

Chapter 5

SME suppliers

5.1 Modern naval ships are complex systems that rely on a range of sub contractors specialising in particular aspects of naval shipbuilding to deliver the required capability on time and on budget. Thus, during a major naval shipbuilding project a significant part of the work is undertaken by a network of second and third level suppliers and subcontractors. As chapter 4 noted, the existence of an efficient and effective supply chain is critical to the naval shipbuilding and repair sector. An important consideration in determining the capability of Australia to build naval ships is the role of the many smaller companies that support the industry. These small to medium size enterprises (SMEs) provide specialist services and bring significant technology, innovation and skills to the maritime industry, particularly during upgrades and through-life support programs'.¹ This chapter looks at the capability and reliability of the supplier base in Australia. It seeks to identify the strengths and weaknesses in the network of SMEs servicing the industry.

Supply network in Australia

5.2 While shipyards are the high profile hubs of shipbuilding activity, they are supported by a substantial industrial base spread throughout the country. Particularly with modular construction, firms located at a distance from the shipyard are able to participate in a ship build providing a range of materials, equipment, and ships' parts and components. One SME told the committee that the country's shipbuilding capability is only:

...possible by leveraging the capabilities of shipbuilding primes that will have overall platform build, enhancement and support responsibilities with the range of skills provided by established local enterprises that will provide the more detailed systems support and linkages to overseas equipment suppliers.²

5.3 Indeed, the supply chain is estimated to provide between 60 and 70 per cent of the net value of any new ship, naval or merchant.³ Mr Michael Gallagher, Nautonix, stated that this figure of 70 per cent by value of a project that is expected to be outsourced by the prime can 'invariably be higher'. He stated:

In fact, if I recollect correctly, the submarine program achieved 77 or 78 per cent. I would like to think as we go through the Air Warfare Destroyer

1 *Submission 20*, p. 1.

2 *Committee Hansard*, 20 April 2006, p. 20.

3 See for example, Professor Martin Edmonds, Director, Centre for Defence and International Security Studies, 'UK Shipbuilding: a new direction?', Lancaster University, 2001; Nautonix, *Committee Hansard*, 3 April 2006, p. 36; and Senator the Hon. Robert Hill, Minister for Defence, Keynote Address, Defence & Industry Conference, Canberra, 21 June 2005.

Program, given the way they have approached that task and encouraged Australian industry to get on board early, that potentially we will see a much higher percentage of Australian industry participation and involvement, as we have done with our electronic charting systems.⁴

5.4 The Government of Victoria also highlighted the extent to which a shipbuilder relies on a wide and diverse network of local suppliers to construct a naval vessel:

Modern shipbuilding now rarely involves construction at a single site; rather, it involves a wide network of sites for construction of ship modules, which can include up to 80 per cent of fit-outs and then assembly of modules at a launch site. Consideration of a sustainable industry must therefore take into account a viable industry in the enabling sector, which includes the construction of components, fit-out components and manufacture of inputs. A successful industry in this regard requires a strong and diverse industry base which spans more than just defence manufacturing and access to a deep skills market. It is important to note that none of these activities need necessarily be located near to the final assembly of ships.⁵

5.5 In Australia, suppliers tend to have niche capabilities and their contribution ranges from 'quite small nuts and bolts to systems and electronics'.⁶ There are well over 1000 small-to-medium domestic enterprises and a number of sophisticated systems houses that support Australia's naval shipbuilding projects. Some are subsidiaries of international companies. Indeed, the Australian Industry Group Defence Council spoke in glowing terms about the depth of Australia's shipbuilding supply chain especially since the Collins class submarine. Mr John O'Callaghan, Australian Industry Group Defence Council, said:

...we now have a huge reservoir of small to medium sized enterprises in this country at the forefront of activity that are not only capable of being involved in ship construction activity but also have the wit to be involved in other things related to it. There are certain systems that are involved in ship construction which are very similar to aircraft activity. Various SMEs move between the two from time to time. In the main that is not the case, but we now have a reservoir of thousands of SMEs in this country which we never had before, capable of doing all that advanced integration systems activity which the JSFs and warfare destroyers of the world put before us.⁷

5.6 The Chamber of Commerce and Industry was in no doubt that Australian companies are 'more than capable' of building naval vessels. Observing that Australia could build on existing capability gained from projects such as the ANZAC and minehunters, Gibbs & Cox Australia Pty Ltd maintained that:

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

5 *Committee Hansard*, 18 August 2006, p. 17.

6 *Committee Hansard*, 27 April 2006, pp. 36 and 37.

7 *Committee Hansard*, 28 June 2006, p. 29.

...now is the right environment to grow capability in Australia and focus on the positive side of it.⁸

5.7 Suppliers also assume a key part in supporting the vessel through its life. The Government of Western Australia noted that:

In supporting the ANZAC ships home ported in Western Australia, Tenix Western Australia is able to tap into a comprehensive supply chain in Australia and New Zealand that was already conditioned by extensive involvement in the construction of the ANZAC ships. The availability of a tested supply chain greatly reduced the cost, schedule and technical risk inherent in local support of the ANZAC ships. Specifically, under the ANZAC Ship build contract, Tenix contracted directly with original equipment manufacturers (OEM) for provision of such major items as, for example, propulsion engines. This enabled Tenix to extend these relationships in the provision of in-service support of the ANZACS, either directly by the OEM or by establishing dedicated local agents for the support of specific items.⁹

5.8 The 2000 Tasman Asia Pacific report on the ANZAC ship project estimated that the project called on the resources of over 1300 companies in Australia and New Zealand which accounted for over 60 per cent of the subcontractor companies.¹⁰ More recently, Mr Miller advised the committee that:

The current contract value of our largest program, the Anzac ship project, is about \$A7.2 billion. Of that amount, over 80 per cent was subcontracted to about 3,000 suppliers in Australia and New Zealand. Stated differently, almost \$5.6 billion flowed into small to medium enterprises in Australia and New Zealand as a result of the government's decision to construct those ships in Williamstown. It should further be noted that many of those businesses are now exporters themselves.¹¹

5.9 Although the supplier base may extend across the country, industries tend to congregate in the vicinity of the lead shipyard. For example, the 2005 Allen Consulting Group study noted that a substantial chain of supplier companies was established in Victoria during the ANZAC project. The Victorian government recorded that there were about 600 firms in Victoria as part of 1300 that were part of the supply chain assisting the Anzac frigate project.¹² It noted that of the 416 suppliers on its register (February 2005), 383 were based in Greater Melbourne, many in proximity to Williamstown, with 10 located in South Australia. It stated:

8 *Committee Hansard*, 19 April 2006, p. 42.

9 *Submission 23*, p. 17.

10 Tasman Asia Pacific, *Impact of Major Defence Projects: a Case Study of the ANZAC Ship Project*, Final Report by Denise Ironfield, prepared for the Australian Industry Group Defence Council, February 2000, p. vi. See also *Submission 23*, p. 16.

11 Mr David Miller, *Committee Hansard*, 27 April 2006, p. 1.

12 *Committee Hansard*, 18 August 2006, p. 23.

While it is difficult to quantify, Tenix at Williamstown also derives some benefit from the existence of a broader cluster of companies with related skills in the Williamstown/Port Melbourne/Fishermans Bend area relating to the automotive, aerospace and defence research areas. Tenix is able to draw on this common infrastructure and skill base. The presence at Fishermans Bend of the DSTO's naval platforms researchers also is of considerable benefit for Tenix at Williamstown.¹³

5.10 Similarly, the Garden Island shipyard enjoys support from a whole range of SMEs spread through Western Sydney, Newcastle and some in the Illawarra that feed into and subcontract into projects undertaken by ADI.¹⁴ The network is well established. The 2002 Tasman Economics report noted that nearly 85 per cent of businesses supplying the Minehunter project were located in New South Wales.¹⁵ Former Director of Naval Sales and Marketing, Mr Geoff Smith, told the committee that, for the Minehunter project, ADI brought together a skilled workforce of some 600 ADI people with more than 2500 subcontractors and SME suppliers in the Newcastle area.¹⁶

5.11 Indeed, the Hunter Economic Development Corporation drew attention to Newcastle which it argued 'has a strong heritage and demonstrated capability for the shipbuilding and repair sector with over 300 vessels built and with many hundreds more vessels repaired and maintained in the region. It concluded:

The region has credentials in managing defence projects, and undertaking technically challenging projects on time and to budget.¹⁷

5.12 Chapter 2 noted the growth in centres of excellence. Both the South Australian and Western Australian governments are actively encouraging the growth of an industrial complex adjacent to their state's key shipbuilding facilities. They are investing in developing centres of excellence, which include large technology parks, designed around a common user facility. These are intended to attract a range of smaller companies to the site in order to create a high technology precinct. For example, Mr Michael Deeks, Nautronix Ltd, explained:

...the West Australian government is trying to support local industry to win a significant portion of the air warfare destroyer modules. Rough figures: I think there is going to be something like 28 modules per ship for the air warfare destroyers of which about seven or eight, I think, are going to be constructed in South Australia. We are expecting and hoping that local

13 The Allen Consulting Group, *Building the Air Warfare Destroyers: How does Williamstown rate?*, February 2005, p. 24.

14 *Committee Hansard*, 28 June 2006, p. 68.

15 Tasman Economics, *Impact of major defence projects: A case study of the minehunter coastal project*, Final report, January 2002, p. 13.

16 Mr Geoff Smith, *Committee Hansard*, 28 June 2006, p. 2.

17 *Submission 39*, p. [4].

industry will win up to half of the remaining modules or more, perhaps, to be constructed locally. We are trying to set up infrastructure to allow them to do that. We wish to see the amphibious ships consolidated and assembled here in Western Australia. We expect that some of the modules will be constructed...We have done quite a significant amount of economic modelling to support the case to government to spend the money they are spending on the current infrastructure at around \$80-odd million. That stands on its own two feet regardless of whether we win the amphibious ships or not because the state is looking for economic development, employment, growth et cetera and also as an offset to other industry sectors such as the mining and offshore oil and gas sector.¹⁸

5.13 It should be noted that these industrial estates are not intended solely for shipbuilding related activities. A more detailed description of these centres of excellence is given in chapter 6.

5.14 It is beyond the scope of this inquiry to examine the potential of Australian suppliers to meet all of the many and various needs of a naval shipbuilder. A number of witnesses, however, used steel fabrication to demonstrate the capability of Australia's supply chain and its capacity to meet Navy's demands.

Steel fabrication—an example of Australia's capability

5.15 The Navy's shipbuilding program will be a significant test for Australia's steel fabrication and shipbuilding capability. The Queensland government believed that Australian suppliers could meet that challenge. It stated:

Queensland's module fabrication capabilities are considered highly competitive for the current naval shipbuilding program. The State's heavy industry has the capacity and track record to cope with an increased share of the steel fabrication activity. The continued developments targeting the common user infrastructure, engineering capabilities and skilled trades will further strengthen the case for retaining this work within Australia.¹⁹

5.16 To support the contention that Australia has the capability to satisfy the demands created by defence's capability plan, the Western Australian minister, the Hon. Francis Logan, cited the potential residing in his state. He noted the massive support facilities that currently exist for all the other sectors of the economy that work with very complex areas including nickel-processing facilities in the goldfields, gold-processing facilities and LNG-processing facilities. He told the committee:

The types of steelwork in these facilities, from exotic steels through to normal, mild steels, are second to none in the world. When specialist welding is required for any of these facilities, whether it is here in Australia or around the world, they come to WA to get the welders because they are the ones who can weld titanium and who can weld the various exotic metals

18 *Committee Hansard*, 3 April 2006, pp. 43–44.

19 *Submission 29*, p. 10.

that are required. The ships of the future will include those types of materials.²⁰

5.17 The Australian Association for Maritime Affairs Incorporated noted that Australian steel makers have no match in the world as demonstrated in the Navy's submarine project. It stated:

The steels used in these vessels were required to have unique qualities and proved to be better than anything then available in the world. Warships built in Australia must be fabricated from the best steel and fortunately Australian steels have been shown to be equal if not better than steels manufactured overseas. This is more than a question of economics: it is an important factor in relation to 'shelf life' of Australian warships which can be as long as 40 years.²¹

5.18 Steel making provides one example of the potential that exists in Australia's supply chain to support a domestic naval shipbuilding industry.

Tasmania and its supply chain

5.19 As noted earlier, an established chain of local firms cluster around the shipyards at Williamstown, Victoria and Garden Island, New South Wales. They have a proven record of meeting the needs of the industry. The main Western Australian and South Australian shipyards also have local supplier networks and with government assistance are developing high technology centres of excellence to attract local business to their locality.

5.20 The construction of ships using modules means that increasingly firms located at a distance from the shipyard can contribute to a shipbuilding project. To explore further the potential and capacity of Australia's supply chain, the committee considers the sometimes forgotten and probably underrated Tasmanian companies. Unlike the larger states, Tasmania does not have the advantage of a prime naval shipbuilder operating in the state.

5.21 Tasmanian industries acknowledged that their state was not in the same league as Victoria and New South Wales with their established shipyards and Western Australia and South Australia who can boast of their impressive manufacturing and engineering precincts which surround a state-of-the-art common user facility. Nonetheless, they argued that local Tasmanian firms have enormous scope to support the larger shipyards.

5.22 The Tasmanian government was confident that Australian industry has both the capacity and capability to build the AWD and LHD in Australia to the desired schedule. It also acknowledged that the two programs would stretch Australia's resources but was of the view that the success of the projects would depend on

20 *Committee Hansard*, 3 April 2006, p. 85.

21 *Submission 13*, p. 4.

drawing on Australian industry capability from all over the country and additional capability from non-traditional ship fabricators. With regard to Tasmania, the government submitted that it together with Tasmanian industry believed that the State has the capability to produce modules for both projects and is ready to participate. It informed the committee that Tasmania has about 1800 skilled personnel likely to be available to manufacture component parts for the AWDs and LHDs:

This skilled workforce is stable and focussed; residing in Tasmania's regional centres and with a proven track record of meeting industry schedules during heavy industrial shutdowns; meeting shipbuilding delivery deadlines and providing programmed maintenance to large mineral and food processors. Utilisation of this type of capability throughout regional Australia would ease pressure on prime contractors to deliver on these key defence projects.²²

5.23 Mr Rhys Edwards, Deputy Secretary of the Industry Development Division in the Tasmanian Department of Economic Development, told the committee that Tasmania is not seeking to become 'a centre for naval construction'. It approached Australia's naval shipbuilding industry from a different perspective:

I think the Tasmanian government has not been, and probably is unlikely to be, in a position to invest tens of millions of dollars in common-user heavy infrastructure such as you have seen in some of the other states. Indeed, as I mentioned, our ambition does not lie in being a centre for naval construction in that way, in being the shipyard where it all gets put together. But I think the modularised methodology of modern shipbuilding means we are ideally placed, with some of our firms, to be providing substantial components. We do have...a big heavy engineering sector. I think the future lies in developing those firms to be able to be part of that. That is about getting to the level where they are comfortable as the tier 2 and tier 3 contractors in a relationship with a prime contractor and are seen as being able to provide quality work on time, at a good price—all the things that come out of the requirements of Defence and other customers.²³

5.24 Mr Christopher Edwards, Chairman of the Tasmanian Marine Network, gave an impressive account of the achievements of companies in Tasmania that are in some cases leading the world in innovation.²⁴ He stated that:

22 *Submission 30*, p. 1.

23 *Committee Hansard*, 28 April 2006, p. 54.

24 *Committee Hansard*, 28 April 2006, p. 20. He said, 'Tasmania's marine engineering workshops provide an impressive array of quality goods. Innovation and skill are qualities in which we have a high investment. Custom design casting and machining services in both ferrous and nonferrous metals by APCO result in high-quality products as diverse as hydraulic cylinders, water jets, deck hatches, bulkhead seals and piping system fittings, cast in aluminium and stainless steel. APCO hydraulic cylinders are in use in many countries, including Europe and the UK, interceptor kits, motion control hydraulic cylinders and two-square metre T-foil sets are supplied to the USA military'.

...Tasmania's leading edge marine industry makes a considerable and growing contribution to the Tasmanian economy...Tasmania's marine industry relies on quality and technological innovation, and this is becoming more and more important as the years go by. If Tasmania is small in size, we in the marine industry are not slow to take up new challenges. What is more, we are more than ready to use our combined strengths to the advantage of all, as is evidenced by the success of the Tasmanian maritime network—taking the world by sea.²⁵

5.25 A number of companies have formed the Tasmania Maritime Network (TMN) made up of approximately 15 highly skilled exporters and manufacturing companies with expertise in marine manufacture and fit out, such as Incat Australia Pty Ltd. Described as 'a mutual beneficial society', they have banded together to help promote Tasmania's maritime industry. In total, it has a turnover of about \$250 million to \$300 million a year.²⁶ Noting that shipbuilding is a cyclic industry, Mr Edwards stated that employee wise at the moment the TMN 'would be around 1,200 to 1,500, depending on what ship builds are going on'.²⁷

5.26 The network is looking to provide completed module sections which provide the steel fabrication as well as the fit-out of mechanical, electrical and other componentry. The network would be able 'to provide not only the fabrication skills but also many other trades and get as much work into that as we possibly can'.²⁸ Mr Edwards explained:

...we are all fairly high technology oriented in what we do, even from our ship provedoring to, in our case, antenna manufacturing. We tend to all be at the leading edge. Unfortunately, in Australia, we do not use any of that leading-edge stuff very much. We tend to buy overseas. That is a real shame, I think, but that is the way of things. We often find with our antennas that we will be selling them to the Malaysians or the US before Australia even looks at them. It is not always the case, but it often is the case.²⁹

5.27 The TMN also forms part of a larger strategic working group of Tasmanian organisations endeavouring to maximise their potential to capture a share of work generated by the naval shipbuilding industry. The organisations are particularly keen to contribute to the LHD project.³⁰ According to the Government of Tasmania:

25 *Committee Hansard*, 28 April 2006, pp. 21–22.

26 *Committee Hansard*, 28 April 2006, p. 24.

27 *Committee Hansard*, 28 April 2006, p. 24.

28 *Committee Hansard*, 28 April 2006, p. 27.

29 *Committee Hansard*, 28 April 2006, p. 25.

30 The organisations include: Tasmanian Manufacturing Industry Council; Tasmania Maritime Network; Department of Economic Development; Australian Industry Defence Network (Tasmania) and Industry Capability Network Tasmania

Tasmania has an active AIDN (Australian Industry Defence Network) membership. The membership includes the majority of companies from the TMN and other leading companies with defence industry capability as well as the Australian Maritime College. In addition to these capabilities a number of niche manufacturers are able to provide products/services directly to prime contractors or tiered suppliers.³¹

5.28 The Tasmanian government has offered to provide logistical support to this consortium. Haywards Group and North West Bay ships Pty Ltd are the lead contractors.³² In addition, a number of specialist and related Tasmanian companies have indicated their support for the project. These include all significant Tasmanian heavy steel fabrication companies, duplex stainless foundries, CNC machine shops and toolmakers and members of the Tasmania Maritime Network (TMN) as well as precision engineering specialists, technical engineering service providers, composite manufacturers, electrical and air conditioning installation experts.³³

5.29 A working party for this group has investigated and identified suitable sites for final fabrication and shipping from Tasmania. The Tasmanian government stated that the 'newly formed Tasmanian Ports Corporation, arising from the recent amalgamation of the three major ports, will be closely associated with any Tasmanian bid'.³⁴

5.30 In summary, Mr Christopher Edwards believed that Tasmania has the skills and capacity to fabricate for AWDs and LHDs concurrently.³⁵ He stated:

...we have a very long tradition of shipbuilding in the state, and that is retained here. One of our big advantages in Tasmania has always been that we have a very stable workforce. If there is a bit of a downturn, for instance, in the shipbuilding industry, they are quite happy to move to the building industry, and then come back again.³⁶

5.31 The Tasmanian government explained that there is significant interest in this project and reiterated that Tasmanian industry clearly has the capability to produce a number of modules for the project.³⁷

31 *Submission 30*, p. 2.

32 *Submission* p. 2. Haywards Group has agreed in principle to become the lead contractor working to a prime contractor. This company is Tasmania's leading heavy steel fabricator with expertise in large scale projects and has a skilled workforce of over 140 personnel and substantial workshops, design office and corrosion management facilities. North West Bay ships Pty Ltd is to support the Haywards Group with the 'necessary specialist maritime project management and additional marine manufacturing support'.

33 *Submission 30*, p. 3.

34 *Submission 30*, p. 3.

35 *Committee Hansard*, 28 April 2006, p. 29.

36 *Committee Hansard*, 28 April 2006, p. 29.

37 *Committee Hansard*, 28 April 2006, p. 61.

Committee view

5.32 Australia has an extensive and widespread chain of suppliers who have supported, and are looking forward to continuing their involvement in Australia's shipbuilding industry. The industrial base in Tasmania, although small and remote from the major shipbuilding centres, is an example of the scope and extent of the nation's capability, notwithstanding the small ship market it supplies. The modular construction of ships means that increasingly more firms or clusters of companies in regional areas or in states removed from the assembly site can participate in the shipbuilding projects.

5.33 There is no doubting the enthusiasm of the states and their local industries to participate in the AWD and LHD projects and their conviction that Australia has the capability to meet the demands created by the projects. Before further considering whether Australia's supply network has the capacity to satisfy the requirements of Navy's shipbuilding program, the committee examines in greater detail the capability of locally based companies and the contribution they make to the shipbuilding industry in Australia.

SMEs and their contribution to the industry

5.34 The role of SMEs in the local supply chain is integral to the construction of a ship and ranges across all aspects of a ship's build. They are in a unique position to add considerable value to the goods and services they provide to the naval shipbuilding industry. Nautronix told the committee that to get the systems set up when and where the shipbuilder wants them, Australia needs a raft of companies and organisations to form the 'backbone of that capability—the nuts and bolts suppliers through to...the acoustic suppliers—the whole nine yards'.³⁸

Value adding

5.35 The contribution of SMEs, however, does not stop with the delivery of goods or services to a particular project. Defence through the prime shipbuilder is looking for the capability to meet its requirements including quality as well as quantity, the long-term reliability of the supplier, the cost effectiveness of supplying the product and the degree of dependence on any one major supplier.

5.36 Some of these 2nd and 3rd tier companies are able to provide services involving complex naval systems. Gibbs & Cox submitted that:

Currently there exists an established industrial base in Australia experienced in the detail design and construction of surface combatants. Much of this base resides within the Australian shipbuilders, small, medium and large independent design firms, and Commonwealth design and research authorities. This base has recent experience in the design of the

38 *Committee Hansard*, 3 April 2006, p. 39.

Collins Class submarines, the ANZAC Class frigates and the modernization of the Adelaide Class frigates.³⁹

5.37 Mr Derek Woolner, who is researching the Collins class submarine project, cited the world class innovative work of some companies that were involved in the submarine project. For example, he informed the committee that:

The anechoic tiles for the submarine were made by a company in Mordialloc that was close to the Maribyrnong materials research laboratory that did the research work. They got contracts to provide rubber components that we use to isolate the decks within the modules of the submarine. Not only did they do that but, once they got going, they redesigned those components and made them more effective. A similar thing happened with the building of the hull modules that were done around the country—some in Newcastle and some elsewhere.⁴⁰

5.38 CEA Technologies is a major Australian company of 220 employees that specialises in the design, development and manufacture of radar and communications systems. Its success also demonstrates the ability of Australian companies to develop expertise in a specialised field and to be highly competitive on the global stage in a niche area. The growth of the company also highlights the role that Defence contracts can have in assisting fledgling enterprises in Australia and the importance for such firms to form strategic alliances with overseas companies.

5.39 An initial contract of about three months with Defence and worth approximately \$60 000 gave CEA Technologies the necessary foothold to build a thriving business with export potential. Mr David Gaul, President, CEA Technologies, explained the company's incremental increases that were based on a continuous stream of Defence contracts:

It is just a step up each time—bigger, more difficult, a more stretching project— and as long as we deliver, we get the next one. You keep moving up the chain, as it were, to where we are now with the AUSPAR development, which is a high-powered active phased array missile system that both the Australian and US governments are funding.⁴¹

5.40 The company took the opportunities offered by Defence and built on them gaining global recognition on the way. Its first export, which was an antenna developed for the Collins submarine, was arranged through Argo Systems in the U.S. to a couple of customers. CEA Technologies have formed a partnership with Saab to take the system for the ANZAC frigate ASMD upgrade to sell to European navies. Northrop Grumman has also become a minority shareholder and is going to open up the U.S. markets for the same product. The company has ambitions to expand into the Canadian and UK markets. Mr Gaul believed that these relationships are critical to

39 *Submission 10*, p. 3.

40 *Committee Hansard*, 4 September 2006, p. 28.

41 *Committee Hansard*, 3 July 2006, p. 28.

enable the company to move forward. He was confident that other areas of Australian industries could emulate their example:

To have a global reach, you must have global partners, because we do not have a global company in Australia, apart from BHP. Getting the right partners becomes an essential element. It was a very deliberate process that we went through to get Northrop Grumman on board. We first of all got two big brothers—the US government and the Australian government—and we got IP agreements. So they were standing next to us. Then we went out and selected our gorilla, basically, and we went through a very vigorous process to do so. Saab was also considered as part of that process, but obviously the American market is much more in our foci than is the European market. You can understand why. Saab are very comfortable with the outcome of where we are at now, and so we have two partners moving forward.⁴²

5.41 Mr Gaul stressed the point, however, that an SME must be in a position to attract the interests of larger internal companies and that CEA Technologies could not have done so without the 'involvement of the U.S. and Australian governments in IP agreements and things like that'.⁴³

5.42 Natronix Ltd, a large SME, provides another example of an Australian company making a valuable contribution to Australia's shipbuilding industry. It has grown significantly from its origins in Fremantle in the mid-1980s to a publicly listed Australian company with 'a strong global capability in key acoustic technologies'. It was acquired by a leading Oil and Gas company in 2002 and its headquarters transferred to Aberdeen, Scotland. The company continues to operate from four strategic centres in Australia, the UK and U.S. The largest of the four Nautronix companies is located in Australia which remains 'the central focus for the conduct of research and development as well as Defence related systems and solutions'.⁴⁴

5.43 In Australia, Nautronix currently employs over 85 people with key specialisations centred on software and systems engineering with a primary interest in acoustic technologies. Increasingly it is moving towards military systems integration. It explained:

From various external assessments, the Company has been identified as a large SME being ranked in the top 5 Australian SME for the last 2 years. Nautronix is often recognised for 'fighting above its weight' a fact that is evidenced by the investment of over \$A20 million in Research & Development over the last 10 years with the majority of those funds being spent in Australia.⁴⁵

42 *Committee Hansard*, 3 July 2006, p. 30.

43 *Committee Hansard*, 3 July 2006, p. 32.

44 *Submission 27*, p. 3.

45 *Submission 27*, pp. 3–4.

5.44 Another important consideration is the ready availability of local SMEs to provide a product or service in Australia. The Western Australian government linked navy preparedness and by extension the credibility of Australia's maritime strategy to a dependency on local industry support.⁴⁶ It used the Anzac ship program to demonstrate how local industry involvement in the construction of the AWDs 'will help establish and condition the supply chain required to maintain an acceptable degree of preparedness once they enter service'.⁴⁷

5.45 The potential that resides in Australian SMEs not only to deliver a particular good or service but to add value to the shipbuilding industry is beyond dispute. Even so, a shipbuilder requires the skills, knowledge, experience and capabilities covering every facet of a ship build. As noted in chapter 2, even the U.S. is not totally self-sufficient in the construction of its warships and must look to overseas sources to supply certain goods or services.⁴⁸ The following section examines how Australia's shipbuilding industry goes about acquiring all it needs for the successful construction of a modern naval ship.

Gaps in capability

5.46 A number of submitters referred to Australia having niche capabilities in shipbuilding but not a capability that encompasses all aspects of ship design and construction.⁴⁹ The Tasmanian government said:

In some of the more complex systems engineering, software systems and communications and things, we just do not have those types of companies here, by and large. Indeed, when you look at the amount of off-the-shelf systems that are purchased overseas and then integrated in a vessel, you will see that there is quite a high proportion of that as well. So the Australian capability is not necessarily there either.⁵⁰

5.47 Mr Michael Gallagher, CEO, Nautronix, was of the view that there are certain areas where Australia 'does not have the expertise to bring capabilities to the table'. He cited large turbine type engines.⁵¹ Along similar lines, Saab Systems Pty Ltd also noted that there would be times when the services of foreign systems developers were

46 *Submission 23*, p. iv.

47 *Submission 23*, p. 16.

48 See quote by the UK Ministry of Defence in chapter 2, paragraph 2.10.

49 Mr Peter Croser, *Committee Hansard*, 19 April 2006, p. 43.

50 *Committee Hansard*, 28 April 2006, p. 61.

51 *Committee Hansard*, 3 April 2006, p. 33. See also Mr Bonner, Weir Strachan and Henshaw, *Committee Hansard*, 20 April 2006, p. 24. Mr Bonner told the committee that it is inevitable that the platforms going to be built in Australia will have overseas equipment. He stressed the importance of establishing relationships with overseas equipment suppliers in the early design and procurement period. Indeed, Weir Strachan and Henshaw identified a range of equipments that were not being supported well in Australia and moved to fill that void. In some cases, however, it talked to 'people overseas and formed licences and have contracts'.

required to meet the level of capability sought or the specific technologies needed. It cited the combat system in the AWDs.⁵²

5.48 ThyssenKrupp Marine Systems, a wholly owned subsidiary of Blohm+Voss, also recognised the limitations of Australia's shipbuilding industry. It questioned the capability of Australian firms 'to perform the full spectrum of design work involved in the development of large, complex warships and submarines without the direct support of well-established and experienced overseas designers'.⁵³ For example Mr Peter Hatcher, CEO ThyssenKrupp Marine Systems Australia Pty Ltd, noted that 'there is no way in the foreseeable future that I can see Australia ever becoming a developer for air-independent propulsion systems...that sort of technology is always going to need to be brought in'.⁵⁴

5.49 Raytheon Australia, cited the development and production of highly complex systems such as a combat management system as an activity where Australia lacked capability:

Due to the size and nature of the Australian defence market the majority of these systems will come from overseas. Although there are some sensors and control systems developed and made in Australia it is most unlikely that a world class naval combat management system would be developed here in the future. There is simply not the expertise within the local defence industry to produce a system that could equal those produced in the United States or Europe.⁵⁵

5.50 In such cases, Australian shipbuilders have no option but to look to outside sources to fill the void left vacant by Australian companies.

International companies filling a void

5.51 Large projects undertaken in Australia have the potential to attract international companies to Australian shores. By locating in Australia they may fill a capability gap and indeed from an initial commitment go on to develop an indigenous skill and knowledge base in this capability and to establish an Australian business. Raytheon Australia noted that:

Systems engineering and systems integration are areas where local subsidiaries of large international companies make a substantial contribution to raising the level of knowledge and improving the techniques, processes and tools utilised through the transfer of best practice from their parent companies.⁵⁶

52 *Submission 25*, p. 7.

53 *Submission 34*, p. 2.

54 *Committee Hansard*, 18 August 2006, p. 8.

55 *Submission 35*, p. 8.

56 *Submission 35*, p. 9.

5.52 A 2005 report by the Allen Consulting Group identified a number of overseas companies with major systems capability that have a presence in Australia including BAE systems Australia, Honeywell, Lockheed Martin, Raytheon Australia and Saab systems.⁵⁷ It stated that:

The ability of these firms to build and maintain effective company networks and attract skilled personnel will be a factor in the success of the forward program of naval procurement.⁵⁸

5.53 The committee took evidence from a number of Australian based companies whose origins or parent company is overseas. They have demonstrated their belief in the viability of an Australian naval shipbuilding industry and a commitment to employ and train Australians. For example, Gibbs & Cox indicated its confidence in Australia's future naval shipbuilding by recently establishing a wholly owned subsidiary, Gibbs & Cox Australia Pty Ltd (GCA) in Adelaide. It saw scope for further development of the Australian Ship Design and Build sector in meeting the demands of Defence's future naval acquisition program. It stated:

We have supported various Commonwealth surface combatant shipbuilding and modernization programs for over 30 years. Our response to the Committee's inquiry reflects our expertise, our experience in Australia and, in particular, our plans for supporting the AWD Project and future shipbuild and modification programs.⁵⁹

5.54 Raytheon Australia, however, pointed to the importance of ensuring that overseas companies contribute to the development of Australia's industrial base. It noted:

...simply contracting the work to an overseas company, or hiring overseas workers without ensuring the transfer of knowledge to local people, results in little or no increase in Australian industrial capability.⁶⁰

5.55 Without doubt the Australian subsidiaries of large overseas companies are working side by side with local firms to provide the shipbuilding industry with an extensive, reliable and capable network of enterprises supporting the construction of naval ships. As noted by Raytheon Australia, their role should extend beyond providing goods or services to participating actively in the growth and development of the industrial base.

57 The Allen Consulting Group, *Future of Naval Shipbuilding in Australia: Choices and Strategies*, May 2005, pp. 37–39.

58 The Allen Consulting Group, *Future of Naval Shipbuilding in Australia: Choices and Strategies*, May 2005, p. 39.

59 *Submission 10*, p. 1.

60 *Submission 35*, pp. 9–10.

Overseas companies—fostering local industry

5.56 It should be noted that overseas companies operating in Australia also rely on the local supply chain to compensate for shortfalls in their own capability. They actively search for, identify and engage SMEs that have the capability they want. Raytheon advised the committee that it has about 30 SMEs, all Australian companies, working for it in the capability area.⁶¹

5.57 Mr David Bonner, Weir Strachan and Henshaw Australia, informed the committee that the company, established in Australia in 1988, initially seconded staff from Bristol to start the office but 'by a constant process of recruitment and business growth in Australia the business is now operated by an experienced local work force'.⁶²

5.58 The Anzac ship project gave the Saab company in Australia the foundation on which it has broadened its activities throughout defence, leading to \$1.1 billion of business. The company employs 300 staff involved in successful operations in the domestic and export sphere.⁶³ It sees itself as one of the fledgling companies that was given a kick start by local construction. Now in its 16th year of operation and employing a large workforce, it believes that it is making a significant contribution to the Australian economy.⁶⁴

5.59 Raytheon, the fourth largest defence company in the United States, is another overseas company employing significant numbers of Australians in the shipbuilding industry. It has had a presence in Australia since the mid-1950s and has been a major supplier of weapons, sensors, command, control and communications systems to the ADF.⁶⁵ As a result of the government's Defence and Industry Strategic Policy Statement, Raytheon Company decided in 1998 to invest further in Australia and establish a local capability. Since then, Raytheon Australia, a wholly owned subsidiary of Raytheon Company, has grown to a workforce of over 1100, with operations in all mainland States and Territories. It had an annual turnover for indigenous business (not including product sales from the U.S.) of \$390 million in 2005.⁶⁶ The company's core business in Australia is Mission Systems Integration, which it is in the process of expanding into Mission Support.⁶⁷

61 *Committee Hansard*, 3 July 2006, p. 24.

62 *Committee Hansard*, 20 April 2006, p. 20.

63 *Submission 25*, p. 4.

64 *Submission 25*, p. 7.

65 *Submission 35*, p. 2.

66 *Submission 35*, p. 2.

67 *Submission 35*, p. 2. Raytheon are involved in a number of major programs in which they are responsible for systems integration, including:

- Air Warfare Destroyers (AWDs);

Overseas companies—technology transfer and indigenous innovation

5.60 Companies such as Weir Strachan and Henshaw, Saab systems Pty Ltd, Gibbs & Cox Australia and Raytheon Australia not only create employment opportunities in Australia but have helped raise the level of capability of Australian employees, encouraged technology transfer and attracted further investment in technology development. These companies, according to Saab 'go on to sustain the technology providing a world class service and Australian oriented support for Australian military forces and spin-offs over civil and dual use technologies'.⁶⁸ They also broaden the industrial base and in so doing enrich the industry.⁶⁹

5.61 The ability of these companies to reach back and tap resources from the parent company adds to the capability of those employed in Australia and assists in the transfer of technology.⁷⁰ Saab Systems Pty Ltd noted that 'Many successful companies have continued to work in Australia providing an ongoing conduit for global technology into Australia and giving Australians the experience that hones world-class skills. In many cases the companies are stand alone enterprises'.⁷¹ As explained by Weir Strachan and Henshaw:

We are an autonomous company, and part of our strategy is to become more autonomous. Because of that we are expanding our engineering activities here. We are building new facilities and moving to larger facilities. In that respect we are autonomous, but we do rely on our company in the UK to provide us, when necessary, with support. As they are an international defence business, they supply us with a lot of solutions. Quite often they are required to develop solutions on submarine systems by the MoD. They pay for all the development and are able to offer a proven solution here in Australia. The relationship we have is that they are still our technical counsel. In our transition to our own design authority status here, we have a couple of years to go along that road, so we rely on them for that

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- replacement combat system on the Collins Class submarines;
 - simulators for the upgraded F/A-18 Hornets;
 - electronic warfare training aircraft operated out of HMAS Albatross in Nowra;
 - electronic warfare emulator pod, which is to be fitted to the BAE Hawk aircraft;
 - in service support for the Royal Australian Navy (RAN) Submarine Group at HMAS Stirling; as well as technical support for the joint facility at Pine Gap and the Tidbinbilla Deep Space Communications Complex outside Canberra; and
 - a geospatial imagery business.

68 *Submission 35*, p. 5.

69 Michael Gallagher, Nautonix, *Committee Hansard*, 3 April 2006, p. 40.

70 See for example David Bonner, *Committee Hansard*, 20 April 2006, p. 19.

71 *Submission 25*, p. 7.

technical counsel and technical oversight and also design data for systems they operate worldwide.⁷²

5.62 The benefits of this transfer of technology and close exchange of information are substantial. Again, Weir Strachan and Henshaw demonstrated the advantages to this collaborative approach:

One of the things we are looking at is reciprocal working. Because we operate in two different time zones, it is actually quite useful at times to have them work on project problems which crop up in the afternoon, and sometimes we can have an answer in the morning and vice versa. We in Australia are not yet at the stage to be able to offer a lot of technical assistance to the Spanish submarine project. However, part of our development is that an exchange process has been set up where we are going to have engineers from Australia work in the UK, and possibly in Spain, and engineers from the UK working in Australia.⁷³

5.63 According to Raytheon, its success and growth in Australia has been the ability and willingness of its parent company to strengthen the capability of its local subsidiary by transferring technology, knowledge, skills, and processes.⁷⁴

Reach Back has strengthened the knowledge and skill base of the Raytheon workforce in Australia and effectively extended the capability available to the Australian defence customer to that of Raytheon Company overall.⁷⁵

It also works in reverse with the parent company benefiting from advances made in Australia. For example, Raytheon Australia is now the company's centre of expertise for integrating combat systems into conventional submarines and has developed an innovative way of interfacing United States-designed combat systems to existing sensors in conventional submarines.⁷⁶

5.64 Raytheon has expertise in the area of combat systems and stated that it was working with DSTO and others, such as the University of Melbourne, who have expertise in that area. Dr Terrence Stevenson, Chief Technology Officer for Raytheon Australia, added 'so there are areas...where we can add our expertise—and, if we are good at a particular area, we can enhance that system'.⁷⁷

5.65 Mr Gallagher, Nautronix, explained how the work of his company in electronic charting systems has enriched Australia's industrial base:

72 *Committee Hansard*, 20 April 2006, p. 25.

73 *Committee Hansard*, 20 April 2006, p. 26.

74 *Submission 35*, p. 2.

75 *Submission 35*, p. 3.

76 *Submission 35*, p. 3.

77 *Committee Hansard*, 3 July 2006, p. 14.

We have brought that knowledge and technology to Australia. It becomes more than just a representative role; it becomes part of that Australian industry base. As I go down the track and achieve accreditation by the IMO as a certified place of production for these systems, I am no longer just a representative. We now have a workforce that is building, supporting and upgrading that capability in Australia with a significantly reduced reliance on the overseas supplier.⁷⁸

5.66 The gaps may not only occur in technology but in special skills required. In this regard, companies are able to second or recruit specialists from their overseas company.⁷⁹

Committee view

5.67 Clearly, in some specialised areas involving complex systems, Australia may have to seek overseas assistance to augment identified deficiencies. In many of these cases, overseas companies have established subsidiaries in Australia that have gone on to become valuable participants in the country's shipbuilding industry. Without doubt, many are contributing to a vibrant and innovative naval shipbuilding industry offering employment opportunities and driving advances in science and technology. The committee underlines the need for the government to ensure that Australia takes full advantage of their presence in Australia, especially in the area of technology transfer.

5.68 For highly complex systems or specialised services, Australia may have to turn to overseas based companies.

Overseas companies meeting special requirements

5.69 Australian companies do not stand alone or unassisted in determining and achieving the capability needed to satisfy Navy's demands. ASC told the committee that in preparing for the AWD contract, it accepted that it was not the world's best builder of air warfare destroyers so it approached Bath Iron Works which was deemed by ASC to be the best. Mr Tunny explained:

We commissioned Bath Iron Works to do a study on us, to tell us in as unflattering detail as they desired, how imperfect we were and what they believed we needed to do to rectify that circumstance. So we got that report. We took on board all of their observations and recommendations. We would put in place either actions or planned actions. In the thousands of pages in which we responded to the government, the DMO and its expansive evaluation team which drew on shipbuilding consultants from around the world, we convinced them that we had put in place the ability to deliver the air warfare destroyers.⁸⁰

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

79 See for example, David Bonner, *Committee Hansard*, 20 April 2006, p. 26.

80 *Committee Hansard*, 19 April 2006, p. 16.

5.70 The purchase of Aegis as the core combat system for the AWDs is another example of Defence having to rely on the expertise and experience of an overseas company to provide a capability that Australian companies could not.⁸¹ Lockheed Martin will supply the system and services to the U.S. Navy for transfer to Australia. According to Defence, Aegis has been proven in service with the U.S. Navy across a range of operations and has been regularly upgraded and improved to meet the changing requirements of naval operations. It explained:

The AWDs will be fitted with the latest open architecture version of AEGIS which will provide the RAN with the opportunity to upgrade the system over coming decades and benefit from the fact that there will be around 100 AEGIS equipped warships operating globally by the time the AWDs enter service.⁸²

5.71 The purchase of Aegis and its critical role into the future as the core combat system for the AWDs underscores how important it is for Defence to maintain and effectively manage a sound and mutually beneficial business and professional relationship with Lockheed Martin, and Raytheon Australia, the combat systems integrator. The difficulties for Defence and the Australian government in ensuring that such alliances run smoothly and that Australia's interests are fully protected is considered in Part IV of the report.

5.72 Australia is not alone in its reliance on overseas companies to assist in certain aspects of a ship's construction. As noted in chapter 2, even the U.S. 'may struggle to retain a wholly independent national capability in all areas of defence'.⁸³

Conclusion

5.73 Clearly the success of a naval shipbuilding and repair programme relies heavily on the existence of an extensive chain of reliable, efficient and skilled subcontractors. The committee has no doubt that SMEs in Australia have the skills, knowledge, experience and drive to provide a solid base upon which to build

81 According to Lockheed Martin, their Aegis Weapon System 'is the world's premier naval defense system and the sea-based element of the United States' Ballistic Missile Defense System. It is 'a radar and missile system seamlessly integrated with its own command and control system, capable of simultaneous operation defending against advanced air, surface and subsurface threats.' The system capabilities are on 67 U.S. Navy cruisers and destroyers on station around the world with plans underway to install the system on an additional 22 U.S. Navy destroyers. It is 'the primary naval weapon system for Japan, it is part of two European ship construction programs—the Spanish F-100 and the Norwegian New Frigate—and the Republic of Korea recently selected Aegis for its newest class of destroyers, <http://www.lockheedmartin.com/wms/findPage.do?dsp=fec&ci=11357&rsbci-13000&>, accessed 29 November 2006.

82 Department of Defence, answer to question on notice, 18 August 2006 (received 30 October 2006), p. [19].

83 Chapter 2, paragraph 2.10, contained in quote Ministry of Defence Policy Paper No. 5, *Defence Industrial Policy*, October 2002, pp. 8–9.

Australia's naval shipbuilding program. Some are at the cutting edge of world class developments and are contributing to innovation and driving advances in technology. In some cases, a Defence contract was the catalyst that set the company on its successful trajectory.

5.74 It is important that the wealth of local talent residing in Australia is properly harnessed and nurtured. The committee believes that Defence has a key role in developing this network and that considerations such as how best to nurture local SMEs should be part of Defence's overall strategic planning.

5.75 The committee is aware, however, that Australian companies cannot provide all the goods and services necessary for the construction of a naval ship and rely on overseas countries to fill the gaps. Many overseas companies have established subsidiaries to make up for the deficiencies in Australia's industrial base. Although initially reliant on their parent company, some have grown and developed a degree of autonomy to the point where in particular areas of specialisation they outshine their parent. Over time they have built up a local workforce meeting the special needs of Australian shipbuilders.

5.76 Furthermore, the committee notes the potential and actual contribution that Australian subsidiaries of international companies make to innovation and improved technology.

5.77 The committee believes that it is important for government to ensure that the Australian industry is able to take full advantage of the presence of these companies in the country. They must be part of the growth and development of Australia's industrial base. Also, Australia's reliance on overseas companies for a particular product or service raises a number of matters touching on Australia's national security interests and the desire for self-sufficiency in its defence capability. Chapter 12 of this report explores these matters.

5.78 While the committee believes that Australia's network of suppliers, including the subsidiaries of international companies, is capable of supporting the country's major shipbuilders, it is aware of the challenge posed by the AWD and LHD projects. They will test the capacity of local companies to deliver. The following section examines the infrastructure requirements of the shipbuilding industry.

