



PARLIAMENTARY LIBRARY

INFORMATION ANALYSIS ADVICE

RESEARCH PAPER

RESEARCH PAPER SERIES 2014-15

10 NOVEMBER 2014

The Air Warfare Destroyer program

David Watt

Foreign Affairs, Defence and Security

Executive summary

- The Air Warfare Destroyer (AWD) program will deliver three Hobart Class AWDs and support systems to the Navy under an alliance-based contracting arrangement between ASC Pty Ltd, Raytheon Australia Pty Ltd and the Australian Government, represented by the Defence Materiel Organisation (DMO).
- The total approved budget for the AWD build is \$7,849 million but the actual cost is likely to be greater.
- The AWD program has suffered from various delays and cost increases and has been the subject of an independent review which has led to the Government approving plans for remediation of the project.
- The current government has stated that the AWD build must be fixed before it can confidently approve further substantial military shipbuilding projects in Australia.

Contents

Executive summary	1
Introduction	2
Initial development	2
Construction	3
Rebaselining.....	6
The AWD keeps Australian shipbuilding afloat?.....	6
Australian National Audit Office report	8
Independent review	9
Conclusion	11

Introduction

This paper assesses the progress of SEA 4000—Air Warfare Destroyer (AWD) from its inception at the start of the previous decade until August 2014. SEA 4000 is a program to build three guided missile destroyers (or DDGs to give them their hull classification symbol) for the Royal Australian Navy (RAN). These three vessels, to be named HMAS *Hobart*, HMAS *Brisbane* and HMAS *Sydney* (collectively the Hobart Class), will be delivered to the RAN between 2016 and 2019 and will replace the four remaining Adelaide Class frigates which have been in service since the early 1980s and are due to be withdrawn from service by 2019. The current approved budget for this program is \$7,849 million.¹

Initial development

The 2000 Defence White Paper announced that the Australian Government would replace the existing Adelaide Class guided missile frigates (FFG):

...the FFGs are planned to be replaced when they are decommissioned from 2013 by a new class of at least three air-defence capable ships. It is expected that these ships will be significantly larger and more capable than the FFGs. The project is scheduled to commence in 2005–06. The Government's strong preference is to build these ships in Australia, which will provide significant work for Australia's shipbuilding industry.²

Regarding the strategic justification for these ships, the 2000 Defence White Paper noted:

Without such capability, our ships would be more vulnerable to air attack, less capable of defending forces deployed offshore and less capable of contributing effectively to coalition naval operations.³

Phase 1 of the program took place between 2000 and 2005, generally out of the public view, and included analysis on choosing the type of design, the combat system and the possible candidates to fill the design role. The then Minister for Defence, Robert Hill, announced the commencement of the AWD program during May 2005.⁴ It was decided that the AWDs would be built by an alliance between primary contractors, with ASC as the principal builder, Raytheon as the Combat Systems Support Engineer and DMO representing the Australian Government.⁵ Phase 2 saw the development of two designs, an 'off-the-shelf' option (the 'Australianised' version of Navantia's F-100 class frigate) and an 'evolved' option (the Gibbs & Cox designed variant of the US Navy's *Arleigh Burke* class of destroyers). Spain was already operating three of the F-100 class vessels whereas the Gibbs & Cox vessel was still in the design phase and Defence assessed the risk of proceeding with a less mature design to be fairly high.⁶

In October 2005 the Australian Government signed a Foreign Military Sales contract with the US Government, enabling it to procure the Aegis Combat Systems to be fitted to the AWDs. This was to be the first instance in which this system would be fitted to an Australian ship.

The selection of the Navantia design at second-pass approval in June 2007 completed Phase 2, allowing Phase 3—detailed design, contract award, and construction—to begin.⁷

During October 2007 the AWD Alliance was formed (between DMO, ASC, and Raytheon Australia in a three way Alliance Based Incentive Agreement). During a June 2014 Estimates hearing the Chief Executive Officer of the DMO, Warren King, explained the decision to adopt the alliance approach as being a risk sharing strategy:

Why do we run this as an alliance based project? Experiences gained doing other major projects previous to the air warfare destroyer—the Department of Finance engaged a commercial advisor supported by Defence on a better

1. Australian Government, [Portfolio budget statements 2014–15: budget related paper no. 1.4A: Defence Portfolio](#), 2014, p. 150, accessed 4 August 2014.
2. Department of Defence, [Defence 2000: our future defence force](#), Department of Defence, Canberra, 2000, p. 90.
3. *Ibid.*, p. 89.
4. R Hill (Minister for Defence), [Air Warfare Destroyer announcement](#), media release, 31 May 2005, accessed 27 November 2013.
5. [Air Warfare Destroyer Alliance website](#), accessed 22 September 2014.
6. Auditor-General, [Air Warfare Destroyer Program](#), Audit Report No. 22, 2013–14, ANAO, Canberra, 2014, p. 87.
7. Prime Minister John Howard announced the decision to build the Navantia type vessel on 20 June 2007. The speech is available as J Howard (Prime Minister), [Transcript of the Prime Minister the Hon John Howard MP: Defence announcement: Russell Offices, Canberra](#), media release, 20 June 2007, accessed 22 September 2014.

way to enter into high-risk projects where risk was shared equitably between the customer and the supplier. Their recommendations in 2004 were to conduct this under an alliance so that there was a shared risk in the outcomes.⁸

Mr King noted that a benefit of this approach is that cost overruns in the program are shared equally between DMO and the Alliance partners.

The non-inclusion of Navantia in the Alliance, while understandable, was perhaps unfortunate in that a substantial portion of the risk inherent in the program was in the transfer of the designs from Navantia to the shipyards. The Auditor-General expressed the problem in the following terms:

The non-inclusion of Navantia has detracted from the Alliance's ability to collectively and collaboratively manage risks, which are among the main reasons for establishing such an arrangement; and there has been incomplete alignment of incentives for sharing of best practices and for reducing costs, from design conception through to shipbuilding and ship acceptance.⁹

The contract binding the Alliance is described in the Australian National Audit Office (ANAO) review of the AWD program, which is discussed later.¹⁰

The factors that went into the selection of the Navantia ship have been discussed heavily in the literature. Essentially, they boiled down to the higher capability, greater potential for future development, and again potentially more work for Australian industry, but also the higher cost and risk of the Gibbs & Cox design.¹¹

As journalist Richard Scott wrote:

Key to the selection of the F-100 design was its pedigree as an existing design already proven in service with the Spanish Navy. Four ships have been delivered to date, a fifth (F-105) is in build, and a sixth programmed. This established heritage was seen to substantially reduce the cost and schedule risks of the AWD programme in comparison to the Evolved AWD design being offered by Gibbs & Cox; factors judged to decisively outweigh the enhanced capability and greater growth potential of its rival.¹²

This was the first time that Navantia had exported a surface vessel for construction and the first time ASC had built a surface vessel. However, the fact that the design was a pre-existing one and that modifications were mainly to do with 'Australianising' the combat systems and some other elements undoubtedly meant that a high degree of confidence existed within Defence that the program would operate with an acceptable level of risk.

Construction

The ships were to be built using the modern method of block construction. Essentially, this entails the assembly of prefabricated sections (blocks), which are pre-built in a shipyard, taken to the building dock (or slipway) and then placed into position and attached to other sections. Using this method, equipment and utilities may be built into blocks before assembly, thereby saving time and effort once the hull has been completed.

In May 2009 the AWD Alliance announced that it had selected Forgacs in Newcastle and NQEA in Cairns to build 70 per cent of the blocks for the three vessels, with the work worth approximately \$450 million.¹³ NQEA's work was subsequently transferred to BAE Systems in Melbourne, as NQEA had advised the AWD Alliance that it was unable to meet the financial obligations contained in its tender.¹⁴

The 90 prefabricated hull blocks and three sonar blocks for the three AWDs were to be made in Adelaide, Williamstown (Victoria), Newcastle, and Spain. Production of these blocks, averaging 200 tonnes each, began in

8. Senate Foreign Affairs, Defence and Trade Legislation Committee, *Official Committee Hansard*, 3 June 2014, p. 48.

9. Auditor-General, *Air Warfare Destroyer Program*, op. cit., p. 25.

10. Auditor-General, *Air Warfare Destroyer Program*, op. cit., pp. 107–144.

11. A Davies, *The Air Warfare Destroyer: decision time*, Australian Strategic Policy Institute, Canberra, 14 June 2007, pp. 2–3, accessed 20 July 2014. Davies paper sets out the pros and cons in more detail.

12. R Scott, 'Australia's new AWD: proven design pedigree, the key to selection,' *Asia Pacific Defence Reporter*, December 2007–January 2008, pp. 12–16.

13. AWD Alliance, *Air Warfare Destroyer Alliance selects preferred suppliers for \$450 million shipbuilding work*, media release, 9 May 2009, accessed 21 July 2014.

14. AWD Alliance, *AWD Alliance shipbuilding contract with BAE Systems Australia Defence*, media release, 29 June 2009, accessed 21 July 2014.

April 2010.¹⁵ At the start of the construction phase ASC in Adelaide was building the ships' forward superstructures, Forgas in Newcastle the rest of the superstructures, and BAE Systems in Williamstown was building the keel blocks. The three sonar blocks for the three ships were being constructed in Spain and the UK. The blocks were then brought together by ASC in Adelaide.

In October 2010 it was revealed that the central keel block for HMAS *Hobart* (the first to be built), manufactured by BAE Systems, was distorted and did not 'fit' the other sections of the warship. The cause of the distortion was disputed, with the media reporting that BAE Systems blamed inadequate technical drawings from Navantia for the problem.¹⁶

The AWD Alliance said in a statement that reports in *The Australian* claiming that the inaccurate dimensions of the AWD hull block constructed by BAE systems were a 'result of faulty welding and inadequate quality control at the Williamstown shipyards, were not true'.¹⁷

The block was not built to inaccurate dimensions. Distortion did not result from faulty welding.

The sub-block structure is dense—[it includes] a lot of structural components—and distortion was caused by shrinkage after welding as the welded component cools. This can be controlled by managing the weld sequences and the amount of heat induced into the structure during welding. Our production processes have been updated to ensure that this occurs.¹⁸

Gregor Ferguson, writing in the Australian Strategic Policy Institute's (ASPI) 2011–12 Budget brief, *The Cost of Defence*, provided further detail of this development:

While the AWD Alliance put its best possible face on the problem, the reality was ugly. Block 107 is one of the most complex of the keel blocks, requiring the heavy steel plate of the ship's bottom to be curved and shaped very precisely. It includes the ship's stabilisers and their operating mechanisms and part of the longitudinal stabilising strakes, and its 20m x 20m flat upper deck also supports one of the ship's two propulsion diesels, one of its LM2500 gas turbines, one of its gearboxes and one of its propeller shafts. Tolerances are very tight and the technical difficulty is compounded because Block 107 also contains some 2,000 pipes, ducts and vents for electrical cables, air conditioning and fuel, water and sewage.

The weld quality on Block 107 was found to be poor; just as bad, heat distortion had buckled the flat deck plating out of tolerance. A significant amount of re-work is necessary which has delayed delivery of the first blocks from Williamstown [it should be noted that as at September 2011 three blocks have been delivered from BAE Systems at Williamstown].

...

The production difficulties have been compounded by data issues with the engineering drawings from which the blocks are fabricated. Navantia is delivering some 10,000 drawings that are essentially identical to those used by Navantia themselves. While Navantia's design and engineering processes are excellent, like many industrial processes shipbuilding relies on human knowledge and experience and the drawings haven't always conveyed the subtle expertise and 'tricks of the trade' that Navantia's workforce has developed building the F-100 family at its Ferrol yard—this is a recurring issue with most technology transfer regimes.¹⁹

Whatever the cause, this issue led to some schedule slippage. On 26 May 2011, the Government announced that the AWD Alliance had informed the Department of Defence that there was the potential for schedule delays because the BAE Systems facility in Melbourne could not keep up with production schedules (due to that dock

15. G Combet (Minister for Defence Materiel and Science), [Inspection of Air Warfare Destroyer block production](#), speech, 20 April 2010, accessed 21 July 2014.

16. C Stewart, '[\\$8bn navy flagship founders after construction bungle](#)', *The Australian*, 26 October 2010, accessed 21 July 2014.

17. Ibid.

18. J Grevatt, '[AWD Alliance admits destroyer contract hit by construction difficulties](#)', *Jane's Defence Industry*, 26 October 2010, accessed 22 September 2014.

19. G Ferguson, 'Air Warfare Destroyer,' in M Thomson (ed.), *The cost of Defence: ASPI Budget brief: 2011–2012*, Australian Strategic Policy Institute, Canberra, 2011, p. 216.

also constructing superstructure blocks for the two Landing Helicopter Deck ships (JP 2048)).²⁰ The Minister for Defence's media release noted:

Last year the project encountered difficulties in relation to engineering and construction of some of the first AWD hull blocks. To assist the AWD project schedule, earlier this year the AWD Alliance reallocated construction of nine steel blocks from BAE Systems in Melbourne to the Forgacs shipyard in Newcastle.

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.

The Government, the AWD Alliance and BAE Systems take the schedule for both these important projects extremely seriously.

In February 2011, BAE Systems advised the AWD Alliance of potential schedule delays. Over the last few months, the AWD Alliance and BAE Systems have been working closely to develop options to improve the production program.

...

The advice of the AWD Alliance is that if no action is taken to relieve the pressure on the Melbourne BAE Systems shipyard the first ship would be two years late, approximately 25 per cent over schedule.²¹

In response to the advice received concerning the problems with construction, the Minister for Defence and the Minister for Defence Materiel announced that some of the further construction work scheduled for completion by BAE Systems would be moved to other shipyards, including to ASC in Adelaide (seven blocks), Forgacs in Newcastle (four blocks) and a Navantia facility in Spain (five blocks). This left BAE with two blocks. The joint media release noted that this change was likely to lead to delays in the completion of the AWDs 'by up to 12 months' (for each vessel).²²

The South Australian Coalition Opposition criticised this announcement, stating that it 'mean[s] the cost of the project is likely to rise and companies in SA will have their timelines, costs and employee commitments extended in difficult times'.²³

In the ensuing months the Minister for Defence and the Minister for Defence Materiel publicly praised BAE for the work they were doing to rectify the delay in the AWD project:

It is the case that over the last 12 months or so, there was a reallocation of blocks on the Air Warfare Destroyer project. Since that time, BAE, to its credit, has substantially enhanced and improved both its technical capacity on this site, but also the work that it is delivering.²⁴

The Minister for Defence Materiel stated on 27 July 2011 that the gun mounts for the three AWDs, manufactured by BAE Systems in the US, had been delivered to ASC in Adelaide.²⁵

On 18 August 2011 it was announced that the first keel block had been delivered to ASC. This block was built by BAE Systems in Williamstown. At the time, the Minister for Defence Materiel also noted that construction had begun on all blocks for the first ship (HMAS *Hobart*) and block building had begun for the second ship (HMAS *Brisbane*).²⁶

20. S Smith, '[Answer to Question without notice: Defence procurement](#)', [Questioner: D Melham], House of Representatives, *Debates*, 26 May 2011, p. 4847.

21. S Smith (Minister for Defence) and J Clare (Minister for Defence Materiel), '[Changes to Air Warfare Destroyer Construction Program](#)', media release, 26 May 2011, accessed 21 July 2014.

22. Ibid.

23. M Hamilton-Smith (South Australia Shadow Minister for Industry and Trade), '[Air Warfare Destroyer delay exposes Labor's spin](#)', media release, 27 May 2011, accessed 22 September 2014.

24. S Smith (Minister for Defence) and J Clare (Minister for Defence Materiel), '[Transcript of doorstep interview: BAE Systems: 3 December 2012: Landing Helicopter Dock; Air Warfare Destroyer; HMAS Coonawarra](#)', media release, 3 December 2012, accessed 5 August 2014.

25. J Clare (Minister for Defence Materiel), '[Air Warfare Destroyer gun mounts have arrived](#)', media release, 27 July 2011, accessed 21 June 2014.

26. J Clare (Minister for Defence Materiel), '[First keel block delivered for new Australian warship](#)', media release, 18 August 2011, accessed 21 July 2014.

Further to this, on 27 September 2011, the Materiel Minister announced that two more blocks had been shipped to Adelaide for the first of the AWDs.²⁷ These blocks were also built by BAE Systems in Williamstown, Melbourne. By March 2012 the final block allocation was:

- Forgacs—44 blocks
- ASC—25 blocks
- BAE Systems—11 blocks and
- Navantia—10 blocks.²⁸

Rebaselining

During September 2012 the Minister for Defence announced that there would be a further delay in the completion of all the AWDs, with 18 months between the keel-laying of each vessel (in a modern ship keel-laying is actually the point at which the first modular blocks are joined together). This delay will mean that the last of these vessels (which will be commissioned as HMAS *Sydney*) will not be complete until March 2019. This rescheduling also had the effect of saving the Government about \$100 million in the near term (by pushing the expenditure 'to the right'):

Today Minister Clare and I are announcing a re-base-lining of the project to see the ships, the three ships come online on the timetable that I've indicated between now and 2019. We've done that in very close consultation with industry. And one of the reasons we've done that is to make sure that there is a smooth flow of work and a retention of skills, not just for this very substantial project – the current largest project we have – but also for the Landing Helicopter Dock project, two Landing Helicopter Docks with the first of those about to arrive in Melbourne for integration work.²⁹

The AWD keeps Australian shipbuilding afloat?

Regardless of the problems with the construction of the AWD some commentators [suggested](#) that Australia should order a fourth Air Warfare Destroyer in order to provide continuity to the shipyards currently working on the AWD.³⁰ In a moment of industry and trade union solidarity, members of the AMWU took industrial action to highlight the risk to jobs if greater continuity of construction was not achieved. The AMWU's campaign urged the public to raise the plight of local shipbuilding with their local MP, and for the federal government to reconsider building a fourth Air Warfare Destroyer and the two refuelling ships.³¹

ASPI's Mark Thomson did not agree, questioning both the strategic rationale for such an acquisition and also the cost benefits claimed by proponents of the initiative.³² Professor of Strategic Studies at the Australian National University, Hugh White, agreed with Thomson but went further stating that large ships such as the AWDs are not what Australia needs:

Because the warships we are building today are designed for a mission both pointless and unachievable. They are not designed for low-level operations in places like East Timor or the South Pacific, which we must be able to do. They are designed to fight for control of the sea to allow the deployment of amphibious land forces into high-intensity conflicts in Asia.

...

27. J Clare (Minister for Defence Materiel), [AWD: another two blocks delivered](#), media release, 27 September 2011, accessed 4 November 2014.

28. S Smith (Minister for Defence) and J Clare (Minister for Defence Materiel), [Allocation of block construction work for the third Air Warfare Destroyer](#), media release, 9 March 2012, accessed 4 August 2014.

29. S Smith (Minister for Defence), [Transcript of doorstep interview: 6 September 2012: Air War Destroyer](#), media release, 6 September 2012, accessed 21 November 2013.

30. [Shipbuilding companies lobby Government for a fourth Air Warfare Destroyer](#), *News.com.au*, 8 October 2013, accessed 28 November 2013 and J Kerin, [Fourth Warship regarded as vital](#), *Australian Financial Review*, 11 March 2013, accessed 27 November 2013.

31. J Kerin, [AMWU fires broadside on shipyard jobs](#), *Australian Financial Review*, 25 May 2013, accessed 28 November 2013.

32. M Thomson, [A folly of strategic proportions](#), *The Strategist* weblog, Australian Strategic Policy Institute (ASPI), 18 October 2013, accessed 28 November 2013.

But today it has become extraordinarily hard to protect warships from a capable adversary. Modern surveillance systems make ships easy to find, and modern long-range precision-guided munitions make them easy to hit and quick to sink.³³

While the idea that Australia should order a fourth AWD remained afloat, by May 2013 the Shadow Minister for Defence, David Johnston, was sounding a cautionary note:

I want to have a look at what Navy wants. I believe it has said that it doesn't operationally require a fourth Air Warfare Destroyer, that's pretty persuasive.³⁴

In an October 2013 presentation to the Pacific 2013 International Maritime Conference, Rod Equid (CEO of the Air Warfare Destroyer Alliance) said of the construction of a fourth AWD that 'in reality it is probably the only viable option to immediately follow-on from the AWD build and maintain the continuity of skills and achieved productivity'.³⁵ In the same presentation Equid also indicated that 'ideally an AWD construction program would roll directly into a Future Frigate construction program'; however, he did not suggest that this would specifically relate to using an adjusted version of the AWD hull, but rather leveraging 'benefits such as continuity of work and maintaining the associated knowhow, productivity and skills'.³⁶

Regardless of the arguments for and against building a fourth AWD, the Abbott Government has remained cautious about the idea:

...a spokesman said "There are no current contingencies for a fourth AWD and note that neither the Coalition or former government had budgeted plans for a fourth warship included in their respective defence policies".³⁷

The idea that the use of a common hull for the ADW and the Future Frigate might provide continuity for Australian shipbuilding has gained some traction.³⁸

During November 2013 the AMWU published the report 'Australian Naval Shipbuilding: design, build and maintain our ships here'. As part of the report's suite of recommendations, the AMWU called for 'the future frigate program [to] be established as a rolling build program for the Navy's future surface combatant fleet and structured so there is a seamless transition from the AWD project'.³⁹

Not everyone agrees that bringing forward the Future Frigates is the solution it might appear to be. The CEO of the South Australian Defence Teaming Centre, Chris Burns, stated in a March 2014 interview that an accelerated Future Frigate program would 'probably not' arrest a loss of shipbuilding jobs and that such a plan 'could be problematic' due to design requirements.⁴⁰

Mark Thomson, a senior analyst at ASPI specialising in defence economics, noted in his article 'Shipbuilding—Australian style' that any potential gains achieved through generating a rolling-build of AWD hulls for the Future Frigate would be insufficient to offset the cost of recapitalising the current frigate fleet four or five years early.⁴¹ Thomson provided a similar assessment in late May 2013 in his article '[Future Frigate haste means Anzac waste](#)', where he was particularly critical of the Defence Department's paper '[Future Submarine Industry Skills Plan: a plan for the naval shipbuilding industry](#)'.⁴²

Thomson's colleague at ASPI, Andrew Davies, has also [recently commented](#) on the Future Frigate program, in outlining both the potential benefits and challenges of using an adapted AWD hull design.⁴³ He is particularly

33. H White, '[Opinion: Navy on the wrong course building large warships](#)', *The Age*, 29 October 2013, p. 17, accessed 27 November 2013.

34. D Johnston (Shadow Minister for Defence), '[Transcript of doorstops interview: 8 May 2013: Future submarine project, women in combat](#)', media release, 8 May 2013, accessed 6 August 2014.

35. R Equid, '[Joint presentation by Peter Croser, Program Manager, Air Warfare Destroyer Program Management Office \(Defence Materiel Organisation\) and Rod Equid, CEO Air Warfare Destroyer Alliance](#)', 8 October 2013, accessed 6 August 2014.

36. Ibid.

37. T Shepherd, '[All at sea](#)', *Adelaide Advertiser*, 11 April 2014, p. 1, accessed 22 July 2014.

38. The 2009 Defence White Paper stated that Australia would acquire eight of a new type of frigate to replace the ANZAC Class vessels. The Future Frigate (SEA 5000) will feature advanced anti-submarine warfare capabilities.

39. Australian Manufacturing Workers Union, '[Australian Naval Shipbuilding: design, build and maintain our ships here](#)', 14 November 2013, p. 5, accessed 6 August 2014.

40. P Smart, '[SMEs getting ready for the Future Submarine](#)', *Australian Defence Magazine*, 1 March 2014, p. 33, accessed 6 August 2014.

41. M Thomson, '[Shipbuilding—Australian style](#)', *The Strategist* weblog, ASPI, 10 June 2014, accessed 7 August 2014.

42. M Thomson, '[Defence: Opinion: Future Frigate haste means Anzac waste](#)', *The Australian*, 25 May 2013, p. 5, accessed 7 August 2014.

43. A Davies, '[Future Frigate: hasten slowly](#)', *The Strategist* weblog, ASPI, 19 June 2014, accessed 22 September 2014.

wary of the significant problems of adding substantial new capability to the AWD 'shell', in that 'a fair proportion of the ship above the waterline will be new', which will impact weight distribution in the eventual design. Additionally, the integration of new technical systems would also present significant cost and schedule risks.

On 6 June 2014 the Minister for Defence, David Johnston, [announced](#) that the Government had committed \$78.2 million to fund preliminary engineering and design work 'to keep open the option of building the Future Frigate in Australia'.⁴⁴ Specifically, this funding would be used to determine whether the Future Frigate could comprise the same hull as the Air Warfare Destroyer (AWD) but with adaptations to its internal fit-out. The Minister also noted that further decisions would be made 'in the context of the 2015 Defence White Paper', due to be released approximately nine months after this announcement.

Speaking at the 2014 Defence and Industry conference in July, the Defence Minister said:

The Government has agreed to an investigation of the continued build of the AWD hull, but with the Australian CEA Radar and the Adelaide based SAAB 9 LV combat system. The ship itself would have a primary role of Anti-submarine warfare but would also be highly capable of air defence. We have recently signed a number of contracts to support this.

This is allowing us to keep open the option of a following build to the Air Warfare Destroyer. This opportunity is of such significance it may establish a sustainable industry.

It begins with 8 ships and may endure if we cycle keel rotations in line with Navy's overall needs. This program dwarfs AWD in terms of long term opportunity.⁴⁵

Arguments about the suitability of the AWD hull as a platform for the Future Frigate will presumably run for some time. At a speech to the Australian Industry and Defence Network, Chris Lloyd, vice president Maritime and Aerospace for Thales Australia, said:

Commenting on the possible use of the Air Warfare Destroyer (AWD) hull for the Future Frigate that will eventually replace the Anzac class, Lloyd said a large AWD did not make an ideal anti-submarine warfare platform or general purpose frigate.

"Its signatures (noise, radar cross section) are relatively poor, the crew size large (circa 200 per vessel) and the platform technology is not exactly 'state of the art'.

"I would suggest that staying with AWD is likely to result in a very average operational solution produced at about twice the cost and requiring substantially larger sustainment budgets of other comparable solutions being produced in other countries today".⁴⁶

Australian National Audit Office report

The most thorough public review of the AWD program was released on 6 March 2014 when the ANAO released its review of the program.⁴⁷ The report sets out a thorough overview of the program and its development.

The ANAO report highlights a variety of important issues in the AWD build:

- The Alliance contract imposes an obligation on the various industry participants to deliver the AWD parts in accordance with the schedule, but the Commonwealth bears most of the residual risk.
- Building the AWDs in Australia rather than overseas involves a significant premium in the cost of the program. The ANAO notes that the 2007 briefing by the Treasury puts this at \$1 billion, an effective rate of assistance of 30 per cent.
- There have been significant problems with the detailed design documentation which the ANAO describes as containing drawing errors and omissions, as well as late vendor furnished information.

44. D Johnston (Minister for Defence), [Boosting Australia's maritime capabilities](#), media release, 6 June 2014, accessed 7 August 2014.

45. D Johnston (Minister for Defence), [Speech to the Defence and Industry Conference](#), media release, 29 July 2014, accessed 6 August 2014.

46. J Kerr, ['Doubts over proposed naval build solutions: Thales'](#), *Australian Defence Magazine* (ADM), 25 September 2014, accessed 25 September 2014.

47. Auditor-General, [Air Warfare Destroyer Program](#), op. cit.

- Revisions to drawings have been frequent and at times have ‘saturated’ the AWD Alliance’s engineering and planning department which has resulted in delayed release of documentation.
- There were major issues with capacity and skills at the shipyards undertaking block construction.
- There had been a decline in productivity at the shipyards with the program’s Earned Value Management System revealing that it was costing ASC \$1.60 to produce work that was originally estimated to cost \$1.00.
- The Alliance’s estimate that the total cost would be \$302 million more than the target cost estimate is likely to be an underestimation.
- Defence underestimated the level of risk involved in developing a modified design, exporting that design to Australian shipyards and re-establishing shipyard skills which had not been used for some time.⁴⁸

The ANAO report indicates that there was a total of 2,132 construction drawings and that, as at October 2013, some 6,071 revisions to these drawings had been issued.⁴⁹ This leads the ANAO to conclude that the high number of revisions and the range of design change categories indicate significant immaturity in the detailed design of the Hobart-class DDGs.⁵⁰

In relation to the productivity problems mentioned above, the ANAO has this to say:

... a range of factors have been assessed as contributing to low construction productivity, including the performance of ASC and its Australian block subcontractors, and construction rework arising from both ongoing changes in the detailed design and rectification of block subcontractor work. The Australian shipyards’ distributed-build production engineering strategies and build processes continued to evolve into 2013, some four years after block construction began.⁵¹

It is also important to note that the report quotes a part of Navantia’s response to the audit:

Navantia, in its January 2014 response to an extract from this audit report, stated that ‘The design of the Australian AWD is very different from that of the existing F-104, incorporating lessons learnt from the Spanish Navy’s F-105 (not all known at the time of the contract), implementing Australian regulations, and taking account of obsolescence, Contract Amendment Proposals, etc. All these items, together with the supply chain information modifications in respect to F-104 equipment, imply a very relevant number of revisions/modifications to the existing F-104 design, to be implemented at the time that the information is made available to the designer—in most cases out of the designer’s control’.⁵²

This reinforces the criticism made by the ANAO that insufficient weight was attached to the risks involved in adopting a modified and evolving design.⁵³

An additional result of both the ANAO report and the Winter Review (described below) was the listing on 4 June 2014 of the AWD project in the Projects of Concern list.⁵⁴

Independent review

In addition to the lack of a clear strategic rationale for the construction of a fourth AWD the Government was sufficiently troubled by the delays and cost overruns that an addition to the program must have seemed unwise. Media reports suggested that, reflecting the Government’s level of concern, the Minister was about to announce an independent review.⁵⁵ This proved to be the case, when in December 2013 the Minister for Finance and the Minister for Defence announced that there would be an independent review of the AWD.⁵⁶ In December 2014

48. Dot points summarised from Auditor-General, [Air Warfare Destroyer Program](#), Audit Report No. 22, 2013–14, ANAO, Canberra, 2014, Audit summary, accessed 23 October 2014.

49. Auditor-General, [Air Warfare Destroyer Program](#), op. cit., p. 183.

50. ANAO, op. cit., p. 183.

51. ANAO, op. cit., p. 26.

52. ANAO, op. cit., 24.

53. ANAO, op. cit., pp. 24–25.

54. D Johnston (Minister for Defence), [Air Warfare Destroyer added to Projects of Concern list](#), media release, 4 June 2014, accessed 22 July 2014.

55. I McPhedran, ‘[Minister’s concern at \\$8 billion destroyer project](#)’, *Adelaide Advertiser*, 18 November 2013, accessed 28 November 2013.

56. M Cormann (Minister for Finance) and D Johnston (Minister for Defence), [Coalition committed to the efficient delivery of the Air Warfare Destroyer programme](#), media release, 18 December 2013, accessed 22 July 2014.

the Minister announced that a review of the AWD Program would be jointly conducted by former US Secretary of Navy, Professor Don Winter, and former Transfield chief, Dr John White.⁵⁷

The Government declined to release the Review when it was completed in June 2014, stating:

What we've done today is a release a one-page summary of the report and we've reflected the key findings and the key recommendations in the body of our press release. You'd appreciate that there are a number of senior partners, both in the public sector and in the private sector that are involved in this. There will be some complex negotiations in the next few weeks and the next couple of months. That is the reason why we've decided not to release the full report at this point in time because we don't want to hinder the proper conduct of those negotiations and to achieve a successful conclusion of those negotiations, essentially by creating too much disturbance as those discussions take place. But at the right time the report will be released.⁵⁸

Subsequently, the Government's view seems to have hardened somewhat:

Tabling this document would make many of the cabinet's deliberations, on the basis of cabinet's decisions, publicly available. Release of the mentioned report could also damage the commercial interests of the Commonwealth, as it relates to a range of sensitive commercial negotiations underway.⁵⁹

Notwithstanding the non-release of the report, the Ministers' media release stated that problems had occurred in the following areas: the initial program plan; inadequate government oversight; the Alliance structure's capacity to manage the project and deal effectively with issues if and when they arose ; and the performance and capabilities of ASC and major subcontractors.⁶⁰

In order to respond to these problems the Review recommended a reform strategy that, the Ministers asserted, would:

- improve shipbuilding productivity at the Air Warfare Destroyer shipbuilder ASC and its subcontractors BAE Systems, Forgacs and Navantia;
- include the urgent insertion of an experienced shipbuilding management team into ASC; and
- after augmented shipbuilding capacity has been put in place, pursue the reallocation of blocks between shipyards to make the Air Warfare Destroyer program more sustainable.⁶¹

On 19 June 2014 [Greenhill & Co Australia Pty Ltd](#) was appointed as Commercial Advisor and [Ashurst Australia](#) as Legal Advisor to the Government in matters pertaining to the AWD project.⁶² No detailed explanation was provided about why such advisors were needed but it seems reasonable to assume that the complexities of the Alliance agreement might require such advice if the agreement were to require substantial change.

Implicit in the headline findings from the Review is that ASC has underperformed as the principal contractor in the AWD program. This was further apparent in comments made by the Minister for Finance during the media conference held to announce the outcome of the Review:

Well what it says is that the ASC did not have the adequate capability to cost-effectively manage a project of this size. Let's not kid ourselves. Effectively, and I think this is a matter of public record, the ASC was quasi learning on the job how to deliver a project of this sort of complexity, the AWD project. Which is why the Winter Review made very clear that there were problems with the initial program plan and there were problems in terms of the inadequate government oversight.

...

57. M Cormann (Minister for Finance) and D Johnston (Minister for Defence), [Review of the Air Warfare Destroyer Program](#), media release, 24 February 2014, accessed 23 July 2014.

58. M Cormann (Minister for Finance) and D Johnston (Minister for Defence), [Transcript of joint press conference: 4 June 2014: Review of the Air Warfare Destroyer Program; putting the Air Warfare Destroyer Program back on track](#), media release, 4 June 2014, accessed 25 July 2014.

59. M Fifield (Manager of Government Business in the Senate), ['Defence procurement: order for the production of documents'](#), Senate, *Debates*, 9 July 2014, accessed 22 July 2014.

60. M Cormann (Minister for Finance) and D Johnston (Minister for Defence), [Putting the Air Warfare Program back on track](#), op. cit.

61. Ibid.

62. M Cormann (Minister for Finance) and D Johnston (Minister for Defence), [Advisors appointed for Air Warfare Program reform strategy](#), media release, 19 June 2014, accessed 23 July 2014.

Now in relation to the ASC, I had another very good conversation with Bruce Carter the Chair of the ASC last night about the findings in the Winter Review and the way forward and the way the Government proposes to go forward. I have every confidence that Bruce Carter, as the Chair of the Board and the Board of the ASC will work collaboratively, constructively and positively with the Government to ensure that this project is put back on track, that this project is delivered in the most cost effective way possible. Matters related to management at the ASC is a matter for the ASC Board.⁶³

While the 16 July 2014 announcement that ASC CEO Steve Ludlum would leave the company might have been a coincidence, subsequent media reports that the review by Winter and White contained a recommendation that the Government consider transferring principal carriage of the rest of the AWD program to BAE would suggest that ASC has been held responsible for the worst of the program's problems.⁶⁴

On 15 August 2014 *The Adelaide Advertiser* carried a story which stated that the AWD Alliance had revealed that the cost overrun had climbed an additional \$150 million to a total of \$500 million.⁶⁵ It also quoted the Minister for Defence calling the program 'a disgraceful mess' and 'a bit of a skunk'.

A recent media report also states that the Government will bring the original designers of the AWD, Navantia, into the program in order to assist with the next steps:

Sources close to Adelaide-based shipbuilder ASC said a team of up to 15 senior Navantia personnel would be charged with overseeing the integration and testing phase of the first of the Hobart-class destroyers ahead of delivery, due in October 2016.⁶⁶

Conclusion

In one sense the travails of the AWD program are not a surprise. As far back as 2009 Andrew Davies told the Lowy Institute's blog *The Interpreter*:

Let's look at the example of building air warfare destroyers in Australia. I have written—and have been criticised for it in some circles—that there is a large premium, of order 30-40%, for building them here. The riposte I received is that the only differential between Australian shipyards and overseas ones is the cost of labour. Everything else, the argument runs, is purchased at market prices—the commodity steel, copper wire, through to the Aegis system. When you do the sums, you conclude that the differential is closer to 5%.

But that misses a fundamental point. That sort of argument will give the right answer only when both production lines are mature. When we set out to build AWDs, we incur a whole bunch of fixed costs before we start cutting steel, and the first vessels are at the start of the learning curve and therefore significantly more expensive than later ones. Of course, we then stop at three (or maybe four)—well before the benefits of learning mature. When you factor all of that in, you get my answer, which I stand by.⁶⁷

In a speech to the 2014 Defence and Industry Conference in July, the Minister reinforced the importance of the AWD to forward momentum in the rest of Australia's military shipbuilding industry when he said:

Firstly, the AWD program must be recovered and the Abbott Government has a very public plan to do this. NOTHING CAN COME BEFORE FIXING THE AWD PROGRAM. Our advisers are working to the plan and some of you in industry are being consulted. This recovery plan is frankly the test case for Industry. At the moment the increases above the target estimate are over \$300 million and rising.⁶⁸

-
63. M Cormann (Minister for Finance) and D Johnston (Minister for Defence), [Transcript of joint press conference: 4 June 2014: Review of the Air Warfare Destroyer Program; putting the Air Warfare Destroyer Program back on track](#), op. cit.
 64. C Stewart, '[Axe looms over \\$8.5bn ship crisis](#)', *The Australian*, 30 July 2014, p. 1, accessed 31 July 2014.
 65. I McPhedran, '[Savage attack on ship build](#)', *Adelaide Advertiser*, 15 August 2014, p. 7, accessed 19 August 2014.
 66. S Martin, '[Spanish team called in to help right troubled destroyer program](#)', *The Australian*, 23 September 2014, p. 2, accessed 25 September 2014.
 67. S Roggeveen, '[Three destroyers for the price of four](#)', *Interpreter* weblog, Lowy Institute for International Policy, 30 October 2009, accessed 7 August 2014.
 68. D Johnston (Minister for Defence), [Address to the Defence and Industry Conference 2014](#), media release, 29 July 2014, accessed 24 September 2014.

Of course, at this point in time it is difficult to fully judge the efficacy of the measures taken by successive governments to remediate the program. This task is made more difficult by the Government's decision not to release the Winter Review.

The Air Warfare Destroyer program illustrates some of the difficulties involved in getting complex defence procurement right. Underestimation of difficulties in the transfer of the plans from Navantia to Australian shipbuilding facilities, the impact of the modifications necessary in order to 'Australianise' the vessels (primarily by modifying the Aegis combat system), and the preparedness of Australian shipyards to carry out work of this sort after a prolonged period of not manufacturing large steel-hulled vessels have all contributed to the delays and cost overruns experienced by the project.

Difficulties of these sorts are hardly unknown in the world of defence procurement and do not mean that the Hobart Class will not serve Australia well for many years. However, the Australian Government is rightly concerned to ensure that it, the DMO and Australia's shipbuilding industry have resolved these problems before committing to further large-scale military shipbuilding in Australia.

Commonwealth of Australia



Creative Commons

With the exception of the Commonwealth Coat of Arms, and to the extent that copyright subsists in a third party, this publication, its logo and front page design are licensed under a [Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Australia](#) licence.

In essence, you are free to copy and communicate this work in its current form for all non-commercial purposes, as long as you attribute the work to the author and abide by the other licence terms. The work cannot be adapted or modified in any way. Content from this publication should be attributed in the following way: Author(s), Title of publication, Series Name and No, Publisher, Date.

To the extent that copyright subsists in third party quotes it remains with the original owner and permission may be required to reuse the material.

Inquiries regarding the licence and any use of the publication are welcome to webmanager@aph.gov.au.

This work has been prepared to support the work of the Australian Parliament using information available at the time of production. The views expressed do not reflect an official position of the Parliamentary Library, nor do they constitute professional legal opinion.

Any concerns or complaints should be directed to the Parliamentary Librarian. Parliamentary Library staff are available to discuss the contents of publications with Senators and Members and their staff. To access this service, clients may contact the author or the Library's Central Entry Point for referral.