation. Preparations were underway for the keel laying for ship 03.⁶¹

4.55 On 22 May 2015, ship 01 was launched, which marked a major milestone and provided an opportunity for the government to issue an update on the progress toward removing the AWD from the project of concern list. On this day, however, the Minister for Finance released the results of the 'forensic audit' on the AWDs. The minister's media release was titled 'Air Warfare Destroyer program still fixing

57 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, p. 22.

58 *Proof Committee Hansard*, 6 March 2015, p. 5.

59 *Proof Committee Hansard*, 14 April 2015, p. 26.

60 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, p. 21.

61 *Proof Committee Hansard*, 14 April 2015, p. 8.

serious legacy issues' and gave prominence to cost and schedule overruns.⁶² The committee now considers this cost review of the AWD program.

Comprehensive cost review or forensic audit

4.56 On 15 November 2014, the government decided that a comprehensive cost review process would be undertaken by the AWD Alliance but also including BAE and Navantia that were already participating in the interim arrangements for the AWDs. During the second week in February 2015, the audit into the cost and schedule overruns of the AWD project got underway. It should be noted that the audit was conducted in the context of the reform process whereby interim arrangements were in place to help lift productivity and performance at the ASC shipbuilding business. According to the Minister for Finance, pending the findings of this audit the government could then 'make appropriate arrangements on a more permanent basis'.⁶³ The minister wanted to make 'absolutely perfectly crystal clear' that:

...the outcomes of the forensic audit were fully understood by ASC, because they have been an integral part of the process of putting that forensic audit together.⁶⁴

4.57 The minister indicated that the AWD Alliance conducted the forensic audit in accordance with the appropriate standard, AS4817, on project performance measurement using earned value.⁶⁵ Mr Lamarre explained that ASC participated with other members of the alliance and with Navantia and BAE in the comprehensive cost review of the project. The audit looked at where the project stood to date with costs. It also considered what was left to be done and the risks and opportunities facing the completion of the project. He explained that the review was an alliance-generated document containing information confidential to some of the other parties. The review included:

...a more traditional cost-type scope view of the world that also took advantage of other shipbuilders who have activated ships, because we had only demonstrated so far in this program to the point where we were beginning to test the ship.⁶⁶

62 Joint Media Release—Minister for Defence & Minister for Finance—'Air Warfare Destroyer program still fixing serious legacy issues', 22 May 2015, <http://www.minister.defence.gov.au/2015/05/22/joint-media-release-minister-for-defence-the-hon-kevin-andrews-minister-for-finance-senator-the-hon-mathias-cormann-air-warfare-destroyer-program-still-fixing-serious-legacy-issues-22-ma/> (accessed 5 June 2015).

63 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, pp. 41 and 60.

64 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, p. 58.

65 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, pp. 38 and 41.

66 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, p. 39.

4.58 On 2 April 2015, Commonwealth departments received a briefing on the comprehensive cost review and within the fortnight a report was provided to government. Just over a month later, on 19 May 2015, the National Security Committee met and considered the outcomes of the forensic audit, along with recommendations on how to proceed as part of the reform strategy of the AWD.⁶⁷ Three days later, the government released information drawn from the audit and advice on how it would proceed.⁶⁸

Findings of forensic audit

4.59 The primary findings of the audit showed that as of 22 May 2015, the project was at least \$1.2 billion more expensive than its original budget and was running about 30 to 33 months behind for each of the three ships being built.⁶⁹ The Minister for Finance announced that the additional \$1.2 billion would have to be funded at the expense of other Defence acquisitions. Also noting the significant delays, he produced the following revised delivery dates for the three AWDs:

- Ship 1: Original delivery: December 2014—revised estimate: June 2017
- Ship 2: Original delivery: March 2016—revised estimate: September 2018
- Ship 3: Original delivery: June 2017—revised estimate: March 2020.⁷⁰

4.60 As with the Winter report, the government has not released this comprehensive cost audit, even in an abridged form, to assist industry and subject matter experts understand and learn from its findings.

4.61 The Minister for Finance announced that the 'forensic audit' had been able to define the new baseline for the AWD project. Acknowledging the advances in capability that had been made under the interim arrangement at ASC, the minister

67 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, pp. 42 and 60–61.

68 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, p. 42.

69 Senator the Hon Mathias Cormann, Minister for Finance, Transcript, 'Doorstop—Air Warfare Destroyer project', Perth, 22 May 2015, <http://www.financeminister.gov.au/transcripts/2015/0522-doorstop.html> (accessed 25 May 2015).

70 Joint Media Release—Minister for Defence & Minister for Finance—'Air Warfare Destroyer program still fixing serious legacy issues', 22 May 2015, <http://www.minister.defence.gov.au/2015/05/22/joint-media-release-minister-for-defence-the-hon-kevin-andrews-minister-for-finance-senator-the-hon-mathias-cormann-air-warfare-destroyer-program-still-fixing-serious-legacy-issues-22-ma/> (accessed 5 June 2015) and Joint Media Release, Senator the Hon Mathias Cormann, Minister for Finance and The Hon. Kevin Andrews MP, Minister for Defence, 'Air Warfare Destroyer Program—Still Fixing Serious Legacy Issues', MC 24/15, 22 May 2015, <http://www.financeminister.gov.au/media/2015/0522-air.html> (accessed 25 May 2015).

explained that, given the cost and schedule overruns, the government would be seeking to enter into a more permanent arrangement, to further build on these improvements.⁷¹ To this end, the government would begin a limited tender process on 29 May 2015 that would seek 'proposals to either insert a managing contractor into ASC for the remainder of the AWD build or to further enhance ASC capability through a partnering arrangement'.⁷² The work on the AWDs, however, would continue under the arrangement whereby personnel from BAE Systems, Navantia and Raytheon would keep going with their efforts to improve performance.⁷³

4.62 The committee is disappointed with the overall tone of the announcement on 22 May 2015, which chose to focus on the cost and schedule overruns and failed to acknowledge or give due recognition to:

- the source of the AWD's problems including starting production from a cold start and with a reduced workforce and unanticipated complications in knowledge transfer;
- the well-recognised lower productivity performance on ship 01—a first-of-class;
- the dramatic improvements in productivity as construction has proceeded on ship 02 and 03; and
- the broader economic benefits that have derived from this Australian build.

4.63 At this point in the report, the committee believes it is important to take particular note of the main findings of the Winter report relating to the fundamental causes of the AWD's problems. In the review's assessment there were two direct causes for cost and schedule growth:

- the initial program plan for AWD development and production was unrealistic in its cost and schedule estimates; and
- the Alliance, as structured, composed and staffed, had been unable to effectively manage the AWD Program.

4.64 It also identified the following contributing causes:

- systems engineering on the AWD Program had been of limited effect;

71 Senator the Hon Mathias Cormann, Minister for Finance, Transcript, 'Doorstop—Air Warfare Destroyer project, Perth', 22 May 2015, <http://www.financeminister.gov.au/transcripts/2015/0522-doorstop.html> (accessed 25 May 2015).

72 Joint Media Release, Senator the Hon Mathias Cormann, Minister for Finance and The Hon. Kevin Andrews MP, Minister for Defence, 'Air Warfare Destroyer Program—Still Fixing Serious Legacy Issues', MC 24/15, 22 May 2015, <http://www.financeminister.gov.au/media/2015/0522-air.html> (accessed 25 May 2015).

73 Finance and Public Administration Legislation Committee, Estimates, *Proof Committee Hansard*, 27 May 2015, pp. 46 and 55.

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- the AWD Alliance and ASC were unable to effectively manage the AWD block subcontractors; and
 - the oversight provided by the Commonwealth of Australia has been of limited effect.

4.65 Importantly, and relevant to this committee's inquiry, the review also considered systemic issues that could affect any other naval shipbuilding programs in Australia, and identified the following:

- the limited base of shipbuilding activity in Australia materially impacted the AWD Program; and
- the Commonwealth of Australia has not developed a long-term shipbuilding plan that can cost-effectively support the needs of the RAN, while sustaining the Australian industrial shipbuilding base.⁷⁴

Conclusion

4.66 It is clear from the evidence presented to the committee that the source of the AWD project's problems can be attributed to a poor understanding and inadequate analysis of cost and schedule, and poor or inadequate management at the Alliance and Commonwealth level. From the beginning, decision-makers failed to appreciate the difficulties in transferring the design work to Australia, where industry was trying to meet demands created by fitting out the LHDs and starting on a 'first-of-class' vessel. There are clear lessons to be learned from the AWD project. It is important to note that a number of factors that affected productivity were outside the control of the people working on the ships. Two systemic issues identified by experts such as Dr John White are that the project was starting from scratch, and the lack of long term strategic planning.

4.67 The committee is deeply concerned that the government has not released either the Winter Report, or the more recently conducted comprehensive cost audit of the AWD, even in an abridged form. The committee calls on the government to release these documents as a matter of urgency to assist industry and subject matter experts to understand and learn from the findings.

Recommendation 3

4.68 The committee recommends that the government provide the committee with a copy of the 'forensic audit' of the AWD program.

74 'Report of the Independent Review into the performance of the Hobart Class Air Warfare Destroyer Program conducted by Professor Donald C. Winter and Dr John White', 4 June 2014, <http://www.financeminister.gov.au/media/2014/docs/air-warfare-destroyer-program-review-0.pdf> (accessed 8 August 2014).

4.69 The committee also repeats its recommendation contained in its first report that the government release the report of the independent review of the AWD program (also known as the Winter Report).

4.70 The committee understands that it may be appropriate for a public version of both documents to be released with classified material removed.