

Chapter 6

Infrastructure

6.1 The shipbuilding industry is capital intensive requiring substantial equipment and installations that are expensive to build and maintain. A shipyard itself is a major industrial facility that occupies large tracts of land with access to water.¹ Docks, slipways, piers, cranes, large covered workshops as well as supporting administrative buildings and amenities are needed. The age, condition and suitability of its facilities clearly influence a shipyard's capacity to build modern naval vessels.

6.2 As noted in the previous chapter, much of ship building activity takes place in sites scattered around the country. Activities, such as steel fabrication, may also be capital intensive and require substantial infrastructure. This chapter evaluates the infrastructure in Australian shipyards and associated sites to determine its capability to sustain a viable naval shipbuilding industry and its capacity to meet the likely demands of Australia's navy.

6.3 There are a number of phases in shipbuilding—design, production, outfitting, testing, commissioning and trials.² The UK's naval shipbuilding report spelt out the facilities required in the construction of warships which it asserted, 'cannot be developed or expanded without significant resources, planning effort, and a long lead time'.³ It divided ship construction into three main phases together with the main facilities required in each phase.⁴

Pre-Final Assembly		
<ul style="list-style-type: none"> • Shops • Cranes 		
	Final Assembly	
	<ul style="list-style-type: none"> • Dry docks • Floating docks • Slipways • Land-level areas • Ship assembly 	
		Afloat Outfitting
		<ul style="list-style-type: none"> • Piers • Quays • Locks • Any location specified as such

1 See for example, The RAND Corporation, *The United Kingdom's Naval Shipbuilding Industrial Base: The Next Fifteen Years*, prepared for the United Kingdom' Ministry of Defence, 2005 (The UK's Naval Shipbuilding 2005 Report), p. 3.

2 See The UK's Naval Shipbuilding 2005 Report, p. 90.

3 The UK's Naval Shipbuilding 2005 Report, p. 3.

4 The UK's Naval Shipbuilding 2005 Report, p. 90.

6.4 There is some overlap in the use of different facilities throughout each phase. For example, the cranes, shops or fabrication facilities associated with the final assembly are used throughout the other phases.

Investment in infrastructure

6.5 Modern facilities are a precondition for success in naval shipbuilding.⁵ The recent First Marine International study of major shipyards graded shipyards according to their level of technology. It identified five categories of shipyards ranging from the most basic to the highest state-of-the-art shipbuilding technology.⁶

6.6 Modularisation fits into the highest levels of technology as determined by the First Marine International study. Some shipyards in Australia have actively embraced this technology. Indeed, a number of witnesses believed that Australia has gained a comparative advantage from modularisation and assembly in Australia.⁷

6.7 Keeping infrastructure up-to-date with the latest advances in shipbuilding is costly. ASC noted that it and other Australian shipbuilders have invested heavily in new up-to-date facilities to satisfy the requirements of success. These include 'undercover construction and land level transfer to allow highly efficient outfitting on the hard stand' and access to key warship intellectual property.⁸

6.8 The Government of Western Australia recognised, however, the difficulties companies have in investing in major capital works:

Provision of these facilities involves high fixed costs which can only be recouped over the long term and which even the largest companies have difficulty absorbing. This constitutes a form of market failure in which investments that would enhance aggregate state and national welfare are not forthcoming because individual firms selling into specific markets (like resources projects or repair/maintenance of naval ships) cannot obtain

5 *Submission 17*, pp. 14–15.

6 For example Level 4 refers to shipyards that have continued to advance their technology during the 1980s and 1990s. Generally a single dock, with good environmental protection, short cycle times, high productivity, extensive early outfitting and integration of steel and outfit; together with fully developed CAD/CAM and operating systems. Level 4 is better than industry averages but not up to leading standards.

Level 5 represents state-of-the-art shipbuilding technology. It is developed from level 4 by means of automation and robotics in areas where they can be used effectively, and by integration of the operating systems, for example, by the effective use of CAD/CAM/CIM. There would be a modular production philosophy in design and production. The level is also characterized by efficient, computer-aided material control and by fully effective quality assurance. In summary, state-of-the-art use of technology and industry-leading business processes, facilities, systems, management and workforce.

7 See for example, Chamber of Commerce and Industry, Western Australia, *Committee Hansard*, 3 April 2006, p. 30.

8 *Submission 17*, pp. 14–15.

sufficient individual benefit to warrant making the investment by themselves.⁹

6.9 The South Australian government also noted that a major challenge for the industry concerns investment in sustainable, modern, competitive infrastructure.¹⁰

6.10 Over and above the investment by Australian shipbuilders in their own infrastructure, governments have played a significant role in developing necessary facilities to support large construction projects. Thiess Pty Ltd remarked on the recent practice involving state investment in infrastructure which is then rented to the shipyards 'at prices which could vary depending on the willingness of the respective government to help the industry set up in their State'. It elaborated on the advantages that accrue to industry from this type of assistance:

The main attraction is that they are leased for the duration of the project and therefore do not need to be fully amortized on the project. Because they remain the property of the State, if they are sufficiently generic, they can be reused by other industries such as the resource industry.¹¹

6.11 A notable development based on this model of state involvement is the construction of a Common User Facility (CUF) to attract shipbuilding and other manufacturing industries. It is a new concept embraced by sectors of the Australian shipbuilding industry and supported by a number of state governments.

6.12 The CUF is designed to form part of a broader industrial complex. Its use is not limited to shipbuilding. A number of witnesses underlined the advantages of having a CUF which can be used by different companies from a number of industries, particularly the resources sector. The Australian Shipbuilders Association Ltd noted:

Broadly, State Governments provide a site with state of the art infrastructure; wharfage and ship lift capacity on a lease basis. The availability of such infrastructure allows shipbuilders/repairers to undertake major projects without the barrier to entry of capital infrastructure costs, which might otherwise be incurred. The site can be leased for the duration of the project, reducing cost. A CUF can and is also used by other industries, in particular the resource industry.¹²

6.13 Mr David Miller, Tenix, regarded the availability of the CUF as one of the great advantages that shipbuilders have in Australia.¹³ He stated:

We do not have first-hand experience in South Australia but, certainly, our Tenix site is immediately adjacent to the common user facility in

9 *Submission 23*, p. 25.

10 *Submission 9*, p. 35.

11 *Submission 22*, p. 11.

12 *Submission 36*, p. [3]. See also comments by Thiess, *Submission 22*, p. 11.

13 *Committee Hansard*, 27 April 2006, p. 5.

Henderson. Over the past year we have undertaken a number of naval repairs on Anzac frigates using that facility. We are currently converting the civilian oil tanker *Delos* into an underway replenishment ship for the Australian Navy. It is soon to be the HMAS *Sirius*. The availability of that infrastructure allows us to take on major projects without the barrier to entry that we might otherwise experience if we had to go out and capitalise all of that ourselves.¹⁴

6.14 There are three CUFs in place or planned in Australia: WA, SA and Queensland. The Australian Shipbuilders Association Ltd stated that they are on a scale 'suitable for the fabrication and fit-out of large ship-section modules'.¹⁵ They are designed to accommodate not only the major shipbuilders in Australia but also regional engineering and fabrication firms with their own labour and resources.¹⁶ It suggested that this wider accessibility 'significantly augments Australia's overall "shipbuilding" capability through access to an extensive, much broader and geographically spread pool of resources with relevant skills'.¹⁷

Overview of shipyards in Australia

6.15 There are numerous naval shipyards located around the Australian coastline. Some, such as Henderson in Western Australia, are green field sites that have attracted significant investment. Others, however, are well established with a long tradition of naval shipbuilding (see paragraphs 3.2–3.7).

6.16 In 2002, after examining the physical infrastructure of Australian shipyards, the Naval Shipbuilding and Repair Sector Strategic Plan concluded that:

It is important to note that no Australian shipbuilding facility can currently accommodate the consolidation/final assembly of Navy's major surface ships planned under SEA4000, JP2048/2027 and SEA1654. This assumes the following physical characteristics of these major ships:

- a future Air Warfare Destroyer (AWD) will probably be in the order of 6,000-9,000 tonnes displacement and a length of 130m to 150m; and
- future Amphibious and Afloat Support ships that will be somewhat larger and considerably wider than the AWD and also of considerably greater laden tonnage.¹⁸

14 *Committee Hansard*, 27 April 2006, p. 5.

15 *Submission 36*, p. [7].

16 *Submission 36*, p. [7].

17 *Submission 36*, p. [7].

18 Defence Materiel Organisation, *The Australian Naval shipbuilding and repair sector strategic plan*, August 2002, p. 14. SEA 4000 is the AWD Project, JP2048 is the Amphibious Watercraft replacement, Amphibious Ships, Strategic Lift Ship Capability and Sea 1654 includes the replacement for the *Success*.

6.17 It suggested the following two alternatives if vessels were to be constructed in-country:

- varying degrees of infrastructure investment in an existing facility; or
- the development of a new green-field site.¹⁹

6.18 Significant developments have taken place since the publication of the strategic plan in 2002 including additional investment in infrastructure at a number of shipyards. It should be noted that the plan was not adopted by the government. Also, in May 2005, the government selected ASC as the preferred tenderer for the AWD project.

6.19 Before continuing a general appraisal of the current and future infrastructure requirements to meet Navy's future acquisition program, the committee considers the infrastructure at Australia's major shipyards.

Infrastructure and the lead naval shipyards in Australia

6.20 There are eight shipbuilding sites of particular relevance to the committee—Henderson in Western Australia, Osborne in South Australia; Williamstown in Victoria; Newcastle (ADI), Newcastle (Forgacs) and Garden Island in New South Wales; and Cairncross and Cairns in Queensland.²⁰ Some of these shipyards date back to the 19th century; others, however, have developed or are developing to accommodate the newest developments in technology particularly the construction of larger and more sophisticated modules. The following section looks at recent developments in these shipyards and the level of government support for infrastructure development.

The Australian Marine Complex at Henderson in Western Australia

6.21 The Australian Marine Complex (AMC) is at Cockburn Sound, south of Perth. It is situated next to a 'massive technology park', including an industrial estate, where companies can position themselves next to the AMC. The complex is divided into four specialist precincts and takes advantage of the advances in technology and the benefits that derive from catering for diversification in products and markets. It recognises the cost savings to be gained from integrating Australia's naval shipbuilding and ship repair capacity into a broader marine complex that also provides for the needs of the oil and gas sector. According to the Hon. Mr Francis Logan, Minister for Science and Innovation in the Western Australia government, this heavy engineering/marine industry cluster is 'unique in Australia as a matrix for a sustainable

19 Defence Materiel Organisation, *The Australian Naval shipbuilding and repair sector strategic plan*, August 2002, p. 14.

20 The Allen Consulting Group, *Future of Naval Shipbuilding in Australia: Choices and Strategies*, May 2005, p. 31.

naval shipbuilding capability'.²¹ The AMC is not intended for shipbuilding alone but is a facility that can provide for the needs of a wide range of companies and industries.²²

6.22 The Western Australian government has demonstrated its preparedness to invest in important infrastructure to support industry including naval shipbuilding. It informed the committee that it and the Commonwealth government initially invested a total of \$180 million (\$100 million from the State government and \$80 million from the Commonwealth) in the Australian Marine Complex Common User Facility (CUF). This initial investment, which was completed in mid-2003, is owned by the State government and operated by AMC Management (WA) Pty Ltd.

Common User Facility (CUF)

6.23 The CUF is a state-of-the-art commercial heavy engineering facility located in the AMC. The facility is substantial and sufficiently large to accommodate a number of projects being carried out concurrently. It is not dedicated to one user or even one industry and will have applications other than for naval shipbuilding.²³ In particular, it is expected to service the oil and gas, resources, marine and defence industries.²⁴ The CUF comprises:

- a protected deepwater harbour—10 metres water depth;
- a 15,000 tonne service and heavy lift wharf;
- a 3,000 tonne load out wharf;
- a 4,800 square metre mobile assembly hall with a 200 tonne mobile portal crane;
- 39 hectares of paved laydown area; and
- offices, workshops and other amenities.²⁵

6.24 It is leased out by the government on the basis of whoever wishes to use it under the following arrangements:

Parties using the facility provide their own management and workforce and accept normal project accountabilities. They use only the facilities as and when their projects so require: for example, a company may require the use of the mobile assembly hall and a project office for some months and then use the load out wharf for two weeks. The CUF only charges the company for its use of those specific facilities for that particular period. This

21 *Submission 23*, covering letter from the Minister for Science and Innovation, The Hon. Mr Francis Logan MLA.

22 *Committee Hansard*, 3 April 2006, p. 82. See also p. 91.

23 *Submission 23*, p. 26.

24 *Submission 23*, p. 26.

25 *Submission 23*, pp. 25–26.

arrangement greatly reduces set up costs for the project and overheads for the company, thereby enhancing their ability to win such contracts.²⁶

6.25 The Hon. Mr Francis Logan also referred to the incentive that this large modern facility offers to Australian industry:

Not one of those companies could afford that type of facility themselves... and they would not want to hold onto it because of the ongoing costs of running those types of facilities. But they can get access to it at any point in time, and that is the paradigm shift—and it is in keeping with the way in which the rest of the corporate world is going.²⁷

6.26 Mr Michael Deeks, Chairman, Nautronix Ltd, envisaged that companies like Austal and Tenix would use the floating dock for other commercial ship construction work. He also expected other, non-naval businesses, such as heavy fabrication, to use it and noted that 'One company in particular wants to use the floating dock basically for testing purposes—to submerge fixtures that go on seabeds for the oil and gas industry'.²⁸ Clearly, the infrastructure will be used for purposes other than just naval ship construction.



The committee visited the Common User Facility (CUF) at Henderson south of Perth.

26 *Submission 23*, p. 26 and *Committee Hansard*, 3 April 2006, p. 93.

27 *Committee Hansard*, 3 April 2006, p. 93.

28 *Committee Hansard*, 3 April 2006, p. 44.

Recent developments at the AMC

6.27 Over the last three years, the AMC has attracted greater business. In December 2003, ASC was awarded the \$3.5 billion 25 year contract for the repair and maintenance of the Collins class submarines. The Federal government and State government, in conjunction with the West Australian marine industry have established the home port of the submarines in Western Australia.²⁹ Other developments have encouraged further investment. These include Tenix Western Australia securing a \$60 million contract to convert the Korean oil tanker *Delos* as a replacement for HMAS *Westralia* and the ANZAC Alliance needing berthing in order to undertake ship upgrades worth \$500 million.

6.28 The Western Australian government responded to this growing demand by committing a further \$81.1 million toward additional infrastructure at the CUF including:

- a floating dock to launch and dock large ships and a rail transfer system to allow construction and repair within the CUF's undercover facilities;
- an extension and upgrade of the existing wharves to accommodate all types of naval and commercial vessels; and
- the installation of marine services such as power, seawater fire main, wharf communications and sewerage off-take.³⁰

6.29 According to the Western Australian Chamber of Commerce, the current upgrade means that the CUF:

...could have five ships tied up at dock at the same time and they could have two platforms being built, two amphibious ships and a submarine being refitted—and this is just in the common-use facility. At the same time, you have not even called on Austal's or Tenix's premises. This is a very significant development that has occurred down there and you could have a lot of work in there. At the moment, there is a little bit of work in there compared to how much work you could put in there.³¹

6.30 The Australian Manufacturing Workers' Union (Western Australia Branch) singled out this massive and expanding manufacturing precinct at Henderson to demonstrate the extent of government commitment to developing infrastructure and the benefits flowing from it:

The AMC accounts for approximately 55% of national shipbuilding production, and has produced vessels in excess of \$2 billion dollars in the last decade. 25% of the world's demand for high-speed ferries is met by

29 *Submission 16*, pp. 1–2.

30 *Submission 23*, p. 26.

31 *Committee Hansard*, 3 April 2006, p. 26.

businesses at the AMC. The AMC is an internationally competitive manufacturing precinct with a proven record of large-project shipbuilding.³²

6.31 The Government of Western Australia expected that other long term stakeholders such as the Australian Navy and the ANZAC Alliance would also make contributions to the operation and upgrade of the CUF commensurate with their respective usage of the facility.³³ Indeed, ASC intends to:

- build its own new purpose built submarine support facilities (worth an estimated \$20 million) in the Australian Marine Complex, adjacent to the CUF; and
- contribute a further \$5 million in capital towards the common user transfer system connecting the floating dock to the ASC submarine support facility.³⁴

6.32 To April 2006, the CUF had achieved a million man-hours and \$100 million worth of work.³⁵ The Western Australian government believes that the success of the CUF to date demonstrates its existing capability to undertake naval maintenance work and establishes its claim for consideration for future naval shipbuilding.³⁶

Additional investment

6.33 The Australian Manufacturing Workers' Union (Western Australia Branch) noted the planned upgrade of AMC including the floating dock and rail transfer system and was of the view that:

Unlike other Australian locations, the AMC would not need significant additional infrastructure to cope with a major RAN shipbuilding contract. Such a project would, for the most part, merely require an expansion of current capacity rather than the construction of new facilities.³⁷

6.34 Even so, the Government of Western Australia is considering further developments, over and above the current commitment.³⁸ It has stated that it would invest further should the site be included in the construction of the LHDs. According to the Hon. Mr Francis Logan, his government is 'prepared to build the second half of

32 *Submission 16*, p. 1.

33 *Submission 23*, p. 27.

34 *Submission 23*, p. 27.

35 The Hon Francis Logan, Minister for Energy, Science and Innovation, Government of Western Australia, *Committee Hansard*, 3 April 2006, p. 82.

36 The Hon Francis Logan, Minister for Energy, Science and Innovation, Government of Western Australia, *Committee Hansard*, 3 April 2006, p. 82.

37 *Submission 16*, p. 2.

38 *Submission 23*, p. 27.

the floating dock should the AMC be selected as the site for integration and consolidation of the amphibious support ships'.³⁹

6.35 Although naval shipbuilding is a highly specialised industry there are strong parallels with the infrastructure needs of the oil and gas sector and more generally the resources sector. The developments taking place in Western Australia demonstrate the growing synergy in technologies that is occurring and allowing other industries to use the same facilities. The Western Australia Chamber of Commerce and Industry observed that the risk profile for an oil and gas platform or an LPG plant is similar to the defence industry which encourages the technologies used in these sectors to merge.⁴⁰ It saw a unique opportunity for both industries to take advantage of the growing complementarity between the two sectors.⁴¹

Osborne in South Australia

6.36 In 2002, the Australian Naval Shipbuilding and Repair Sector Strategic Plan reported on the infrastructure at Osborne in South Australia. It recorded that the 20 acre site had a shiplift (5048 dwt capacity, 80m x 20m), side transfer rails, manufacturing halls, adjacent hull and outfitting workshops, various workshops and alongside berthing of 160 metres. The strategic plan found that the site had the capacity to be developed to cater for a considerably greater level of demand, including consolidation and upgrade of vessels proposed under SEA 4000, JP2048/JP2027 and SEA 1654.⁴²

6.37 At the same time, a report from the Australian Strategic Policy Institute (ASPI) noted that significant facility development was required at the site for participation in major surface ship module construction or ship assembly.⁴³

6.38 Since 2002, the South Australian government has actively promoted the naval shipbuilding industry in that state by committing to develop further the site at Osborne. It has developed a plan that builds on the presence of ASC at Port Adelaide to 'provide the critical mass of naval shipbuilding infrastructure and a skilled work force that can deliver the next generation'. It informed the committee that planning is well advanced to 'transform industrial land at Port Adelaide into a modern

39 *Submission 23*, covering letter from the Minister for Science and Innovation, Mr Francis Logan MLA.

40 *Committee Hansard*, 3 April 2006, p. 27.

41 *Committee Hansard*, 3 April 2006, p. 22.

42 *The Australian Naval Shipbuilding and Repair Sector Strategic Plan*, August 2002, p. C-3. SEA 4000 is the AWD Project, JP2048 is the Amphibious Watercraft replacement and Sea 1654 includes the replacement for the *Success*.

43 Australian Strategic Policy Institute, *Setting a Course for Australia's Naval Shipbuilding and Repair Industry*, An ASPI Policy Report, August 2002, p. 15.

internationally competitive shipbuilding site that can become the future hub of naval warship construction in Australia'.⁴⁴ The Allen Consulting Group noted that:

...the ASC at Osborne has a capability in conventional submarine construction and support that is probably unrivalled outside Europe.⁴⁵

6.39 The facility at Osborne has been designed around common user facilities to enable any shipbuilder to come onto the site to use the infrastructure.⁴⁶ The centrepiece of the infrastructure aspect of the plan comprises a 10 000 ton ship lift, wharf and transfer system representing a current budget of approximately \$130 million.⁴⁷

6.40 The configuration of the complex enables a builder from the back block, where the infrastructure will be developed, to gain access to the water through the ship lift.⁴⁸ Thirty hectares of land has been set aside where the government hopes to see a 'fully integrated submarine and shipbuilding supplier and subcontractor precinct'.⁴⁹ Adjacent to the shipbuilding infrastructure, the government intends to make available more than 100 hectares at Port Adelaide as a 'high technology defence industrial hub'.⁵⁰

44 *Committee Hansard*, 19 April 2006, p. 22.

45 The Allen Consulting Group, *Future of Naval Shipbuilding in Australia: Choices and Strategies*, May 2005, p. v.

46 Rear Admiral (retired) Scarce, *Committee Hansard*, 19 April 2006, p. 34.

47 *Submission 9*, p. 32 and Admiral (retired) Scarce, *Committee Hansard*, 19 April 2006, p. 34. According to Thiess 'SA is tendering to build a CUF to be used by ASC for the AWD project. \$120m will be spent on a new ship lift and transfer system as well as in dredging and new wharves'. *Submission 22*, p. 11

48 Rear Admiral (retired) Scarce, *Committee Hansard*, 19 April 2006, p. 34.

49 Rear Admiral (retired) Scarce, *Committee Hansard*, 19 April 2006, p. 30.

50 *Submission 9*, p. 32.



This is an impression of ASC's site at Osborne when current developments are completed. The Collins-class submarines were constructed at the facility to the centre-right of picture, while some of the AWD modules will be constructed in the new facilities to the left of picture. The committee thanks ASC for their permission to reproduce this picture.

6.41 Mr Andrew Fletcher, CEO, Port Adelaide Maritime Corporation, noted progress in achieving the state government's objective to develop a long-term sustainable defence base at Osborne:

There are the common user facilities...There is the suppliers precinct at the rear. That was initially 30 hectares; we now control 500 hectares of land on the peninsula and in the adjacent area for future development. There is also the development of the air warfare destroyer system centre and the skills centre in a hub that we are building.⁵¹

6.42 The base itself is in the heart of South Australia's busiest international port. It is 18 kilometres from the central business district and 16 kilometres from the international airport. According to Mr Fletcher:

...on completion of the road and rail bridges across the Port River, which are anticipated by the end of next year, it will be connected directly by rail and road to the rest of Australia. So it is a unique piece of real estate that is attractive not just to the defence industry and the SMEs supporting the defence industry but to industry as a whole in South Australia...⁵²

6.43 While the AWDs are to be assembled at Osborne, 70 per cent of the module construction is expected to be outsourced. It should be noted that Defence informed the committee that the Commonwealth is not funding the development of any infrastructure for this project. It stated that the government of South Australia is funding the development of a Common User Facility (approximately \$115 million) while ASC is funding about \$69 million of infrastructure development. Defence

51 *Committee Hansard*, 19 April 2006, p. 30.

52 *Committee Hansard*, 19 April 2006, p. 31.

informed the committee that the Commonwealth is to reimburse ASC 'for the depreciation costs of the new infrastructure, which was taken into consideration in the comparative and value for money evaluation of ASC's offer against other tenders'.⁵³

Older shipyards

6.44 Up to this stage, the committee has focused on the newer shipyards. Australia also has shipyards that have a long history of shipbuilding. Williamstown, Garden Island and Cockatoo Island were designed in the 1880s to look after old seafarers. According to Mr Peter Croser, Gibbs & Cox Australia Pty Ltd, the cost of changing their infrastructure would be reflected in the cost of the program. He does not argue that such sites do not have the capability but that it depends on where they are in their infrastructure development. He stated:

What I would say is that once the infrastructure on a greenfield site is in place it obviously will be to a higher standard and more tailored to currently and to the future than the existing ones, and therefore will be a standout in that regard. But, with investment, you can improve old infrastructure to meet demand.⁵⁴

6.45 Even so, he queried whether the older sites have sufficient space.⁵⁵

Williamstown in Victoria

6.46 The Victorian government noted that its state holds most of the residual value of the considerable investment made in naval shipbuilding in Australia over recent decades. It made the point that Williamstown has benefited from over 100 years of public investment in its infrastructure.⁵⁶ Indeed, the Allen Consulting Group noted:

Tenix's shipyard at Williamstown has a record in significant surface warship construction that would be envied by many competitors around the world.⁵⁷

6.47 Williamstown is situated on the western shore of Port Phillip Bay and dates back to 1865. Tenix owns the site, which they bought in 1987 from the Commonwealth 'as a going concern to build ships'.⁵⁸ It has 2 x 6000dwt building berths (150m length x 36.5m total width), travelling cranes: 3 x 59t, 3 x 10t, graving

53 Department of Defence, answer to question on notice, 28 March 2006 (received 29 May 2006), pp. 29–30.

54 *Committee Hansard*, 19 April 2006, p. 43.

55 *Committee Hansard*, 19 April 2006, p. 43.

56 *Committee Hansard*, 18 August 2006, p. 20.

57 The Allen Consulting Group, *Future of Naval Shipbuilding in Australia: Choices and Strategies*, May 2005, p. v.

58 The Allen Consulting Group, *Building the Air Warfare Destroyers: How does Williamstown rate?*, report to the Government of Victoria, February 2005, p. 28.

dock (limited to 145m x 29.6m; gate 23.3m), crannage of 250t capacity, transporters with capacity 400t, halls for module construction, assembly, blast and paint and outfit, and wharfage in excess of 600m with 300m fully serviced.⁵⁹ Mr David Miller, Executive General Manager, Tenix Defence Pty Ltd, believed that, despite its age, Williamstown is a very modern, very clean and very advanced shipyard. He explained that, in the mid-1990s, the shipyard had four and five ships under consolidation simultaneously. He noted further that 'in terms of modularity and how it fits into our infrastructure, modularity allows us, more than anything, to simply...spread the work around so that we can have the higher, more complex, work of the system and physical integration of the ship ongoing'.⁶⁰

Investment in infrastructure

6.48 The 2002 strategic plan noted that the infrastructure at Williamstown had been developed to enable consolidation of the ANZAC frigates. It observed that some aspects of the infrastructure could be modified 'relatively easily', whereas others would require 'considerable investment or are effectively permanent'.⁶¹ The plan reflected advice it had received that 'for future construction of large major surface combatants such as proposed under SEA 4000, the site would need significant redevelopment'. It stated further 'Considerable investment, possibly including a floating dock to supplement land docking, might also be necessary should concurrent build and/or upgrade activities be planned'.⁶² At this time, ASPI concurred that the site could be used to construct large ship modules but that major infrastructure changes would be necessary for the consolidation of large ships.⁶³ A study, conducted by the Allen Consulting Group in 2005, before the AWD project was awarded to ASC, found:

While much of the existing shipyard would not require refurbishing in order to accommodate the AWDs, some facilities would need to be upgraded or replaced. For example, the present slipways and docks are too small, and in any case there is now a view that slipway launches are undesirable for substantial vessels because of the strain they supposedly exert on the hull.⁶⁴

59 *Naval Shipbuilding and Repair Sector Plan*, August 2002, p. C-1.

60 *Committee Hansard*, 27 April 2006, p. 4.

61 *Naval Shipbuilding and Repair Sector Plan*, August 2002, p. C-1.

62 Defence Materiel Organisation, *Australian Naval Shipbuilding and Repair Sector Strategic Plan*, August 2002, p. C-1.

63 ASPI, *Setting a course for Australia's Naval Shipbuilding and Repair Industry*, An ASPI Report, August 2002, p. 15.

64 The Allen Consulting Group, *Building the Air Warfare Destroyers: How does Williamstown rate?*, report to the Government of Victoria, February 2005, p. 29.



The Tenix Williamstown 64 tonne slipway crane

6.49 The report indicated that the capital cost of the work would be approximately \$80 million and would include: a floating dock for launch; cranes, including a heavy lift mobile crane; a construction hall; a steel fabrication shop; panel manufacturing facilities, including a robot cutting machine; pier demolition; and dredging.⁶⁵ The

65 The Allen Consulting Group, *Building the Air Warfare Destroyers: How does Williamstown rate?*, report to the Government of Victoria, February 2005, p. 29.

report noted that the Victorian government had offered a support package for the AWD project that would have provided 'funding for a share of this upgrade cost'.⁶⁶

6.50 According to Mr Miller, Tenix commissioned a benchmarking study of its performance as a shipbuilder against companies through Asia, Europe and the U.S. According to Tenix, the study indicated that Tenix is 'above the midpoint of where many of the best yards in the worlds are in'. Although the study showed the company's strength in planning systems and organising work, it had specific suggestions to improve its modular assembly. Mr Miller stated:

An area where it was suggested we should go back and begin to put in plans for improvement was the layout of our yard. So we would look at ways to have a better flow of material coming through in the way that modules are constructed, so that we do more work in the module phase before we begin the large assembly of a hull. A lot of that just gets into time use management to ensure that you get as much into that module as you can and that you get it as densely packed as you can before you begin moving that on and assembling it as part of the hull. Simply, it takes more labour once you get it as part of the hull—then the workers have to begin crawling down into more confined spaces and so forth.⁶⁷

Investment for the construction of very large ships

6.51 Looking to the immediate future, the committee asked whether additional significant investment would be required in Williamstown to make those yards competitive for the modular assembly of both the AWDs and the LHDs. Mr Miller informed the committee that a substantial upgrade would be needed if Tenix were to take on the construction of a very large vessel such as an LHD at Williamstown. The company, however, has other options that would accommodate such a project, such as using its Western Australian site which is immediately adjacent to the common user facility in Henderson. According to Mr Miller, the common user facility in Western Australia is now part of Tenix's business plan: that when bidding for major jobs it tends to do so through the CUF.⁶⁸ He noted:

Over the past year we have undertaken a number of naval repairs on Anzac frigates using that facility. We are currently converting the civilian oil tanker *Delos* into an underway replenishment ship for the Australian Navy. It is soon to be the HMAS *Sirius*. The availability of that infrastructure allows us to take on major projects without the barrier to entry that we might otherwise experience if we had to go out and capitalise all of that ourselves.⁶⁹

66 The Allen Consulting Group, *Building the Air Warfare Destroyers: How does Williamstown rate?*, report to the Government of Victoria, February 2005, p. 29.

67 *Committee Hansard*, 27 April 2006, p. 7.

68 *Committee Hansard*, 27 April 2006, p. 5.

69 *Committee Hansard*, 27 April 2006, p. 5.

6.52 It should be noted, however, that Mr Miller did not want to imply that because Tenix consolidates in one place, work cannot be done in other areas such as Williamstown.⁷⁰

Garden Island in New South Wales

6.53 The New South Wales government noted that there are two existing facilities with the capacity 'to host work on large naval vessels'—Captain Cook Dry Dock in Garden Island and the Cairncross shipyard in Brisbane.⁷¹ Mr Warwick Glenn, New South Wales Department of State and Regional Development, told the committee that the Captain Cook Dry Dock is 'ideally positioned at the fleet base—near naval personnel, accessible to Canberra and close to Defence ICT systems hub of North Ryde, which offers support for electronics components of modern ships'.⁷²

6.54 Although in Commonwealth hands, the Garden Island Dockyard in Sydney is operated under lease by ADI Ltd (now Thales, see paragraph 4.48).⁷³ The yard is used mainly for repair and maintenance of major surface ships and upgrade of the FFGs.⁷⁴ The site has a dry dock 100 000 dwt capacity, 345 metre x 41.6 metre and a floating dock 800 dwt capacity, 63 metre x 12.9 metre. According to the 2002 Australian naval shipbuilding strategic plan, the dry dock is the largest in the Southern Hemisphere and capable of servicing very large ships of foreign navies. It was of the view that the site 'as a whole would require significant investment to convert to consolidation of vessels planned under SEA4000, JP2048/2027 or SEA1654'.⁷⁵

6.55 The 2002 ASPI report was of the view that, although its key capabilities relate to the repair sector, it could be used for the construction of large ship modules. It noted, however, that while the Captain Cook Dry Dock could be used to assemble modules, this activity would disrupt its repair and maintenance dockings.⁷⁶

70 *Committee Hansard*, 27 April 2006, p. 5.

71 *Committee Hansard*, 28 June 2006, p. 66.

72 *Committee Hansard*, 28 June 2006, p. 66.

73 *The Australian Naval Shipbuilding Repair Sector Strategic Plan*, August 2002, p. 13.

74 *The Australian Naval Shipbuilding Repair Sector Strategic Plan*, August 2002, p. 13.

75 *The Australian Naval Shipbuilding and Repair Sector Strategic Plan*, August 2002, p. C–4.

76 ASPI, *Setting a course for Australia's Naval Shipbuilding and Repair Industry*, An ASPI Report, August 2002, p. 15.



The Captain Cook Dry Dock at Garden Island

Investment for the construction of large naval vessels

6.56 Mr Smith, ADI, advised the committee about the existing facilities on the eastern sea board which have been in place for many years. In his view they are 'fully capable right now of commencing this LHD program with only very small infrastructure investment—and I mean really small'.⁷⁷ He explained:

The history of Garden Island as a facility before ADI was a privatised company is that it was a heavy engineering facility where anything was possible. You could do any work there. That has changed for obvious reasons. There are environmental pressures on the site. Having said that, however, what we can do are essentially...major cutting, major refabrication within the ship, putting in new capabilities and so forth. As I said before, if there is some aspect of that work that is noisier, dirtier or whatever than what is possible under our licence regime then we get that done somewhere else and bring the finished product into the facility where we then install it in the ship.⁷⁸

77 *Committee Hansard*, 28 June 2006, pp. 13 and 14.

78 *Committee Hansard*, 28 June 2006, p. 10.

6.57 He noted that ADI have partners in the bid for the LHDs including Forgacs, an engineering company based in Newcastle that has facilities in Newcastle and Brisbane.⁷⁹ He indicated that between ADI; Forgacs; the French designer-shipbuilder partner, Amaris; and other strategic subcontractors, ADI does not envisage any constraints in undertaking the LHD program.⁸⁰

The Cairncross Dry Dock in Queensland

6.58 The Queensland government also believed that Australia has the existing infrastructure needed to sustain a viable naval shipbuilding industry. It identified two sites in Queensland that could provide the necessary infrastructure for the proposed LHDs.

6.59 The Cairncross Dry-dock Facility is situated in a mixed industrial-residential area on the Brisbane River and has access to the local workforce, existing steel fabrication sites and transportation nodes. In 2002, the Naval Shipbuilding and Repair Sector Strategic Plan noted that the site covered 16 hectares and had a graving dock (85 000 dwt capacity, 263 metre x 33.5 metre), a fitting out wharf of 307 metre and travelling cranes: 4 x 5 tonnes, 1 x 50 tonnes, 1 x 30 tonnes. The 2002 Strategic Plan commented on the capacity for infrastructure expansion on this 'relatively spacious' site. It was of the view that 'some investment would be needed to adapt it to module fabrication, but full vessel assembly was not considered 'practical'.⁸¹

Investment for the construction of large naval vessels

6.60 According to the Government of Queensland, the site is amongst the largest in the Southern Hemisphere and could facilitate the assembly of either of the LHD designs. It is considering developing a CUF, particularly in support of building modules to be consolidated in the Cairncross Dock in Brisbane and is working on the plan for the development of a common user facility with leaseholder Viking Industries.⁸² The development would provide the necessary facilities for the complete assembly of large ship modules up to 500 tonnes which could then be transported six kilometres to the Cairncross Dry Dock or another shipyard in Australia.

6.61 Cairncross is highly suited to the assembly of super-blocks, such as the forward or aft section of a large vessel and the site requires minimal upgrade to support the project 'given the symbiotic relationship between the dry dock and the fabrication facility (Common User Facility) immediately down river'. The Queensland government noted that the site would be suitable for the fabrication of modules for the

79 *Committee Hansard*, 28 June 2006, pp. 9–10.

80 *Committee Hansard*, 28 June 2006, p. 10.

81 *Australian Naval Shipbuilding and Repair Sector Strategic Plan*, August 2002, p. C–8.

82 *Submission 22*, p. 11

AWD that would then be transported to South Australia.⁸³ Additional requirements, however, would be needed to cater fully for the consolidation of the LHDs at this site.

6.62 Brisbane Slipways wrote to the committee drawing attention to its facilities and suitability to be part of the naval shipbuilding projects. It noted that it is a 2500 tonne repair facility based in Brisbane on over 30 000 square metres. It listed its existing infrastructure and concluded:

Brisbane Slipways has existing physical and staff infrastructure to make a serious contribution to Australia's shipbuilding capabilities. We are enthusiastic about the future and look forward to working with Government and other industry players to develop our joint capabilities.⁸⁴

6.63 Having looked at individual shipyards, the committee now considers the state of Australia's shipbuilding infrastructure as a whole. It looks at the efficiencies or inefficiencies created by the pattern of investment in Australian shipyards.

Overall infrastructure development in Australia

6.64 Australian shipyards are not without problems. Rear Admiral (retired) Kevin Scarce from the Port Adelaide Maritime Authority and the South Australian government informed the committee that their analysis of data revealed 'a fragmented industry characterised by an oversupply of dated, uneconomic and competitive infrastructure...'⁸⁵ The South Australian government stated that Australian shipbuilding infrastructure has 'evolved on a project-by-project basis rather than in response to a national plan'. It maintained that 'the myriads of facilities that are left are old, underutilised and not cost competitive'. In its view, further infrastructure investment beyond that already planned, can 'only add to the underutilisation of costly assets'.⁸⁶ Thiess also gave its assessment of the current state of infrastructure in Australia. It found:

In past naval shipbuilding programs, most infrastructures were built as part of the project. For instance, ASC built up the site in Osborne, SA from a green field. ADI did the same in Newcastle for the Mine Hunter. In most cases, the investment represented around 3% of the total value of the project. The ultimate use of the site after the end of the program was never fully optimized. The Newcastle site was returned to the landlord who is leasing it to a super yacht builder from New Zealand. The site in Williamstown used to build the ANZAC ships is probably underutilised at the present time.⁸⁷

83 *Submission 29*, pp. 4, 8.

84 *Submission 41*, pp. 1–4.

85 *Committee Hansard*, 19 April 2006, p. 21.

86 *Submission 9*, p. 35.

87 *Submission 22*, p. 11.

6.65 An Allen Consulting Group study, commissioned by Tenix, published before the successful tender for the AWD project was announced touched on the development of new sites while, it noted, the older sites offered a viable option. It stated:

On the basis of the criterion of minimising capital expenditure on set-up costs, Tenix at Williamstown is a clear winner. If the AWD project went to Osborne (under the auspices of either Tenix or ASC), the investment required would be at least twice that needed at Williamstown, which is a working naval shipyard successfully building major surface combatants. Other things being equal, since the two sites would be equally capable, this does not stand up as an investment, irrespective of whether or not the South Australian government would fund it. It seems unlikely that a private investor such as Holden, for example, would scrap a successful existing facility when it introduced its next model and build a new plant 800km away at double the cost.⁸⁸

6.66 Mr David Miller, Tenix Defence Pty Ltd, drew attention to the legacy of this practice of building up infrastructure to meet the needs of a specific project resulting in the underutilisation of sites. He told the committee:

My comment would be that there may be value in having more focus on industry policy so that we do not end up with the situation...of having various sites all around the nation that have been developed to a certain level and then left for the grass to grow over. Our site in Williamstown is operating well below capacity, and I suspect that that is the situation at many sites around Australia right now.⁸⁹

6.67 Defence also noted the influence that specific projects have had on the pattern of infrastructure development in Australia:

ASC was created to meet the needs of the Collins project. Tenix grew from the Anzac ship project, which used Williamstown facilities previously owned by government, and they created a whole new workforce to undertake the build program. ADI created a completely new greenfield workforce for the MHC project.⁹⁰

6.68 Mr Kim Gillis, DMO, noted further that the Osborne facility in South Australia is designed around the AWD program. Mr Warren King, DMO, reinforced the view that the Osborne site is being purposely designed and built to accommodate the AWDs.⁹¹

88 The Allen Consulting Group, *Building the Air Warfare Destroyers: How does Williamstown rate?*, Report to the Government of Victoria, February 2005, p. 30.

89 *Committee Hansard*, 27 April 2006, p. 18.

90 *Committee Hansard*, 18 August 2006, p. 29.

91 *Committee Hansard*, 18 August 2006, p. 35.

6.69 Mr Andrew Fletcher, CEO of the Port Adelaide Maritime Corporation, wanted to make clear that the fundamental premise behind South Australia investing in a Common User Facility at Osborne was 'to provide internationally competitive and flexible infrastructure for users'. The additional investment in the CUF is 'to ensure the development of world-class infrastructure that can support multiple users (beyond that required to service the AWD program)'.⁹²

6.70 The Government of Victoria surmised that fragmented single project based decisions had given rise to a situation where there was an oversupply in the naval shipbuilding and repair sector at the same time that Australian industry does not have the capability to undertake the AWD and LHD projects concurrently.⁹³ It observed:

It is interesting to note that, over the last 20 years, each new major shipbuilding contract awarded by Defence has involved building up new capability at a different shipyard.⁹⁴

6.71 The New South Wales government also referred to what it believed could be a better use of established facilities rather than putting in place a new facility:

Use of existing facilities rather than the building of new infrastructure for individual projects is clearly a better use of resources for the taxpayer. Creating new infrastructure is likely to result in a national overcapacity and risk the viability of both existing and new dockyards. Equally, purchasing the amphibious ships from overseas creates risk to the survival of infrastructure for Australia's future needs by reducing the critical mass of work available in Australia. An overseas purchase also relocates to other nations rather than captures for Australia positive impacts such as technology and skills enhancement.⁹⁵

6.72 To a degree, major engineering centres such as the AMC, which are intended to service more than one industry, are looking to address the problem of underutilisation. They are designed to make more and effective use of major infrastructure. Difficulties arise however, if the demands of the respective sectors run out of kilter and the demand for the facilities peak simultaneously, placing heavy demands on the facilities, which may drive prices up.⁹⁶

6.73 Clearly, while individual shipyards and state governments develop their infrastructure to cater for a specific project, there is the potential for inefficiencies and underutilisation of infrastructure. The Commonwealth government, as the major buyer of naval ships in Australia and the custodian of taxpayer money, together with state governments have an important role in ensuring that the pattern of infrastructure

92 Andrew Fletcher to Senator Steve Hutchins, 1 September 2006.

93 *Committee Hansard*, 18 August 2006, p. 16.

94 *Committee Hansard*, 18 August 2006, p. 16.

95 *Committee Hansard*, 28 June 2006, p. 66.

96 Mr Gregory Tunny, CEO, ASC Pty Ltd, *Committee Hansard*, 19 April 2006, p. 9.

development benefits the industry as a whole and not just particular sites. This is especially important considering the two major naval ship projects that are underway. The role of the Australian government in planning and shaping Australia's shipbuilding is discussed in Part IV.

Infrastructure needs for the AWDs and LHDs

6.74 Each of the shipyards discussed in this chapter would require further investment in infrastructure if it were to meet the requirements for the construction of the AWDs and LHDs. The state governments, ASC, ADI and Tenix were confident that their particular shipyard, with some infrastructure development or use of additional sites, could accommodate the build of large naval vessels such as the LHD. Their public optimism is understandable. The amount of investment needed to bring Australian shipyards up to standard, however, is unclear and their capacity to meet the demand created by an LHD build is uncertain. For example, in assessing the overall capability for Australian industry to meet Defence's demands with regard to the AWD program, the Allen Consulting Group suggested in 2005 that:

No existing shipyard would be able to accommodate their [AWDs] construction without modification. Of the three competing tenders, only Tenix at Williamstown offers an existing shipyard that, with a significant outlay but one that is relatively modest in terms of the overall value of the contract, would be capable of accommodating the AWD project.⁹⁷

6.75 On the other hand, Mr Warren King, Program Manager, AWD, said with regard to the AWD project:

For the air warfare destroyer, both sites that came under serious consideration—that is, Tenix at Williamstown and the Osborne site—required very similar levels of investment in facilities to make them AWD ready, which is probably not understood by all. There was no facility that was ready and waiting to be used and then was not used. Of course, if there were such a place, that might have made that particular proposal more attractive. The fact is that both sites needed an investment, and it was not an entirely dissimilar level of investment—and in both cases, of course, it was the state governments which made the investment behind the companies. So I do not think we actually had a site that was AWD ready and we ignored it. That was not the case.⁹⁸

In summary, he advised the committee:

My team's bottom line was that they found significant capability around Australia to do the AWD modules in a variety of formats—not just in the shipbuilding industry, interestingly enough.⁹⁹

97 The Allen Consulting Group, *Building the Air Warfare Destroyers: How does Williamstown rate?*, Report to the Government of Victoria, February 2005, p. 27.

98 *Committee Hansard*, 18 August 2006, p. 37.

99 *Committee Hansard*, 18 August 2006, p. 49.

6.76 He noted, however, that their underpinning concern at the moment was 'capacity'.¹⁰⁰ The committee asked Defence to explain the distinction between industry 'capability' and 'capacity'. Defence uses capability to refer to industry's 'shipbuilding related skills and the necessary infrastructure to construct the AWD modules'. On the other hand, Defence understood 'capacity' to mean 'the measure of the available labour to carry out the work'.¹⁰¹ It explained further:

At a number of locations Australian industry has the experience and facilities required to build AWD modules (capability). The capacity of Australian industry to build the AWD modules depends upon the availability of skilled people during the desired build period.¹⁰²

Along with meeting the demands of broader Australian industry, the potential impact of building LHD's concurrently with AWDs will need to be evaluated.¹⁰³

6.77 Chapter 7 examines workforce issues in terms of Australia's capacity to meet the demand for the construction of large naval vessels in Australia. The following section looks in greater detail at the capability of Australian shipyards to construct the LHD given that the AWDs are to be built in Australia.

Capacity to meet the challenges of an AWD and LHD program

6.78 Although most witnesses agreed that Australia does have, or could develop if required, the infrastructure needed to undertake the construction of large naval vessels, the project to build LHDs would require additional infrastructure. Estimates differed, however, on the amount of infrastructure investment needed to accommodate the LHDs. Thiess concluded:

In addition to existing facilities in existing yards and at fabrication shops across Australia, it is now clear that very limited further investment will be necessary to build the new AWD and Amphibious ships (LHD). That should improve the competitiveness of the build by the 3% or 4% that previously was invested in infrastructure during earlier programs and that is not necessary for foreign yards if the ships are built overseas.¹⁰⁴

100 *Committee Hansard*, 18 August 2006, p. 49.

101 Department of Defence, answer to question on notice, 18 August 2006 (received 30 October 2006), p. [10].

102 Department of Defence, answer to question on notice, 18 August 2006 (received 30 October 2006), p. [10].

103 Department of Defence, answer to question on notice, 18 August 2006 (received 31 October 2006), p. [10]. Defence noted that being mindful of competing Australian projects that also require substantial metal fabrication labour, the AWD Program, in conjunction with industry partners ASC and Raytheon, is currently undertaking a series of industry engagements to better understand Australian industry's capacity and commitment to undertake the task of building the AWD modules. Initial indications appear positive, but will need to be confirmed in due course.

104 *Submission 22*, p. 11.

6.79 Aerospace, Industrial and Marine Technology (AIMTEL) Pty Ltd had some reservations about the capacity of Australian shipyards to build the LHDs. It was of the view that Australia has limited capacity to construct ships in excess of 100 metres from existing facilities.¹⁰⁵ It stated:

Australian industry is substantially behind the leading 'Large' shipbuilding yards in Japan and Korea which benefit from massive investment in automated process for construction of 'large' steel ships. However, Australia still leads the productivity race in respect of Aluminium construction.¹⁰⁶

6.80 Even so, it concluded that large ships could reasonably be constructed from improved facilities at Brisbane, Sydney, Melbourne, Adelaide or Perth/Fremantle.¹⁰⁷

6.81 Austal, however, was certain that Australia does not have the infrastructure and production personnel on a scale that would enable the construction of very large naval (or commercial) steel vessels, which are greater than 10 000 tonnes. It noted that traditional steel shipyards have a lot of automated equipment—'a lot of large panel lines; equipment is welded, coated and so forth'. It stated that 'Were this capacity to be developed for a specific naval program then its long-term sustainability would, in the absence of significant ongoing Australian government support, rely on the ability of industry to secure additional contracts for very large, steel vessels'.¹⁰⁸ Mr Rothwell, Executive Chairman, Austal, had no doubt that large ships could be built in Australia but added:

I have often said that, if you need a hole in the ground, you can use a pick and shovel or you can use an excavator—and I do not think we have an excavator, if I can use that as an analogy, in Australia; it is not here. Moving on from that, it could be set up in Australia, but the question is: would that be sustainable or, at least, would there be a workload for it?¹⁰⁹

6.82 It should be noted that the Western Australian and South Australian governments have clearly indicated their preparedness to invest in the lead shipyards in their respective states as a positive indication of their confidence in their industrial infrastructure to meet the demands of building a large naval vessel. The Western Australian government concedes that the investment to date, including the new floating dock, is not large enough to accommodate amphibious support ships which could weigh some 27 000 tonnes. As noted earlier, it has put on the public record its plan to provide the needed infrastructure should it be required. It stated:

The...CUF floating dock is being designed so that it can be extended to accommodate the amphibious support ships, if the Commonwealth chooses

105 *Submission 15*, p. 1.

106 *Submission 15*, p. 1.

107 *Submission 15*, p. 1.

108 *Submission 7*, p. 3.

109 *Committee Hansard*, 3 April 2006, p. 65.

to build the amphibious support ships in Australia and if the shipbuilder selected for the job chooses to build or assemble them at the CUF. The estimated cost of any such extension of the CUF floating dock is \$50 million, equivalent to about 2.5 per cent of the estimated cost of constructing the two amphibious support ships.¹¹⁰

It has made clear, however, that if the amphibious ships do not come to Western Australia, the government would not invest in this second stage.¹¹¹

6.83 Mr Kim Gillis, Deputy CEO of the DMO, referred to the plans for further investment in Western Australia. He noted a recent study undertaken by Appledore that assessed all the independent and individual sites in the country and their ability to build the LHDs and any upgrades or specifics.¹¹² It noted the Western Australian government's two-stage plan to upgrade its facilities at the AMC and the intention in the second stage to investment in a second phase lift so that an LHD could be lifted out of the water.¹¹³

6.84 With regard to the other major sites, Mr Gillis told the committee that:

The Osborne facility in South Australia, from what I have seen of the plans, is designed very much around the air warfare destroyer program; it does not have the facility to lift an LHD. The original plans were that, before ASC withdrew from the LHD program, they could have expanded into that facility but, at this stage, the plans indicate that they cannot lift an LHD. The Williamstown facility does not have the facilities to lift an LHD out of the water. Garden Island in Sydney and Cairncross in Brisbane have the facilities to dock a vessel of that size.¹¹⁴

6.85 According to Mr Gillis, the Appledore report looked not only at those particular facilities but also a whole range of other areas, including blast, the capacity to move large modules and infrastructure issues.¹¹⁵

6.86 In response to a direct question about whether suitable and capable infrastructure and plant existed in Australia to accommodate the AWD and LHD projects, Mr Gillis said with regard to the LHD:

The limiting factors are not necessarily the lifting facilities; a whole range of other infrastructure issues are affecting the ability of any company to build in Australia. The amount of steel that we would need to process would require significant investment in infrastructure in respect of blasting, painting and the ability to move these large modules. Yes, there is a lot of

110 *Submission 23*, p. 27.

111 *Committee Hansard*, 3 April 2006, p. 84.

112 *Committee Hansard*, 18 August 2006, p. 35.

113 *Committee Hansard*, 18 August 2006, p. 35.

114 *Committee Hansard*, 18 August 2006, p. 35.

115 *Committee Hansard*, 18 August 2006, p. 35.

work. We have had estimates from all four original tenderers in the risk reduction and design study phase, which was a funded study that DMO undertook with Austal, ASC, Tenix and ADI. The outcome of that was that a significant investment was required in-country. The dollar figures varied from somewhere between \$100 million to \$300 million worth of investment just in infrastructure in-country to build the LHDs in-country.¹¹⁶

6.87 He indicated that the tenderers have been negotiating with state governments about state government investment.¹¹⁷

6.88 There can be no doubt that if the LHDs are to be built in Australia, infrastructure development would have to take place to supplement existing facilities which could amount to between \$100 and \$300 million.

Through-life costs

6.89 The investment in infrastructure, however, does have long-term benefits for the costs in maintaining and upgrading the vessels. Many noted that by constructing vessels in Australia the economic costs of maintaining, repairing and refitting large naval vessels throughout their useful lives is reduced.¹¹⁸ The savings generated by having the infrastructure available for the maintenance of the Navy's fleet is a major consideration.

Infrastructure outside the shipyard

6.90 It is clear that the importance of adequate infrastructure extends beyond the shipyard. The shift in production to modularisation creates demands for improved infrastructure not only in the shipyards but, as noted above, in areas such as steel fabrication. Modern ship construction also requires the effective and efficient transportation of large modules from their place of production to the assembly site.

6.91 The following section looks at the need for improved methods of transporting large modules from their place of construction to the assembly site.

High wide load corridors

6.92 Modular construction techniques allow the bulk of steelwork fabrication and equipment installation to be performed in controlled workshop environments, in a number of locations simultaneously. This modular approach to shipbuilding significantly shortens project schedules and reduces manpower requirements. The use of modular techniques, however, also leads to an increasing need for high wide loads up to and exceeding 200 tonnes in weight to be transported from place of production

116 *Committee Hansard*, 18 August 2006, p. 36.

117 *Committee Hansard*, 18 August 2006, p. 36.

118 See for example, *AMWU Submission 21*, p. 3.

to final assembly.¹¹⁹ Thus the move to larger modular construction creates new infrastructure demands such as improved transport routes. Although it does not necessarily matter where the modules are built they need to be moved to the lead shipyard. The Chamber of Commerce and Industry, Western Australia, noted that the metropolitan areas are growing throughout Australia but 'without thought to our ability to move huge loads as we have moved to integration across the world'.¹²⁰

6.93 While confident that the industrial capacity exists in Australia, Tenix saw an urgent requirement for the Federal government and State governments 'to seek out and implement innovative means for transporting large steel modules'.¹²¹ It cited the example of modules fabricated in Brisbane, Newcastle or Melbourne for the AWD or LHD programs which may need to be transported efficiently and economically to Osborne or Henderson for final consolidation. Referring to the difficulty transporting modules by truck or train to the one location for consolidation, Mr Miller of Tenix, suggested that consideration be given to heavy sealift.¹²²

6.94 Noting that the growing trend toward modularisation in the shipbuilding industry created specific infrastructure needs, the Chamber of Commerce and Industry of Western Australia stated that:

...principal workshops in the Kwinana and the Kewdale-Welshpool industrial areas were previously hamstrung from bidding for many large contracts because the road network out of those areas contained power line and road furniture obstructions preventing the outward movement of high and wide loads.¹²³

6.95 It cited the construction of very high wide load corridors in Western Australia to accommodate the new trend toward large engineering centres.¹²⁴ This development of high wide corridors has enabled the modules to be transported to the site for assembly. Mr Alan Windram, AGC Industries Pty Ltd, told the committee that with the high wide load corridor, his company can move an 11 metre by 11 metre module of probably 200 tonnes through the arteries of Western Australia.¹²⁵

6.96 As noted earlier, the initial outlay in building the necessary infrastructure for constructing a vessel will then be available for the vessel's through-life support. Investment in infrastructure will also benefit the larger economy, especially

119 *Submission 11*, p. 1.

120 *Committee Hansard*, 3 April 2006, p. 19.

121 *Submission 26*, p. 7.

122 *Committee Hansard*, 27 April 2006, p. 21.

123 *Submission 11*, p. 1.

124 *Committee Hansard*, 3 April 2006, p. 21.

125 *Committee Hansard*, 3 April 2006, p. 75.

improvements in facilities such as the common user facility, which is designed with other users in mind, and the nation's transportation network.

6.97 ASC submitted that national governments are not disinterested bystanders of national shipbuilding and repair industries, that they should have 'a strong and enduring interest in the industry's success'.¹²⁶ This chapter has identified a number of problems in the industry such as the underutilisation of facilities that could be addressed by better planning.

Committee view

6.98 Over many years governments and private enterprise have invested in infrastructure for the naval shipbuilding industry. The governments of New South Wales, Victoria, South Australia, Queensland and Western Australia together with ASC, ADI and Tenix were confident that Australian shipyards, with some infrastructure development could accommodate the build of large vessels such as the LHD. Recent studies acknowledge that infrastructure improvements are needed to supplement existing facilities and that undoubtedly some investment would be required. A study commissioned by DMO suggested that the cost estimates for improvements to satisfy an LHD build range from \$100 million to \$300 million.

6.99 Some lead yards are looking to their respective state government to help fund infrastructure improvements. For example, Western Australia has committed to further investment in its CUF should Henderson be selected as the assembly site for the LHDs. As noted in this chapter, the government would charge for the use of such facilities which would be reflected in the overall cost of building the ships in Australia. The committee has no doubt that should the decision be taken to build the LHDs in Australia, there is the commitment by state governments and the major primes to ensure that the infrastructure needed to support the project would be available.

6.100 This chapter picked up on a number of themes emerging from previous chapters. One of the main themes is the important role that Defence, as the sole purchaser of navy vessels, has on shaping the industry. The committee is concerned about how Defence encourages or fosters local business and the influence it exerts on the extent and nature of investment in large infrastructure. The role of governments in planning for, and investing in, the industry is particularly significant in light of the observations about the fragmented state of the industry where specific projects have dictated the infrastructure requirements for that site. Part IV of the report considers these issues in greater depth.

6.101 Although Australia may possess the infrastructure or the potential to develop the necessary facilities to support the Navy's shipbuilding program, this capability

126 *Submission 17*, p. 10.

alone does not mean that Australia has the wherewithal to meet the challenge created by the AWD and LHD projects. A highly skilled workforce is essential to sustain the industry. The following chapter considers the skill base in Australia.