

**REPORT ON PROCEEDINGS BEFORE**

**STANDING COMMITTEE ON STATE DEVELOPMENT**

**DEFENCE INDUSTRY IN NEW SOUTH WALES**

**CORRECTED PROOF**

**At Macquarie Room, Parliament House, Sydney on Thursday, 3 August 2017**

**The Committee met at 9:30 am**

**PRESENT**

The Hon. G. Pearce (Chair)  
The Hon. R. Colless  
The Hon. J. Graham  
The Hon. P. Green  
The Hon. N. Maclaren-Jones  
The Hon. M. Veitch



**The CHAIR:** Welcome to the second hearing of the Standing Committee on State Development's inquiry into the defence industry in New South Wales. The purpose of the inquiry is to examine opportunities to incentivise and grow the defence industry in New South Wales to generate economic development. I acknowledge the Gadigal people, who are the traditional custodians of the land on which we are meeting, and I pay respect to the elders past and present of the Eora nation and extend that respect to other Aboriginal people present.

Today we will hear from a number of government and industry representatives, and I thank them very much for agreeing to participate. Before we commence I will make a few comments about the hearing. Today's hearing is open to the public and is being broadcast live by the Parliament's website. A transcript of today's hearing will be placed on the Committee's website when it becomes available. In accordance with the broadcasting guidelines, while members of the media may film or record committee members and witnesses, people in the public gallery should not be the primary focus of filming and photography.

I also remind media representatives that you must take responsibility for what you publish about the Committee's proceedings. It is important to remember that parliamentary privilege does not apply to what witnesses may say outside their evidence at the hearing, so I urge witnesses to be careful about any comments they make to the media or to others after they complete their evidence as such comments would not be protected by parliamentary privilege if another person decided to take action for defamation. The guidelines for the broadcast of proceedings are available from the secretariat.

If witnesses would like to take any questions on notice they are welcome to do so. We would like witnesses to provide the answers to questions taken on notice within 21 days if possible. I remind everyone here that Committee hearings are not intended to provide a forum for people to make adverse reflections about others under the protection of parliamentary privilege and I therefore request that witnesses focus on the issues raised by the inquiry's terms of reference and avoid naming individuals unnecessarily. To aid the audibility of this hearing, I remind Committee members and witnesses to speak into the microphones. In addition, several seats have been reserved near the loudspeakers for persons in the public gallery who have hearing difficulties. Please turn mobile phones to silent for the duration of the hearing.

I welcome our first witnesses from the New South Wales Government as well as our first industry representatives from Advanced Navigation and Carbonix.

**JEFF EAGER**, Executive General Manager, Carbonix, sworn and examined

**CHRIS SHAW**, Director and Lead Hardware Engineer, Advanced Navigation, affirmed and examined

**JOHN HARVEY**, NSW Defence Advocate, affirmed and examined

**SIMON SMITH**, Secretary, NSW Department of Industry, sworn and examined

**PETER SCOTT**, Director, Defence NSW, NSW Department of Industry, sworn and examined

**DUNCAN CHALLEN**, Executive Director, Industry Development, NSW Department of Industry, sworn and examined

**The CHAIR:** Thank you to the government representatives. We have had a very informative submission from you and great cooperation in allowing us to do our work; we very much appreciate that. Thank you very much for bringing industry representatives along today; that is an added bonus we had not expected and we are very pleased about that as well. I would like to invite you first to make a short opening statement and then we will ask some questions.

**Mr SMITH:** I thought just quickly I would introduce the colleagues from the Department of Industry because I think they will be the people who have got the answers to the questions that are most interesting to you. First of all, John Harvey. John holds the role of the Defence Advocate within the department. He has 35 years service with the RAAF and, highly relevant to the discussions here, he was the former head of the Joint Strike Fighter program and when he retired he was chief of the Capability Development Group, which was responsible for capability development across the Australian defence forces.

Duncan Challen is our Executive Director in the Industry branch. Duncan comes to us most recently from Shell and he has extensive experience overseas in China. He joined the New South Wales Government first in the Department of Premier and Cabinet in Trade and Investment and is now heading our Industry Development branch, which incorporates this team called Defence NSW that we have established.

Commodore Peter Scott—we have got one from in the skies and one from under the water—has had 34 years in the Navy, including multiple command appointments at sea and ashore including operational service with special operations in the submarine arm and active service in Iraq, the Persian Gulf and Afghanistan, and he retired as Director General of Submarines. He led the campaign to improve and he did remarkable things in achieving a very strong performance with our submarine fleet in Australia. We have hired those two former military leaders because we think they will be the absolute best type of people for us to connect with both understanding the world of defence and the firms that are the customers of Defence, which I am sure you look forward to asking them about.

The other two representatives of the private firms, I will let them introduce themselves. We have asked them to come along because their businesses are so interesting and they are also very keen to tell you about what it is like cooperating with and supplying Defence. In essence, our submission is our submission: it is the strategy the Government has adopted so I will not reiterate it, but it is worth mentioning a few things. The purpose of our department is to create the conditions for New South Wales to prosper. We know that the Government does not create jobs, it is the private firms that create jobs, and those firms create jobs when they perceive that the opportunities are there when all of the infrastructure, social skills, physical infrastructure, rule of law, all of those things are in place, and we see our role as part of making sure that all of that full suite of conditions are in place so that industry can prosper in New South Wales. Defence is a very important part of that for us, in particular because, from my perspective, it is so important because it is so closely connected with advanced manufacturing and the technical capabilities that apply not only in defence but in other related industries across New South Wales.

Defence as an endeavour is obviously very important to New South Wales because it is such a large and extensive operation. Defence forces spend almost \$8 billion per annum within New South Wales, which leads to a very clear economic benefit for the State. We have more defence bases in New South Wales—we have 80, more than any other State or Territory. We have 26,500 people who are indirectly or directly employed by Defence in New South Wales. Just the size and scope makes it a very important part of our economy in New South Wales in any case. Defence also plays some crucial roles in regional New South Wales.

The strategy that you have got before you was launched by our lead Minister, the Hon. Niall Blair, back in May. We had an event just across the corridor to launch it. It was very well received, lots of people turned up and were very enthusiastic to see the Government giving more attention and support and recognition to defence industries in New South Wales. The themes of the strategy are about strength, being smart and being connected, as you would see. I guess the context for us in defence industries—I might go out on a limb a little bit here—is a bit different in New South Wales to some of the other smaller weaker States. Our economy is very strong, as you know, very low unemployment, no debt, very strong economic growth compared to the other States, and we have the highest business confidence in New South Wales. So we are not a mendicant State; we are a State that has very strong fundamentals—we are a bit of a magnet for talent and investment capital, and the envy of other jurisdictions around the world. It is great to be getting involved more with defence; we are in a position of strength, which changes a bit our strategy on how we want to work on this. We are not sort of desperately scrambling for short-term gain, we are in this for the long-term gain to build a deep and persistent technical capability.

I just wanted to mention two little case studies that I have come across in my work that I think will be of interest to you. One of them was raised first with me when we launched the strategy; it was about a firm called Ocius Technology, which is a marine technology provider. We met Robert Dane, who was in the audience on the day. The reason I mention this story is not so much for the particular product that he developed; what he is developing is a new generation of drone-type vessel, which is for unmanned surface vehicles for industrial defence and scientific organisations, which are called bluebottles. They get the resource to move from the environment and they are able to report back data, which is clearly of military benefit but also for civil benefit.

The reason I mention the case study is that clearly the development of really high-end devices like that requires advanced engineering and technical capability. Those capabilities are not often available to small companies, and what was most interesting about what he had done was that he had entered into a partnership with the University of New South Wales, where they have a really clear and simple agreement to share the intellectual property that will be developed as the device is perfected. That enabled him to move on site to sit with the engineers from the university, the aeronautical and marine engineers et cetera, to work together to perfect the device to market. I thought that was a really interesting example of how universities could enter into these arrangements in straightforward ways to enable people with good ideas to develop them and bring them to the point of being ready for market.

The other example I will mention is recently, with the board of Jobs for NSW, we visited a regional centre in New South Wales, which I will not name for reasons that will become obvious. I felt that essentially I had gone into a James Bond movie, because we were visiting the workshop where Q is, where they cook up devices to make things work better. I was absolutely blown away, because from the outside it looks like a regular shed but what was inside were amazingly high-tech machines for working with metal and other materials. The market was the special forces, both from Australia and its Allied nations. Some of the products they showed that they had made were absolutely remarkable. One was a special grappling hook, because the forces had purchased a whole kit with pneumatic guns to fire the hook over the edge of a vessel from a dingy, say. When it came from the overseas manufacturer, the hook did not work that well. They were able to design a completely different one, prototype it within 3-D with plastic materials, test a lot of different ones and develop a new one out of high-quality stainless steel and then manufacture that on site to provide it to the special forces. They took us into another room when they were modifying—what do you call a four-wheel drive vehicle?

**Mr SCOTT:** Like a Unimog or quad bike.

**Mr SMITH:** Like a really big quad bike. Typically they are designed for rough circumstances, and they were modifying them to suit the SAS requirements. They had changed it in about 80 different ways, so that the device could be slung from under a helicopter, because normally those devices are not strong enough for their frames to do that. They were developing a hybrid option, which meant that the device could run on electricity so that it could sneak up silently on the last half kilometre of its journey. The quality of the workmanship was remarkable. The third thing they showed us was a zodiac, a high-speed inflatable boat. They explained that generally these boats take about 40 minutes to unpack from a submarine or aircraft. They have developed one that can be folded down into a cube about the size of a pallet that could be put in place within three minutes. I wondered what this facility was doing in a regional town in New South Wales. There were other things they showed us that were of a confidential nature, which were equally remarkable, and I was inspired by what they had done. That is why I emphasise this connection between defence industries and high-tech manufacturing capability. That is one of the key reasons that we have set up Defence NSW. We want to foster that connection and build connections between the technical capabilities of universities and the up-and-coming

smaller firms to create a hospitable environment for the stronger established firms. I will leave it there for our opening statement.

**The CHAIR:** In some of the evidence we have taken and in some private discussions, some concerns have been expressed that New South Wales has been a bit equivocal in terms of supporting and welcoming defence industries. I will give two examples for you to comment on: one is the Navy in Sydney Harbour. I think the Navy in Sydney Harbour is integral and vital to Sydney, but some people do not. The same can be said for another major base, which is the airbase at Newcastle. Do you have any views on that issue?

**Mr SMITH:** Yes, we do.

**The CHAIR:** Can you give us some solid support, if that is what is being said?

**Mr SMITH:** I think that anyone who does the numbers knows that those two military presences are dominant in value to the State; there is no doubt about that whatsoever. The Government has been very clear that it is unreservedly committed to and welcoming of the retention of those facilities where they are now. As you know, the Government is also looking for where to put additional berthing facilities for cruise ships, but I understand that is also about how to accommodate economic activities without detriment to the military facilities.

**Mr SCOTT:** I do see that a large part of my role is to help people to understand the value of Defence writ large for New South Wales and also the value that New South Wales can provide to the very significant challenges that Defence has ahead of it in the next couple of decades. Myself, the team and the department are working hard to help those who need to understand the relative value of Defence and defence industries in those particular areas, such as Garden Island and RAAF Williamtown. My observations are similar to yours, Chair, that there is in parts of the Defence environment, not a positive perception of the history of New South Wales as a supporter of Defence. We are demonstrating increasing momentum in that regard with the launch of a strategy, the creation of Defence NSW, the conduct of a Committee such as this. These all demonstrate government commitment to Defence across the State. I think we are on an upward path in that regard.

**Mr HARVEY:** Since I have been in the role, we have had a focus on the major Defence activities in New South Wales. With Minister Roberts we visited the fleet commander, which is the first time that has happened in quite a while. I have been to the fleet base and Mr Scott has been talking directly to the commander there. I have been reinforcing to Defence generally our strong support. I am part of the Naval Shipbuilding Taskforce for the future. I was at RAAF Williamtown about two weeks ago, and it was great to see the work that is being done for the Joint Strike Fighter VA systems. I was talking to Lockheed Martin last night about how they are going to expand there. We are certainly committed to making it work, and if there are any concerns we will engage directly to address those concerns and make sure everyone knows we are committed to making sure that everyone knows we support Defence there and it is a good outcome for New South Wales.

**Mr CHALLEN:** I might add one thing. We are also looking at working very closely with all the key stakeholders around the Williamtown base. We are looking to expand and extend the airport and the aerospace precinct, which will enable expansion plans for BAE and Lockheed Martin. We are also working very closely with our tourism colleagues in regards to the cruise ship strategy to make sure that we come up with a balanced approach that takes consideration of both the tourism needs and the Navy's needs at Garden Island.

**The CHAIR:** Mr Smith, please handle the involvement of the industry representatives and decide on how much time we need to give them to give evidence.

**Mr SMITH:** Yes, I would like them to tell their story.

**The CHAIR:** They can do that now or later on, perhaps after the first round of questions.

**The Hon. MICK VEITCH:** I am interested that you are talking about stakeholders. We have had a submission from the ACT Government. How much collaboration and work happens with the ACT to maximise opportunities for businesses in New South Wales around Defence contracts?

**Mr HARVEY:** I work very closely with my counterpart in the ACT, Kate Lundy, both directly between New South Wales and Canberra but also as part of the overall State groups. When I first took over the job I formed a group with my counterparts from all States to make sure that we all work together for a good outcome for Australia. My general philosophy is, let us not fight over slices of pie but let us make the pie bigger for Australia. In the context of the strategy, we do not want to see the ACT as subservient but note that geographically it is within our footprint. We also look at the nature of the relationship, because people work in the ACT and live in New South Wales and vice versa. We have tried to treat that as effectively what is good for

the ACT is good for New South Wales and vice versa. We do not differentiate between them; we work as closely as we can and we have the Cross Border Commission that we work closely with also. We are trying to work basically as part of the same family, that what is good for one is good for the other.

**Mr CHALLEN:** Kate Lundy and the ACT are also fundamental in the development of our strategy, in terms of incorporating their input and feedback into the strategy. We are also looking at other opportunities to co-collaborate, for example on cybersecurity. We see the ACT is an important partner in all of the things that we do. Building on what Mr Harvey was saying, the ACT is an important stakeholder and we always seek its guidance and input into our activities in New South Wales.

**The Hon. MICK VEITCH:** Do we have a picture of the small businesses or businesses that have contracts with international defence? Do we know how many people here are servicing France, Canada or the United States? Do you have any idea about that?

**Mr HARVEY:** In general, at the upper level the statistics on defence and exports are not well tracked overall. That said, we can probably pursue the overall global supply chain program and we can investigate what data is available for that. There seems to be a bit of a gap at the moment in that the Bureau of Statistics [ABS] do not track well the specific nature of all defence activities because some of it is dual-use type activities but we certainly can look into that because the defence industry story in Australia really is a small to medium enterprise [SME] story but I do not have the statistics to hand.

**The Hon. MICK VEITCH:** How hard are those statistics to get, Mr Smith? Would it take a lot of work?

**Mr SMITH:** It would take a bit but it would mainly be doing an agreement with the ABS because they are the ones who collect all the fundamental economic statistics.

**The Hon. MICK VEITCH:** If we know who they are, what supports do we need to put in place to assist them to grow that part of the defence business in New South Wales, but if there are not a lot, what do we need to do to create the environment for them to access that?

**Mr SMITH:** I think we do know most of the firms but we do not know the value of all of the activity and how it relates to international supply chains, et cetera. That is why we have Defence NSW, these guys around every day connecting. It is not a big universe of activity so I am confident that they have got pretty good connections to know who to work with.

**Mr HARVEY:** We are making sure that we are working closely with the Commonwealth Government and Department of Defence. As you all know, Defence generally is pushing to increase Australia's exports. The statistics are, I believe, that we are the fifth largest importer of military technology; we are the nineteenth largest exporter and the ratio is about 12:1. Certainly Christopher Pyne is trying to change that to rebalance to do that. So what we are trying to do in New South Wales is consistent with what the Federal Government is trying to do. I think the point is as well that it is important to work with the other States. A small example is the Joint Strike Fighter project. We produce the vertical tails for the JFS. The composites are made out at Bankstown in New South Wales. The titanium components are produced in South Australia by BAE Systems and they are brought together by Marand in Victoria so it is an overall national endeavour to achieve that. That will be some billions of dollars over the life of the project. So that is a case where the States do need to work together for a good national outcome.

**The Hon. MICK VEITCH:** Is this an area that needs more work and is it worthwhile work? Is it something that we should be focusing on?

**Mr SCOTT:** Perhaps I can offer our general approach. There are many, many SMEs involved in the defence industry across the State. One of the ways that we seek to understand their challenges and support them is by being engaged with the industry groups that represent them. So we have got strong connections with industry groups such as the Australian Industry Group, Australian Industry Defence Network and Sydney Aerospace and Defence Interest Group. They each have a client base. We work very hard with them to help us understand the challenges of the clients that they represent. I know that some of those industry groups will be making submissions to the Committee. We are very interested in those submissions because that is one of the great sources of advice and stakeholder need for us to act on. Our resources are constrained to a degree. We look to make best use of those resources by connecting, as the Secretary said, with the right people who understand in detail the many SMEs in the industry.

**Mr SMITH:** I was going to suggest that we ask the people from industry their perspective.

**The CHAIR:** Yes, that is good.

**Mr SMITH:** And Mr Eager may want to take the opportunity to introduce his company as well.

**Mr EAGER:** Good morning and thank you. On that topic, you might find the Defence Export Office has some statistics and information that might be useful. I certainly know that we have to go through there to export defence material so they would have some information. I will introduce my company. I represent a company called Carbonix, which makes these very fine unmanned aircraft systems behind me. It is called the Volanti. We build that in our little Q workshop, if you like, or scunt work some might say, on Cockatoo Island in the middle of Sydney Harbour. We not only build them out of the complete composite materials but we integrate all of the avionics and electronics in our small company of now around 10 people.

We provide what must be a very good case study for you. We are very small in the sense that we are emerging in this space. We evolved out of marine, hence the location at Cockatoo Island. It is a great place to build watercraft. You go out and fail, drag it back, and go again. We were approached from an offshore company to build some drones—that is the most common term—for a Spanish military contract so the variety you see behind me is what is called a VTOL, or vertical take off and landing, but cruises into horizontal once it has reached a certain height. We were approached to build just a fixed-wing aircraft for that Spanish company. So we built three of those and realised of course that this was a rapidly emerging space, so we evolved and moved out of high-speed watercraft into this space and have been developing for the last two years solid.

It is obviously a very unique site out there at Cockatoo Island; it is a UNESCO, world heritage site but it is an eight-minute ferry ride from the CBD, which is quite unique for a factory. We believe that can have some other implications and if I get a chance I will talk about those. It is one of the fastest growing parts of the aerospace industry mainly because of the small end; it is very affordable, accessible, adaptable and somewhat unfortunately quite anonymous if you want it to be.

It is a high-tech industry that is moving places fast. The aerospace design and engineering capability that we bring for our size—as a country we probably punch above our weight in this space. It evolves also out of some of the marine work. If you think about the things we do in the marine world, from Riviera boats to high-speed catamarans in the military as well; those sorts of things apply themselves straight into this space. Whilst we cannot compete generally on a labour cost equivalent we can certainly punch above our weight in the high-tech manufacturing space, and I would say world-class capability.

We are looking to grow and employ more as soon as we can. Probably a third of our people have been put on in the last 12 months, which gives you some sense of what is there. We are domestic focused first but export as well. We have a lot of interest from offshore, particularly the second and third world countries, our neighbours, and defence now in this heightened state of security would probably encompass all forms of intelligence and reconnaissance and other sorts of areas we can provide a solution—law enforcement, emergency services and humanitarian. That is the company. We are now moving into full production and that is very cost intensive—building new tooling, building new equipment and growing. I could talk more about that if you want but that is a snapshot of our company.

**Mr SMITH:** The next question was about what the New South Wales Government could be doing to create a favourable environment.

**The CHAIR:** Yes. We are from the Government. How do we help you?

**Mr EAGER:** I think on the surface, the Government has been very supportive so far. We have had involvement in a couple of major exhibitions in the land forces. We are invited to join the State booth, which was very handy, as well as the Avalon Air Show. Those two events gave us some great exposure at an affordable rate where we could participate otherwise we could not have. We had some exposure there. I will plug for the industry capability network that I think is supported by the Government; I believe it is supported by the Government; they are very handy. In this business it is interesting. We have a lot of great capability around the country for various components that are evolving—maybe in those little secret workshops that we talked about—but to find them to integrate into such is quite difficult sometimes.

We have used the industry capability network to get through to manufacturers and other parties out there who are seasoned in this space so that we can take the best of the best. We are very focused on trying to build a completely indigenous Australian solution. That is not going to be possible unfortunately until we can make lipo batteries that we find in China and the United States. We have had some discussions with Jobs for NSW and that is progressing as far as I can see but we have not yet got to the point where that is enabling us to employ more.

**The CHAIR:** We will get you back in six months and you can tell us.

**Mr EAGER:** I would love to. The other issue is that defence is obviously governmental. Therefore, government-to-government communication can introduce a small company and can take us into places where we could wave our arms for a long time and never be seen. Those sorts of delegations, introductions and associations with government will certainly help us. As I said, the research and development is intensive. We have put a lot of money into that area. We cannot travel offshore for an upcoming exhibition because we have put a lot into our next project. That stifles us. The Federal Government has a research and development refund system, but we have to wait a very long time to get a refund. There may well be something in terms of a support loan base to get refunds more quickly.

**The Hon. MICK VEITCH:** How long?

**Mr EAGER:** It is horrific; it was five months last year. It was a refund, like a tax refund. It was due and it was nothing special, but it took us five months to get it. That had some major implications for the company. We knew it was coming and we budgeted for it, but it did not arrive.

**The Hon. MICK VEITCH:** So you carried that?

**Mr EAGER:** Yes, and it was several hundred thousand dollars. It is a federal issue, but the States may well be able to do something. That was a very real issue that affected us. Obviously there are lots of things we must comply with in terms of rules and regulations, environmental impacts and so on. Navigating government itself is difficult. Strangely, there are many SMEs that do not have a clue.

**The CHAIR:** It is not limited to SMEs. Mr Shaw, would you like to tell the Committee about your business?

**Mr SHAW:** I am one of the directors, engineers and founders of Advanced Navigation. We founded our company about five years ago. Do not hold it against me, but we initially established it in Perth. However, we moved quickly to New South Wales about three or four months later. At the time, Western Australia was a very mining-focused economy, and we are a very high-tech company. Given the access to intellectual resources in Sydney, we saw it as being the best place to be in Australia. Our approach is probably different from that of other Australian SMEs. We have gone offshore and conquered the global arena first. We are very successful in the United States, where we have offices, and in Europe, and we are also emerging in the Asia-Pacific area. If you tell a global customer that you are from Perth, Australia, they do not know where it is.

**The Hon. MICK VEITCH:** Where is Perth?

**Mr SHAW:** A long way away. However, we went back to the future in a sense and reopened an office in Western Australia about 18 months ago. We did that because we have been very successful in the land, air and space arenas, and we are trying to grow a marine presence in naval and commercial applications. There is really good access to resources in Western Australia compared to other States for marine-based technology and intellectual resources. Industry engagement and collaboration is a lot stronger in that area for that space. That was a key reason for doing that. In addition, and as we all know, the cost of leasing space in Sydney is much higher than it is in Western Australia. When you are trying to operate a marine-based business involving having a big swimming pool and a large warehouse to test your products, it is much cheaper to do that in Perth as opposed to Sydney. One challenge we face being a Sydney-based company is that some of the overheads here can be prohibitive.

**The CHAIR:** Tell us more about what you produce.

**Mr SHAW:** I will try not to nerd everyone out too much. What we do is not as straightforward and as exciting as what Mr Eager's company does. We develop navigation technology. Our components and products tell our customers where they are located. They might install our product on a drone, an armed vehicle with a targeting system, a submarine the size of our future submarines, or a small robotic unmanned submarine. We also help satellites to know where they are, and we locate divers doing training exercises. We tell our customers that there is nothing we cannot track.

In terms of our customer base, we are diverse and we are split between defence and commercial applications. Our customers are companies such as Boeing, Lockheed-Martin, BAE Systems, and many European-based companies such as Leonardo and Thales. There are also many emerging tech companies such as Tesla, Google, Facebook and LG. In some ways some of the commercial areas have moved ahead of defence, and they sometimes have more appetite to test new technologies. That is one of the challenges we found in the Australian defence landscape, and it is why we went offshore. We find the landscape here to be a bit risk averse,

which is probably fair enough. However, that is starting to change with investment by bodies such as the Centre for Defence Industry Capability [CDIC] and the innovation schemes that are looking to invest in and to develop technologies in collaboration with defence.

That is a good approach because it shows us that there are willing SMEs who will develop new technologies as long as there is a deliverable outcome. Being a commercial company, that is all we are interested in. We are not a research organisation. At the end of the day, we must be profitable, so our goal is always to produce things that people want to buy. Given some of the hoops we have to jump through for certain things, it appears that people think we want handouts so that we can endlessly research. That is never our goal.

**The CHAIR:** That is fascinating. What is the CDIC?

**Mr SHAW:** It is the Centre for Defence Industry Capability.

**Mr HARVEY:** The Committee will be hearing evidence this afternoon from Matt Ramage, who is in charge of the policy aspects of the CDIC and who is from the Federal Department of Defence.

**The Hon. RICK COLLESS:** What is the procedure for developing that technology? Is it a chicken-and-egg situation? Is the demand there, and you provide the answers and technology for that demand, or do you develop the technology and then try to sell it to the defence industry? How does it work?

**Mr SHAW:** We have a range of 14 to 20 products these days. It is a combination of both. Sometimes we are developing things where there is a big demand. I brought one of our systems along today. It is underwater technology we developed to track and locate targets under water. We have developed it, but no-one really understands it. Part of our challenge is now trying to find customers and educating them that this product can help them do things which previously cost 10 times as much to do and which involved equipment that was 10 times as big. We can do that job for them much more simply and a lot more cost effectively.

One of the challenges we sometimes face is finding customers for our products. The most common response we get from new customers is that they have never heard about us. We get a lot of that, even here in New South Wales. Just last week we had a meeting with a New South Wales company with whom we will probably do a lot of business. They said that they did not know we existed and they were buying technology from the Canadians to do what we do. Someone mentioned earlier that we probably need to be forced to do a bit more networking between the SMEs because it often does not occur to us to do that ourselves.

**Mr HARVEY:** We are talking about the "technology push" versus the "requirements pull" to balance those two issues.

**Mr EAGER:** It is a bit of both. Everyone seems to know that there is a potential for drones in the future, but they are not sure what it is. I can assure members that it is not at the pizza end and it is not at the rocket end. The commercial middle is massive. It is the pull in that sense, and many companies are already using drones for all kinds of things, particularly in surveillance and reconnaissance, but also in search and rescue and so on. We have also developed unique vertical-take-off technology. The capability to cruise and hover changes the dynamics. We are educating players. A general I spoke to said, "Hang on, let me understand this. Not only do you build these at Cockatoo Island, but they have the ability to take off in small spaces." They can go along a road and hover over something that has recently moved in the gravel—for example, a heat-seeking IED—and go again. That changes the mission into a new paradigm and they have a new capability that can operate long distance.

**Mr EAGER:** So we are pushing that through to say think about how this can go out and land over someone on the water.

**The Hon. RICK COLLESS:** When you develop that you would take that to the military and say, "You need this"?

**Mr EAGER:** Yes. These are the adaptations, these are the missions, this is what you can use it for, and with sensors, we are taking every sensor from around the world to do different things.

**The Hon. RICK COLLESS:** From the military perspective, the military would be recognising they have a need for a particular type of technology. Do you then go to these people to see if they can develop it? Does that happen also?

**Mr HARVEY:** If I can add mention about the Centre for Defence Industry Capability, that is why they have been set up by Defence, to go out there. It is again the requirements pull and the technology push to try and marry those two together out there. From the stake end we try and piggyback on that, not try and

replicate it but make sure that defence generally is aware of the full capabilities in New South Wales to satisfy those requirements.

**Mr SCOTT:** I think as well as organisational developments like the CDIC, there are practical things that government can do for companies like this to help bring industry and Defence together. A good example coming up is Pacific 2017 and the Sea Power Conference. They will be hosted here in Sydney in early October. Sea Power is a conference hosted by the Chief of Navy which attracts representatives from over 50 navies from around the world. That conference is conducted in conjunction with Pacific 2017, which is a defence industry trade show. Not only do companies get to network with each other and display their wares and show what is possible today but they also get the opportunity to engage with defence capability acquisition and development officers. Our role there is to ourselves have a presence as New South Wales Government but be supporting and be clearly associated with those clever New South Wales companies that have got something to offer defence in their challenges.

**The Hon. JOHN GRAHAM:** Thank you for your submissions and particularly for the strategy, which I think is a strong start to this discussion and the increasing priority on this area. I had two areas I wanted to ask about; the baseline and the pipeline, where we are now and what you see as the key areas we can go forward in. Firstly on that baseline question, the strategy and the submission this morning sets out where we are, what the contribution of defence is in New South Wales. What was not clear to me, the key question that is occupying the Committee, is what slice of the pie New South Wales is winning. I accept we should grow the pie but what slice of the pie are we winning at the moment? Can you give us any more details about that?

**Mr SMITH:** Are you talking about the slice of what the Commonwealth is spending to buy defence services?

**The Hon. JOHN GRAHAM:** Yes. There are some quite good figures in here. We know we have 26 per cent of personnel, that is military and civilian combined. We might aspire for that to be higher but at least we know where we are. I am not as clear for things like the \$5½ billion of operational expenditure; how much of the pie is that? Do we have those figures or are they difficult to find?

**Mr SCOTT:** I do not have those figures for you today. We can ascertain and provide those figures. If I could offer, again the Commonwealth Government representatives from CDIC—so Matt Ramage—I expect he will have a clearer view of that today. What I would say though is when New South Wales looks at not just defence expenditure today but also defence expenditure into the future, the way that I think of that is across three main components. One is the operations, just how many Australian Defence Force [ADF] personnel and how much ADF equipment capability is based in New South Wales. We are very well positioned there, I think from some historical legacy. But what is forefront in my mind is that as the ADF develops its capabilities into the future it is also making key decisions right now about force disposition. And for us the importance of presenting as a State that welcomes defence and defence industry is really important now, such that we do not present any disincentive as they consider where they will base those.

**The Hon. JOHN GRAHAM:** That is really the pipeline question that I want to come to. On the first question though, I think it would be helpful if you can provide that information. There is some really good information in here saying we have got 80 bases, \$5½ billion of expenditure, 26 per cent of personnel, but it would help the Committee if you are able to say, this is what we have got, but this is how it stacks up across Australia. When it comes to economic development generally we hope to get about a third of the pie at least, in line with our population, probably higher given the size of the New South Wales economy. That might not be appropriate in the defence sphere. But to know what slice of the pie we have got at the moment is relevant to the argument that the Committee has got to make inside the political system. I think that would be very helpful.

**Mr SMITH:** Certainly we are happy to get that information and I think it is a valid question to ask. I just would not want to think about that alone because there are other questions. We can think about how much is being bought out of New South Wales from the Commonwealth defence budget, we can also think about who are the firms that are the sellers of all of those services. We look at it from a strategic perspective about the types of industries that sell to Defence but also to civil or that sell to Australian defence and also to international defence. The industry associated with defence, that Commonwealth defence force is a big customer and a big source of activity but it is not the whole game.

**The Hon. JOHN GRAHAM:** Understood, and some of that argument is set out in the strategy, so I accept that. To turn to the pipeline question; what does the department or what do any of the people presenting today see as the key priorities? Where are the next opportunities that you are looking to mobilise the attention of

the Government, the attention of the Committee? What should we be perusing as the next opportunities coming down the pipeline in defence?

**Mr HARVEY:** I think we need to separate a few elements. We talk generally about exports. With the general Commonwealth Government push to enhance exports, that is one focus area. From your previous question that does not affect the relative division within the States, that is all basic bonus work. We push as hard as we can, work all those States to maximise the export that we can.

**The Hon. JOHN GRAHAM:** I think that is a really powerful point, so I accept where you want to head on that.

**Mr HARVEY:** Then looking at the Australian defence budget. As we said, we have got a large number of bases here. Our keen focus is to make sure that those bases, everyone realises they are welcome, support the ongoing activity with those. Then we can start looking at individual projects, projects such as a future submarine, the largest project ever for the Australian military area. It is acknowledged that will not be built here in New South Wales but we will look for the major elements of that. Things such as Thales—you will talk to Chris Jenkins this afternoon—we would really like to see Thales sonar go on to that, and that would be a very valuable project for that. The systems integration work, we want to make sure that work goes on there.

The work up at Williamtown on the joint strike fighter. Again, the sustainment of that. It is a done deal, there will be three squadrons there; Lockheed Martin and BAE expanding in that area as well. Nowra; a lot of work there already on the helicopters and we expect the naval UAVs also to go to Nowra. They are some of the big projects that are happening. We need to think of the export staff, the Australian Defence Force, within the defence force there is the sustainment, then there are the project elements of that. A lot of other big projects out of the future; battle space management for air force. Again, it may not be based here but we will look at major elements contributing to that. Companies such as Rockwell Collins in North Sydney started doing work on HASF but are expanding the export of that.

So, within the strategy we have identified a whole range of projects. We want to focus on the ones in the main where New South Wales's strength comes to bear to do as much as that. So we are focusing on doing more in Australia on what would otherwise go overseas, but as well partnering with other States to get a good outcome overall.

**Mr CHALLEN:** Can I just add to what John was saying—and go back to Chris and Jeff's point as well. A big focus is on helping SMEs understand what the opportunities are. I think that there are a lot of them that do not realise that some of the activities and technologies that they have could be applicable within the defence industries space. That is one of the things that we need to help them with. We need to help them understand what the global supply chain programs are, and the channels into building deeper relationships with the big prime contractors as well. I think that we can help them understand the difference between how prime contractors work and what they look for from an SME.

We also need to focus on how we make sure that we have the people with the right skill sets for the jobs of the future. So we also need to be focusing on that aspect. A lot of it comes down to talent. That goes to Chris's point about why he came to New South Wales. We have to make sure that we are on the front foot, making sure that we have the skills for the future. We have been very active recently in trying to target some of those big Defence programs like LAND 400. We were engaged with BAE Systems Australia and Rheinmetall. We put a very comprehensive bid in place for that but unfortunately we were not successful. It was Queensland and Victoria that were shortlisted.

But our discussions continue with BAE and Rheinmetall because we still want to put the smarts into those vehicles which will be produced either in Queensland or Victoria. So there is still a role that we will continue to play to make sure that our companies will be part of the bigger defence programs. If we are not bending the steel here—we probably do not have the competitive strength in that—we want to put the smarts into that machinery.

**The CHAIR:** I would like to pick up on the submarines. Several people have suggested informally to us that it would be a great target to have some of the submarines based here in New South Wales. I know that Mr Green, who is very interested in the regional elements of this, has already started putting in some piles for a wharf at Nowra. What sort of prospects are there for some of the submarines to be based here, and what can the New South Wales Government do to pursue that, if there is an opportunity—particularly for Nowra?

**Mr SCOTT:** I think there are very strong prospects for east coast basing of submarines in the future. There are very logical arguments for east coast basing of submarines today. As the force grows in numeric

strength they will become even more compelling. I think that we can offer a welcome mat to Defence as they make those decisions. You mentioned pressures on Garden Island. Too much airplay about the cruise industry does not encourage Defence to look towards basing another class of vessel here on the east coast.

I deliberately say "east coast" rather than "Sydney". I think that if Defence sees that they will be supported by the State Government wherever they look to base any class of ship, that is the best that we can offer. It might be that they decide to operate the submarines from a port such as Newcastle and smaller vessels from a port such as Port Kembla. We can look to work with them and bodies such as the Naval Shipbuilding Taskforce to display the opportunities that are there, and make those opportunities appear attractive to Defence.

**Mr HARVEY:** Can I just add that we want to have a very long-term vision to make sure that we do not make any decisions now that preclude those things happening—to keep those options open. For example, working with Thales recently, the slipway up at Carrington was an example of the New South Wales Government working with a company to open up, initially, commercial opportunities and aiming to grow that into naval opportunities as well.

**The Hon. PAUL GREEN:** Thank you, Chair, for your acknowledgement of the Shoalhaven again, and the importance of the defence industry to the region.

**The Hon. MICK VEITCH:** Where do you live, Paul?

**The Hon. PAUL GREEN:** The Shoalhaven. I think there is a real market for that underwater baby monitor! I think a bit of diverse marketing there might get you a few extra bucks. It is great to see the importance of defence in New South Wales. I would like to quote your submission, which says:

Every \$1 billion in Commonwealth defence spending we can attract to NSW will boost our Gross State Product by \$1.4 billion and support up to 10,000 jobs across the economy.

That is a fantastic little summary of why we are here today. We want to get a bigger slice of the pie. We have heard about some of the hindrances for SMEs trying to get into the circle of influence and the networking. I think we are hearing that the New South Wales Government has already provided opportunities through expos, which is fantastic.

You note the issue of skill sets. One of the things we are facing in New South Wales is that our skill-set settings right across the board, not just in defence, need to be targeted for the future, for jobs that do not exist now. Do you have a comment about that, and how the Government can contribute to getting those settings right, now, through our schools, TAFEs and universities?

**Mr SMITH:** I would be pleased to start on that. You would know that when the Government set up Jobs for NSW it did a big piece of work called Jobs for the Future, which has been published. It confirmed what many people have been saying, which is that we can see a gradual reduction in demand for routine, scheduled physical or intellectual tasks that might do, and an increasing demand for the other kinds of skills—things that are unpredictable and variable and involve relating to other human beings, problem solving and technology. Since that work has been done, because we do not have as much influence on what is in universities Mark Scott and I have been working on how schools should change. Mark's view is that the schools we have now are excellent for the 1950s. His view is that a big-picture rethink needs to be done about what happens in schools. He would be the best person to ask about that.

In the case of vocational education and training [VET] we have been doing some work. At the moment the model we have is all about student choice. You can understand why. The problem is that most students are not very well informed, either about where a course they might select would take them, or about the quality of the particular provider that they might select. So we have been doing some work with the Commonwealth to do some de-identified data matching to compare people's wages before they go into a VET course and what happens to them in the few years after they have done the VET course. We are heading towards a world where a student in the future will be able to know what happened to the people who walked through a particular doorway ahead of him or her.

Of relevance to this is that the courses with the best-paying rewards are mostly for people who are doing defence training because they have the certainty of a job associated with the training program. But we have found that people make unwise choices going into some courses that do not take them into employment. The future world that we want is where students, their parents and families have much more realistic information about what happens if you choose certain courses. We are also doing work to inform students about what scale of opportunity there is in each region of New South Wales in each principal sector and sub-sector and so forth to try and have a much more efficient labour market in that sense, and make sure that providers and

students and industry can see what is in demand and what needs to be improved. This is quite a substantial journey that we have commenced on.

We have shared our work with some of the other States. They are really keen for us to do it and share how it is done. But for us this is a principal area. I think of it as labour market reform in the sense that it makes the labour market work better. If the people who are selling the labour know what is going to be required in the future they can prepare themselves better to do so.

**Mr CHALLEN:** Can I give you a practical example of what we are doing in the defence space? Here in Parliament House we had the Defence Pitch @ Parliament, where we got about 150 university students doing their masters or doctorates and we invited up to 20 defence companies to Parliament House. It was like speed dating. We gave all the students an opportunity to have face-to-face time with the HR manager, the chief executive officer or the owner of these defence companies. The students could pitch what their background was. That was invaluable because we had kids there who would not have had access to those types of people in those companies. The feedback that we had was, "I didn't realise what a Northrop, Lockheed or Boeing could do, and how exciting that sector is." Stuff that Chris and Jeff are doing is exciting stuff. We are going to do that in the regions as well. We are going to go into the regions so that university students can understand what the opportunities are in the defence space. This is a sector that is all about highly skilled, highly sought after, highly paid jobs. It is also part of our role to make people aware of the opportunities post-university because we had software designers, engineers and the like. Even the defence companies said to us, "What a valuable opportunity that was for us to actually see what talent there is in New South Wales that is coming out of our universities." So we are doing those things. Just building on Mr Smith's point, it is a very male-dominated sector as well. We need more women to come through into defence industries. We need to start targeting it through Science Technology Engineering Mathematics [STEM] and the young schoolkids in lavish entities like Space Camp Australia and those types of initiatives that can then get young schoolkids and also the parents to understand what their career pathways could be in the defence industries.

**The Hon. PAUL GREEN:** Williamtown obviously has an issue with contaminated water, and maybe grounds. How does that affect the opportunity to expand into an aviation park? Could an aviation park be a solution to that?

**Mr CHALLEN:** We are actually looking at that exact issue at the moment. We have been looking at expanding Williamtown. That is one of the challenges that we have faced but we are working towards a potential solution that could address that. A report is being prepared and we are waiting for the final recommendations. We have been working very closely with the Airport Corporation, Environment Protection Authority [EPA] and all the key stakeholders around Williamtown. There may be a solution so we are just working on that, but we are just waiting for the final feedback.

**The Hon. PAUL GREEN:** The expansion of it could very well be the resolution of the contaminated water issue, is that not correct?

**Mr CHALLEN:** It could be, correct.

**The CHAIR:** Thank you for appearing before the Committee today. The evidence you have given has been very valuable. We congratulate our government representatives. The Committee is of the view that you are doing a great job. You are all really making a difference. You will have 21 days in which to answer any questions taken on notice.

**(The witnesses withdrew)**

**(Short adjournment)**

**MATTHEW RAMAGE**, Acting First Assistant Secretary Defence Industry Policy, Department of Defence, sworn and examined:

**The CHAIR:** I now welcome Matthew Ramage to this hearing. Would you like to make a brief opening statement?

**Mr RAMAGE:** Thank you so much for the opportunity to come today. Defence did its very best in terms of providing a submission to be helpful because this is fundamentally about Defence's capability and business. This is a very important inquiry for us. The New South Wales defence industry from our perspective is fundamental to the maintenance and operation of our capabilities, infrastructure, training and support for the Australian Defence Force. Obviously within the national supply chain as well there are great opportunities and we want to work together to ensure that New South Wales companies realise those opportunities. So from Defence's perspective we are doing a lot and the Government is doing a lot in terms of changing the way we think about the defence industry. We have a number of initiatives, some of them we mentioned in our submission that are underway; others, such as a 10-year defence industrial capability plan, a defence export strategy, just that broader policy direction and drive for what we are doing, are still underway for release later this year. We work hand-in-hand with the New South Wales Government and Defence NSW and they are very helpful to us. It is a different kind of partnership than we have had in the past. I just wanted to thank you for the opportunity.

**The Hon. JOHN GRAHAM:** I begin by asking you about the defence innovation network that has been established in New South Wales. You indicate in your submission that you are supportive of that development. I am interested in your perspective about how the Victorian equivalent on which it is based has worked. From your perspective what has that brought to the table? What should we be looking to do as we are establishing this network?

**Mr RAMAGE:** It is a defence science and technology initiative rather than the industry side. I am not the absolute expert but it is a coordinating mechanism to ensure that you are bringing university and research capability together. And in the Victorian space to be able to have a focal point for saying, "This is what defence needs in terms of its capability requirements." There are many universities, to promote collaborative arrangements and ways in which you harness that capability for the greater good rather than necessarily the competition. You can organise collaboration across universities to meet Defence's needs. I think that sort of model translated into New South Wales will mean that you are more likely to get better outcomes by having universities working together and working to meet the common goal.

**The Hon. JOHN GRAHAM:** Earlier the Committee was talking with representatives of the New South Wales Government about the Federal push to expand the export capacity. You have flagged that the export strategy is coming later in the year.

**Mr RAMAGE:** Yes.

**The Hon. JOHN GRAHAM:** Without necessarily going into the detail of exactly where that is heading, can you give the Committee some sense of the pressures and opportunities in the export space that might be important to New South Wales, so we are not just looking at what slice of the pie we can get at the moment but what is of benefit to everyone?

**Mr RAMAGE:** Defence has not sort of focused on exports in the past. We do not have a system that allows us to work necessarily with the States and Territories to say, "Here are the capabilities you have in New South Wales. These are their strengths and this is what you are doing. How can we use ministerial, government defence resources, advocacy and support to help you achieve those opportunities?" In terms of the strategy, what we are trying to achieve is to provide better resourcing potentially of some of the existing initiatives which we have—things like a global supply chain program, which New South Wales companies already benefit from. We work with the primes and under contract they identify opportunities for small to medium enterprises. So to pull them through in terms of the international supply chains to be internationally competitive.

We have Team Defence Australia, which is a national initiative where we go to international trade shows. At the next one in the United Kingdom in September will be the largest presence of Australian companies ever at a trade show. New South Wales also has trade events and goes overseas. So part of it is looking at how we better coordinate that. How do we have a national brand? How do we look at the early identification of capabilities within the New South Wales defence industry and across Australia to say, "Here is

a great idea or capability that is coming on board. How do we look at it early and carry it through the system and think about exports in a strategic way rather than in a more ad hoc and uncoordinated way?" The strategy is about resourcing but it is also about doing business and normalising thinking about exports and thinking about at the Commonwealth and State and Territory level we are working together with a common goal and using those different levers to get the best outcome for Australian industry.

**The Hon. JOHN GRAHAM:** So you are saying that because it has not been a major focus up to now, there could be a major change in how the Government works in this area?

**Mr RAMAGE:** It is going to take time.

**The Hon. JOHN GRAHAM:** So it will not be quick, but nothing in this space is.

**Mr RAMAGE:** That is right. You have got to look at the capabilities that Australian industry has now and where those capabilities are competitive internationally, where those opportunities are. Australian industry does not have a lot of major platforms and systems that it is trying to sell overseas. A lot of it is small to medium enterprises with niche components of capabilities, niche export opportunities, and that is where building into those supply chain opportunities is important. But as we use the investment that we have, as we get that defence capability investment, as we are building Australian industry up, to realise those opportunities it is doing it hand-in-hand so that over time, in five to 10 years time, we should be really doing a lot better in terms of those outcomes.

**The Hon. JOHN GRAHAM:** You have talked about the Team Defence Australia approach. Can you tell us what, from a practical point of view—this just makes common sense; certainly it is one of the things we will look to evolve the culture of over time here in New South Wales—has made a difference with this approach? What has actually worked?

**Mr RAMAGE:** It works because the companies themselves do not necessarily have the ability to go overseas and market themselves into the big primes and the big opportunities overseas. So what Defence does with the Centre for Defence Industry Capability, who run it for us, is bring that together so you get a whole group of companies, we pay and support them, we facilitate access within those companies, we run events for them.<sup>1</sup> So it is coordinating and organising in a way that allows them to get the best opportunity to market themselves, which you cannot do as a small to medium enterprise particularly. And that is where it is targeted; it is not the big primes who have the resources to go overseas themselves necessarily and do that, it is the companies who need that extra help to bring that together. With a national brand that gives you greater leverage because you are bringing that view. Rather than a Tasmanian- or a New South Wales- or a Queensland-only view, you are bringing a whole set of capabilities together and showcasing them overseas.

**The CHAIR:** To give us a bit of an understanding about the relationship between the Department of Defence and the individual services and the decision-making processes in terms of acquisition of equipment and that sort of stuff, and research and development, what are the linkages and how does all of that work? How do industries slot into that?

**Mr RAMAGE:** The services tend to be the capability manager, so in a sense they own the capability that is in service now and they own the future capability and they carry that through the system in terms of what drives the outcomes. The Capability Acquisition Sustainment Group is a project delivery organisation; so when

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<sup>1</sup> In [correspondence](#) to the committee dated 21 August 2017 Mr Matt Ramage corrected the transcript by saying the following:

*In the Hansard record of my reply, I state that:*

*'It works because the companies themselves do not necessarily have the ability to go overseas and market themselves into the big primes and the big opportunities .... , we run events for them.*

*The actual wording of "we pay and support them" should have reflected the intent that "we subsidise elements of support for them". What this means is that we sponsor companies attending international trade shows by way of providing free access to trade events we are attending, as well as a free allocation of a branded "pod" on the Team Defence Australia stand. The small to medium enterprise attending on the Team Defence Australia stand covers all other costs associated with wages, travel and accommodation.*

it comes to, say, SEA 5000 future frigates, Navy is driving the capability requirement and Capability Acquisition Sustainment Group is the project manager and deliverer, the tenderer in terms of tender evaluations and that sort of process. So it is linked between the service who own the capability identifying what they need and the delivery organisation. So within that, Australian industry is really at that end of identifying what the capability requirement is, identifying how we are going to acquire it and then through the Australian Industry Capability Program, which I oversee, which is that industry element of material procurements, that is part of the tender evaluations and the decision-making and the advice to government about the capability solution that best meets the capability need but also, obviously, the Australian industry outcomes within that.

From a front-end Navy, say, in that example, the services are not doing the acquisition in isolation; it is very much a whole-of-defence and providing that advice to government. But the Defence Science and Technology organisation are the research arm of defence and they own the Next Generation Technologies Fund—they own that science and technology focus. The innovation focus, the innovation hub, is within the Industry Policy Division—so working very closely with the Defence Science and Technology Group but being that mechanism to work with the single services, work with the capability managers to identify innovation that can be fed into capability as we move forward. So capability solutions that in five to 10 years' time might give us that war-fighting advantage.

**The CHAIR:** I think you touched on it a little earlier but I think when we started this exercise the culture seemed to be very much of the States competing with each other and how they would compete with each other for bits and pieces of acquisitions. The work that you are doing and the State is doing is being a little bit more clever than that and starting with capabilities and working how to maximise the return for Australia and how to also maximise the return for each of the States. Can you just comment on that and how you see that policy, that interaction developing?

**Mr RAMAGE:** Defence, or the Commonwealth Government, is agnostic about the major acquisitions and where they are. Obviously, the Government has stipulated that our continuous ship building program is Adelaide for the submarines and major surface vessels and Perth for the minor war vessels, but, in general, as you have seen with the LAND 400 experience, the Commonwealth is not mandating where in Australia they will be. We are not trying to intervene to sort of get a solution; it is really up to the tenderers to look at the capabilities within Australian industry and form their own views. But within that, really the focus that we are looking at is obviously around the national supply chain; for example, with the future frigates, whilst they will be constructed in Adelaide it is really where the companies are across Australia that have the capability, that are competitive, and obviously New South Wales has a range of capabilities that will be critical in all of those projects. When States and Territories are competing that is not something that we, obviously, like to see, but, at the same time, that is a natural part of States and Territories looking at how they can best position themselves. So I do not have a singular view about that.

**The CHAIR:** Somebody said to me at trade shows—and I would be interested to hear a bit more about the London trade show that you are talking about—there is not confusion but perhaps we are not getting the best bang for the buck when there is a New South Wales stall and a WA stall, whereas people from overseas are looking for the Australian stall. Is that your perception?

**Mr RAMAGE:** I think sometimes, depending on where it is and whether those countries understand Australia's culture and the way we do business, there is room for misinterpretation if you have a State and Territory with a really large presence or a presence that is the same as the Australian presence. So where we can bring that national approach and a single brand, that is in Australia's interests absolutely, but, at the same time, we recognise that States and Territories, in terms of marketing capabilities, there are opportunities and you want to do that and market in particular areas. Where you do that of your own volition then we are very happy to help, but, in principle, it makes sense to have a single national approach and a national presence so that people are funnelled towards that rather than having a whole range of different mechanisms. Obviously, with the support that we provide we want Australian companies, both in New South Wales and others, to get that benefit. That means that you are saving time and energy and money in terms of trying to organise something in parallel.

**The CHAIR:** Please tell us about the London show.

**Mr RAMAGE:** I think more than 50 companies participated. It is called Defence and Security Equipment International [DSCI], and it is one of the major international trade shows in Europe. We have seen an increase in companies across the board being interested in the Team Defence Australia issues. It is another one of those shows. Obviously, Europe and the United Kingdom [UK] represent a big opportunity for Australian companies, particularly the small to medium enterprises. Europe overall is a challenging market, but we need to

recognise that this is a great means for the Commonwealth to work with the States and Territories to provide funding and resourcing as well as coordination and support. It is in that vein.

**The CHAIR:** A recurring issue is a lack of baseline in terms of understanding capacity, particularly of small and medium enterprises, and then publicising capacities and making sure that the businesses are getting opportunities. Please outline the work that you are doing at a Federal level to address the baseline issue.

**Mr RAMAGE:** We are working at two levels. We have the Defence Industrial Capability Plan coming out later this year, and we have been trying to build that baseline. Defence industries is a sector in its own right, but it has not been done that way before. It has been part of other sectors, and it has waxed and waned in terms of the knowledge base. We are trying to establish the baseline, establish a 10-year goal for what we want defence industries to be, which we have never had. We have never said, "This is what our defence industries must be to meet our needs in five to 10 years and so we will aim and focus our resources accordingly." We are doing a lot of work on that side. We did a survey late last year, early this year to try to build the baseline. We got about 1,400 responses, and that gives you a snapshot of industry but generally there are more than 3,000 companies, and that is the core sector. One of the things we found from that survey is that Defence work is only about 20 per cent of the vast majority of companies' work, at least of the companies that responded to our survey. There is a lot of diversity; not every company is just focused on Defence, and that diversification is a really important measure as is the ability to get into other sectors, because it builds greater resilience.

At the same time, the role of the Centre for Defence Industry Capability is to work company by company to build the supply chains, to build the knowledge and to offer support to companies to understand where Defence is going, its capability needs and how those companies can get the benefit. The centre offers grants and assistance. We are trying to do it at two levels. We are trying to get the baseline knowledge and focus all of the different levers we have, all the different programs, towards our long-term goals and how to get to those goals but also at a tactical level, at a company-by-company and sector level, to help companies to realise those opportunities and use those resources. That is the fundamental premise of the Centre for Defence Industry Capability.

**The CHAIR:** Your survey sounds really interesting. This morning we heard a suggestion that the ABS should be tasked to give clarity on this. Do you work with the ABS, and would that be the best way to get that sort of information?

**Mr RAMAGE:** Yes, we do. The way the codes around industry have been constructed reflects history, and that is that there is essentially only one defence sector code but it does not capture the diversity of defence industries. We are working at that level to try to make it more specific, so you get data capture from the Australian Bureau of Statistics. Really the most practical way is to try to build a baseline of surveys, and that is something we have not had in the past. We do not have the history to say that the Australian defence industries grew 5 per cent or 10 per cent in the last 12 months and to know its export outcomes. We are trying to build that slowly, but obviously by doing that we can help States and Territories, particularly in targeting their investment.

**The CHAIR:** We also heard specifically about a scheme for reimbursement for research and development [R&D] costs. One of the enterprises was concerned that it had taken five months to get reimbursement. Do you know about this scheme?

**Mr RAMAGE:** I think it is probably the Department of Industry, Innovation and Science that taxes R&D incentives. I am happy to take that on notice.

**The CHAIR:** Thank you.

**The Hon. RICK COLLESS:** I am interested in the issue of decentralisation. I notice in point 9 of your submission you talk about hubs and clusters of Defence activity. A lot of SMEs are co-located with some Defence facilities. What is the policy in regard to how decentralised these industries should be? My reason for the question is that, obviously, if you had all Defence capability and SMEs co-located in one area, it would become a target if there were a conflict involving Australia. How do you go about decentralising? I understand the location of Defence facilities themselves, but do you try to decentralise the industry side of Defence to prevent it being a target in the case of conflict?

**Mr RAMAGE:** Not so much. The clustering in New South Wales has an operational basis, so you have core aerospace capabilities and core maritime capabilities. It makes sense to have the companies together in the one place, because it saves money but it also means you get greater innovation and greater efficiency in the way that business is done. In terms of cost and making sure that you get the overall capability, we do not

want to decentralise. Where companies are together in a certain place, they can work together and that might mean that they can offer a more competitive and a more cost-competitive but also a better capability in getting that innovation across different companies. Hubs and centres have proven that generally they are good. Because New South Wales has so many Defence bases, which are geographically spread, you get decentralisation because that is a Defence requirement. In terms of industrial capability, it tends to be based around the centres where you have the people, the science and technology. Across New South Wales, you do not necessarily get industry clusters in rural or regional areas, as much as in Sydney itself. That is a natural reflection of where the industrial base is.

**The Hon. RICK COLLESS:** As someone who lives in regional New South Wales, I would like to see more decentralisation and regionalisation of some industries, given their importance to the community and the types of people they bring into the community. I asked the previous witnesses the same question: Which comes first, the demand for technological change or is technological change brought to Defence by people doing the research and identifying that new technologies could be sold to the military?

**Mr RAMAGE:** It works both ways. What Defence needs and the capability that we require is increasingly complex and increasingly technological in the sense of the generations. A lot of the major platforms and systems are from the United States, but in order to operate them, maintain them and adapt them once we have them in service, we need that technological capability within Australian industry. A key part of getting that technology is the ability to get the intellectual property and have that capability in Australian industry. In a sense, that requirement drives top-down the need for Australian industry, in order for us to achieve that objective to have the technology. At the same time, the whole Australian research and development base and innovation base is trying to help us to maintain our advantage and to bring in new technology in a way that makes us more effective and keeps us ahead of regional competitors while keeping the capability at its highest level.

It is not one or the other; it is both, and both drivers mean that the better the innovation from Australian industry—as well as how relevant is its timing and appropriateness—can be brought in to keep the advantage. But the technology itself is also going to be moving in terms of the capability demand. For example, the Joint Strike Fighter requires us to have that technological base in Australia, and that drives research and development and innovation that was probably started five years ago to help us to realise that capability.

**The Hon. NATASHA MACLAREN-JONES:** My question is about the tendering process. We have heard about the challenges of navigating the tendering process of departments and governments. I am interested to know how open the process is as well as how much feedback is provided to unsuccessful applicants. I am also interested in whether or not it is the role of your department to seek companies to put in tenders.

**Mr RAMAGE:** It depends on the nature of the procurement. The big procurements are generally through the major international primes and their role then, particularly in the industry capability space, is to build their proposed approach working with Australian industry. Generally we would not provide feedback to each small to medium enterprise. It is done at a macro level. I know that can be a challenge for companies, particularly small to medium enterprises in that you are not generally directly procuring or providing services to Defence in that major capital space; you are doing it as a second or third tier supplier to a major prime. Really that is where that direct relationship has to be the most but at the same time the initiatives that we put in place, initiatives like the Centre for Defence Industry Capability, are about trying to help make those connections as well and help small to medium enterprises understand those processes and engage with them.

**The Hon. NATASHA MACLAREN-JONES:** How is connecting them actually done practically? Is it training?

**Mr RAMAGE:** It is range of offerings. There are advisers who will go out to the company and talk to them. They will do assessments and say, "These are our views about where you are at." They might offer them grants. There are opportunities for them to realise that. There is also the website and mechanisms where you can pull information but also then in requesting support the advisers will come out and provide that really tailored advice. Obviously if companies are already in the sector there will be established relationships already. It will really be about helping to make the connections between the companies.

For example, in the Global Supply Chain Program we contract seven primes and the job is essentially to find the companies in Australia that are good companies to work with and to help them become socially competitive. They will work with them, put them through certification and training so that they are ready to compete for those opportunities. It is not just what we are doing but also how we are making sure the primes are doing that as well.

**The Hon. NATASHA MACLAREN-JONES:** Following on from questions about the regions, we all know the opportunities for supporting particularly companies in regional areas. Have you come across barriers that have been identified that are preventing them putting in tenders or actually being able to get into that space?

**Mr RAMAGE:** No particular barriers being in regional rural areas. The main challenge for us is just making sure that companies are aware that we have these new approaches and opportunities and how they can connect with them—it is probably easier in the capital cities—trying to use the AusIndustry wider network but using all of those opportunities with the State Government so that it does not matter where the company is across New South Wales, it knows that there are opportunities; it is making the connections and using the resources we have, which are focused on helping them. That is probably the greatest barrier. Obviously if they are in areas where we do not have a Defence presence then it probably makes it harder to understand where the opportunities are as well. There is not a one-size-fits-all approach but we are trying to raise that awareness but we can certainly do better on that front and that is where those connections with the New South Wales Government are critical in making sure that the information flows through.

**The Hon. MICK VEITCH:** Following on from the series of questions you have just been answering, if companies in Australia have contracts with the international defence industry such as France or Canada, what support do we provide those organisations? They may not have contracts with the Australian defence industry but they may have contracts with the defence industry in other jurisdictions.

**Mr RAMAGE:** If they already have the contracts then generally we would not need to support them but it would depend on how they obtained that. The Global Supply Chain Program is one where we are providing that support to help them realise those opportunities. There are natural instances where companies will market their products and achieve success overseas but the Australian Defence Force will not be using that capability. For example, Austal in the United States does that and there are a range of other examples where Defence's requirements just do not naturally match the companies. In terms of support, it would just depend on helping them realise those opportunities because the seven primes are primarily United States or European-based. There are great opportunities and we have seen a lot of companies, including in New South Wales, realise them. I guess part of the export strategy then is trying to make that more formalised and them realise, "If I am a company that wants to export to France. Where are those opportunities?" France may not be the right market but there are markets closer to home or the United States, so trying to help them find the best way to do that.

**The Hon. MICK VEITCH:** The Chair made a comment about the London trade show and that people look at the Australian standards as opposed to the Victorian, Queensland or New South Wales standards. Are there examples of the States and Territories collaborating really well with regards to defence industry contracts?

**Mr RAMAGE:** As to contracts generally the States and Territories have a role but because it is generally the primes who are driving that into defence. I do not remember where that might be the case, although there are examples at the moment where you can see certain States and Territories talking to each other and looking at collaborative arrangements. I know that Victoria and South Australia, for example, are doing that. In the Team Defence Australia space certainly most if not all of the States and Territories do work together with us because we rely on the States and Territories to help us in making sure the companies that we are taking overseas are best placed to realise the opportunities and obviously each State and Territory wants as many companies as possible in that space.

I think that model is a very collaborative model. It is not a competitive model at all. Probably it is something we can improve and put more resources to, and we can also make sure that we are taking care of the State and Territory needs because obviously as we build Australia, there are going to be more companies in New South Wales that have capabilities that we can market overseas. So we need to find a way where it is not going to be exclusively that it must be under an Australian national singular banner but that we are talking and able to actually help use the resources of Defence and overseas, whether that is Austrade, to get better outcomes through both our mechanisms in a way we probably have not in the past because we both have been doing it, not so much in isolation but we have not looked at how we can best do it and that is the focus of what we are trying to do now.

**The Hon. MICK VEITCH:** If this Committee were to look for an example of a small to medium size enterprise that has secured a contract internationally, is there a good case study for us to go and visit?

**Mr RAMAGE:** I might take that on notice because there are many examples obviously in each different sector, and obviously the Joint Strike Fighter example in New South Wales is a great example, but I am happy to take that on notice and provide some to the Committee if that is helpful.

**The Hon. MICK VEITCH:** My last question relates to university involvement. Some of the universities do really well.

**Mr RAMAGE:** Yes.

**The Hon. MICK VEITCH:** They have expertise such as the University of Wollongong in nanotechnology; some of its stuff is brilliant, and also the University of New South Wales. How do you work to engage the universities in skilling up undergraduates and postgraduates in what is not required now but what will be required?

**Mr RAMAGE:** Our Defence Science and Technology Group has very strong national agreements with a range of universities and that gives a lot of capacity to adapt what they are doing to help us. At the same time we have some programs, as does our Defence Science and Technology Group, about early engagement to get that career path from the research sector into defence and to get that science and technology. There are a lot of different programs. We have one, the defence engineering internship program, to try to help people with the right skills find their path into the defence industry or Defence.

If you look at our submission, there are a number of things our Defence Science and Technology Group is doing with that resource—\$640 million over the next decade of new funding to get the best out of those universities. They are only just starting with the next-generation technologies funding and what can be delivered through that. If you see the contracts and partnerships that are there already, they will continue to grow. It seems to be going very well but it can also be better. It is really about personal links and understanding what Defence's capability requirements are and for us being able to know where those capabilities are and to foster them in the way that we are trying to. But obviously there are a lot of next-generation technologies where we are not as strong. It is not about necessarily the traditional technologies; the ones that we have always invested in. It is about drawing in technologies from other sectors—technologies in information, communication and technology, technologies in space, technologies where necessarily in the defence sector we are not in the lead but we are trying to bring them into the defence space—the unattended aerial systems area is one of those really special ones.

The kinds of relationships we have with the research sector will naturally change over time because you are not just targeting a certain element of the science and technology base and research base; you are looking much more broadly. There are opportunities on the New South Wales side as well to think about: What capabilities do you have in your research sector that might be relevant to defence now but also in the future and how can we then bring those connections together?

**The Hon. JOHN GRAHAM:** You have listed some of the projects that are under consideration as part of those partnerships. One view put to me last week was very strongly about artificial intelligence and that there was almost no research going on in Australia in relation to this. This will have big security and potential defence implications. Do you have any view about where that has priority?

**Mr RAMAGE:** It is certainly one of the 10 priorities that the Defence white paper identified. It is a priority side, but I am not sure I would share that view. I am happy to take that question on notice. As you can imagine, artificial intelligence, the ability to increase computing power and the ability to make faster decisions to bring that in are absolutely the key elements of future defence and operations. I would not share that view.

**The Hon. JOHN GRAHAM:** It is about the amount of Australian research that has already been done. It is clearly a priority, but the view put was that very little research has been done. I will be interested to see your response.

**The Hon. MICK VEITCH:** You can invest a lot of money in research and the next step is commercialisation. Are there examples where that has not worked well that the Committee should consider?

**Mr RAMAGE:** There is a number of examples. Obviously they relate to where there is a lot of investment in research. However, if Defence does not want the product or if it is not competitive, we will not buy it. Part of the challenge, and certainly the way we are doing it in the Defence Innovation Hub, is how we bring this into service. Not everything will be successful and not everything will be taken up by Defence. However, it is about trying to ensure there is a commercialisation path for Defence to take that technology into service, to think about that early and to carry it through. It is definitely a key issue. Often we do not know whether research will be relevant. However, Defence will always apply that test: Will it advance capability, is it competitive, and does it offer an advantage? There will never be a perfect solution to that challenge.

**The Hon. PAUL GREEN:** The Committee has heard about an SME that has people buying product overseas and it has the same technology available here. That is incredibly frustrating. SMEs are focused on

delivering the product and they do not have the time to go to market. What can we do in that area? Can someone give them a hand internally rather than externally? They do not have the time or money to do that, especially with regard to innovative technology.

**Mr RAMAGE:** Yes. They can submit their proposals to the Defence Innovation Hub, which can provide funding. If it believes it is a technology that is relevant to Defence, it will obviously be considered. That is the core business of the Centre for Defence Industry Capability. Someone might have a product that they do not have time to market nor to establish the level of demand. It is great that they are achieving success overseas, but if they are not able to make those connections then ultimately they might fail. That is not what we want. However, if they are working on a product that has no potential in the defence field, that is a bad outcome. As I said, that is CDIC's core role; that is, to connect with those companies, to provide advice, and to find the right people for them to talk to and who understand the capability requirements

**The CHAIR:** One of the things we struggle with a little is understanding how the defence industry works. It is opaque at best. The Committee again heard an example this morning of a company that has come up with a tiny tracking device which is incredibly effective and which operates on land, in the sea and in the air. How does that company interact with or become aware of what you are doing through the Defence Industry Hub or CDIC?

**Mr RAMAGE:** If they are New South Wales-based, there are advisers in Sydney they can contact. The web-based presence has phone numbers, advice and the mechanism to connect with the people who can help them. That is generally the first interface. They can make a phone call and they will be directed to the right adviser or to the web to draw that resource to them. It is always a challenge when a company has a technology that might be fantastic in its own right, but if it is not then able to link into Defence's needs in terms of a broader system, how it might do it, and what we have now, that is a real challenge on both sides in terms of Defence's requirements and whether it meets its needs. Using the CDIC to make those connections means they can get the best possible interaction with Defence to ensure that what they are producing will be fit for purpose. It may not be now, but as we are building capability there will be opportunities in the future.

**The CHAIR:** The Committee needs a card from your centre to hand out as we travel around. We have heard from many people that it would be a great idea for New South Wales to be involved in the maintenance and sustenance of some of the new submarines somewhere on the east coast. If you were the New South Wales Government or New South Wales industry, how would you go about influencing that decision and perhaps getting a favourable outcome for New South Wales?

**Mr RAMAGE:** That is a defence capability-driven decision. The submarines do not start coming into service until the 2030s, so it is not an immediate decision. Defence will have to consider the future disposition of six of those 12 submarines. If I were the New South Wales Government, I would talk to Ministers and the senior people in Defence, whether it be the chief of the Royal Australian Navy or the secretary of the Department of Defence, to understand what is happening. However, I do not think it is necessarily something that can be influenced in one attempt now because it is a strategic decision and a big investment decision. Obviously talking to the right people at the senior level is the best way to go about it.

**The CHAIR:** What are the seven primes you talk about? Which companies are they?

**Mr RAMAGE:** They are the major primes: BAE Systems; Boeing; Northrop Grumman, Lockheed-Martin, Thales, and Rheinmetall. They are the big primes which are operating in Australia and which have long-term bases in this country.

**The CHAIR:** What sort of cooperation do they provide to your global supply chain program, and how does that work?

**Mr RAMAGE:** We have contracts with them, and their measures of success and accountability are how they have engaged with Australian SMEs. Each prime is different. Boeing's supply chain and requirements and what it produces dictate the kind of companies it wants in Australia. That is different from Thales and Rheinmetall. How they look at the Australian supply will be different, but their role is to find those companies and to work with them to understand their capabilities and then to give them training and support to be able to bid into their global supply chain projects overseas. We are contracting them and they are accountable for delivering those opportunities for Australia in terms of the companies' capabilities. Obviously the companies must compete on merit, but it has realised about \$800 million of SME contracts so far. It is going well, but it depends on where the opportunities are and what each company is producing.

**The Hon. RICK COLLESS:** We are talking about how these issues are managed principally during a time of world peace, although there are relatively minor conflicts happening most of the time. If a major conflict were to break out across the world, how would these things change? How would we protect our transport routes to and from Australia? How would we tool up? What are the dynamics of doing more of that work on home soil? Can we tool up quickly if we need to?

**Mr RAMAGE:** There are warning times, and there is a sense of what time it would take to build up for a major conflict. The Australian Defence Force's preparedness settings are based on what we believe it needs to achieve based on the strategic environment. Obviously behind that is what industrial capability and operations we need now. We must also consider, as with defence capability, what industrial base we might need for the future and how long it might take. Work is underway on that, but it is not something that has been at the front and centre of industrial planning and national industrial-based planning. There are risk-based decisions about where Australia stands on that, but, as you said, we are in a time of relative peace. Obviously our planning has to match the time we think it will take to build the industrial capability. Obviously, I think the nature of industry and the defence industry these days, it is a global environment. Even the things we produce at home are certainly not a hundred per cent Australian made. So we are very much linked to the global supply chain either way. But there is thought then if our strategic circumstances deteriorated what capabilities would you need, making sure you have the capability to repair.

**The Hon. RICK COLLESS:** That global supply chain could be interrupted in that case, could it not?

**Mr RAMAGE:** Depending on the nature of the conflict or the nature of where that might be. That is a balance of building. Certainly if you have got the capabilities within Australian industry to operate, sustain, repair and maintain your capabilities, then that is a critical advantage in terms of the ability to conduct operations and that is a major focus for us. Australia cannot produce a lot. We just do not have the workforce or the technology or the intellectual property to produce a lot of the big platforms and systems but it is having that technology and knowhow to operate and maintain them and adjust them as you need to that gives you that base to grow if you needed to in times of difficult circumstances.

**The CHAIR:** Thank you. That has been valuable in giving us our baseline. I appreciate your coming today. We have taken some questions on notice. The secretariat will come back to you with what they are and if you could give us an answer within 21 days that would be appreciated. Thank you again.

**(The witness withdrew)**

**GEOFF KEOGH**, ACT Government, Director, Innovation Policy and Diversification Strategy, affirmed and examined

**KATE LUNDY**, ACT Government, Defence Industry Advocate, affirmed and examined

**The Hon. MICK VEITCH:** Would either or both of you like to make a short opening statement?

**Ms LUNDY:** Certainly. Thank you very much. The position of Defence Industry Advocate was created by the ACT Government last year and it was on the back of quite a degree of activity with respect to the Defence white paper and the opportunities that presented for procurement by Defence for Australian companies. Seeing Australian industry as a fundamental input to capability was quite a dramatic change in Defence procurement and as part of the economic strategy of the ACT and surrounding region the ACT Government saw fit to appoint a Defence Industry Advocate. Subsequently the ACT Government has appointed a Defence Industry Advisory Board and we have prepared a Defence Industry Capability Directory for the region and also a strategy outlining the opportunities that we see to diversify the ACT and region's economy, obviously with the emphasis on the defence industries.

**The Hon. MICK VEITCH:** Mr Keogh, would you like to make an opening statement?

**Mr KEOGH:** No, I am happy with that.

**The Hon. MICK VEITCH:** The submission from the ACT talks about examples of interjurisdictional collaboration. You may have heard me ask the previous witness; is there a good example from the ACT of interjurisdictional collaboration?

**Ms LUNDY:** Yes, there is, and we think a very strong and important one. The ACT sits, of course, within the south-east of New South Wales. One of the key points the Chief Minister made on my appointment is that he did not want to have a visible border, if you like, between the ACT and the surrounding New South Wales region. Rather, he wanted me to approach my work as Defence Industry Advocate looking at the whole region as an economic region and to collaborate strongly with New South Wales, particularly with the newly appointed—back then—New South Wales Defence Industry Advocate, John Harvey. This was formalised, if you like, in an agreement using the cross-border forum that simply said we will collaborate to promote the defence industry in this region.

That allowed our respective industry departments, if you like, economic development in the ACT Government and New South Wales industry as expressed in those cross-border arrangements, to have a level of collaboration that allows us to work interchangeably when representing and taking the interests of the companies in our region forward. For example, there are companies in Queanbeyan that we are really inclusive of in all of our initiatives. We try to understand their issues and their challenges. Equally, I know Mr Harvey is quite conversant with some of the challenges facing companies that operate either really close to the border or in the ACT. We share knowledge and understanding about what those challenges are and work really closely in accessing some of the services and support, you heard from Mr Ramage in relation to the Centre for Defence Industry Capability, the innovation hub opportunities and so forth.

**The Hon. MICK VEITCH:** The University of Wollongong may be doing some work in the ACT. How does your role work in with the universities?

**Ms LUNDY:** In the ACT and surrounding area universities often are training people into areas that are identified as crucial areas of future capability or current capability for defence companies. We know that the defence companies we work with see the creation of people with the requisite skills to allow them to grow and expand is an essential component of their business plan, their business strategy. From a government's point of view and from a Defence Industry Advocate's point of view, working closely with universities to make sure the courses they provide meet the needs of the businesses in the sectors that are trying to grow and respond to defence capability requirements is essential.

The Australian National University [ANU], University of New South Wales [UNSW] Canberra campus, the University of Canberra, other universities in the region—as you mentioned the University of Wollongong—are very aware of this challenge. Certainly in the ACT there are ample opportunities for dialogue between the universities and the companies. We have organised many of those from the Defence Industry Advocate and the area within the economic development division of the ACT Government to make sure that there is a strong flow of information between the business requirements for skilled people as well as the

universities responding to those needs in their courses, both in short courses, undergraduate, postgraduate and doctoral courses. It is a really important element.

**The Hon. MICK VEITCH:** My last question relates to small to medium sized enterprises trying to engage in the procurement process with Defence. In your role as the advocate for the ACT Government how are you facilitating improvements with that engagement in the procurement process?

**Ms LUNDY:** There are several avenues. Mr Ramage mentioned the Centre for Defence Industry Capability [CDIC] a number of times. We have a person representing the Centre for Defence Industry Capability in the Australian Capital Territory, but she does not serve the ACT; she serves the whole region. So again the border is invisible in that regard. I see the CDIC as a crucial link in identifying not only the programs that are available for support—like the global supply chain program that you were talking about with the previous witness—but also in identifying the capability managers within defence. Because it is a complex system of procurement, with Capability Acquisition and Sustainment Group [CASG] as the procurement service provider within Defence, the companies wanting to sell to Defence need to identify the capability manager within the respective service within Defence. CDIC is really great at understanding where those people are and helping companies make the right connection in the first instance. Whether or not that culminates in a contract is a separate matter, but just knowing and understanding the capability requirement within Defence is a critical first step for companies who aspire to sell or who are already contractors to Defence but have an additional offering and want to have the opportunity to pitch that to Defence.

**Mr KEOGH:** Can I just add to that? The Canberra Innovation Network, which is an organisation we have set up which has universities as the foundation members, works very closely with the CDIC. For example, next Thursday night the Innovation Network and the CDIC are running a program where companies can come and pitch their ideas to CDIC. Ms Lundy is actually speaking at that event. We try to link our Defence Industry Advocate to our program environment and into our normal activities. The relationship between universities and the Government and Defence is very close in our environment and how we handle that environment.

**The Hon. MICK VEITCH:** Do you work with SMEs who have missed out on a contract about how they can improve their applications or their sales pitches and the lessons they can learn?

**Ms LUNDY:** Yes, and there is a lot more support available for those SMEs to understand the process of a debrief if they are unsuccessful in tendering. The use of panels in Defence procurement often adds an additional layer of complexity. Tendering in the first instance is to get on a panel, and then pursue subsequent work. Deciphering some of those more opaque processes of Defence is what the CDIC can assist with in understanding what panel would be the most appropriate for the type of capability of an SME which is pitching in.

The other thing that we try to support as a Defence Industry Advocate is a close collaboration with the Australian Industry Defence Network [AIDN]. AIDN operates as an ACT chapter but they service the wider region. We support events that AIDN runs. We help AIDN members express their concerns about the procurement process. I think you are referring to specific complaints. Yes, we can help create connections so that a proper debrief can occur. It also provides us with policy insights and process insights as to what works and what does not. We are able, using our defence industry advocate network, to speak with people like Mr Ramage who have policy and programmatic responsibilities, and provide that feedback at a policy and programmatic level. I think that is really helpful in Defence understanding the real-world experience of SMEs and the challenges they face when trying to do business with Defence.

**The CHAIR:** Thank you so much for coming along. It is obviously an important piece of the jigsaw puzzle for us, looking at New South Wales, to understand how the ACT fits in. Your New South Wales counterpart and the industry department here have been very clear that they see it as a collaborative approach and an invisible border. I would be interested to hear a little bit more about how that relationship is working and to get some examples, if there are any, of how we have jointly progressed some things.

**Ms LUNDY:** The way it manifests itself is that we operate as a region. So, in progressing the general strategy that we have, we have prepared it as the ACT defence industry strategy. We have identified several areas where we have already strategic strengths. These have been confirmed by the survey work that Mr Ramage referred to previously. They are strengths that sit across the whole region, including, in large part, Queanbeyan, and the companies there. A good example is the space based technologies industry and the space sector. A number of the companies that have great strengths in that area are located across the border. So it is a very seamless approach. We do not make the distinction between where those companies reside.

At a more general level, there has been a long-term acknowledgement by the ACT Government that we are not an isolated economy within borders. Several well-entrenched collaborations across the local government areas and the ACT Government view the area as an economic region. This sits very comfortably with a lot of the approach to regional development that the ACT Government takes. In this way the defence economic strategy is one of the newer focuses on economic development that takes that approach as a given in its expression.

On the ground it means that we ensure that Mr Harvey is invited and included in our initiatives if he is available. It means a lot of communication between our respective departments or agencies about initiatives that are occurring. I have certainly been involved in conversations in developing strategies of mutual strength. A good example is cybersecurity. There has been an ongoing conversation with New South Wales about developing our mutual strengths in cybersecurity. The ACT and the surrounding region has some strengths, and we know that New South Wales has some strengths, as well. So it makes perfect sense for us to understand how we can work together and complement each other.

This has a national implication as well. I note your questions earlier regarding how the national interest manifests itself in the State defence industry advocate network, given that all, or nearly all, States and Territories now have an advocate network or structure. I strongly believe that there is a higher national interest opportunity here for the State economic development apparatus to work collaboratively to progress the national interest in being able to source capabilities from Australian industry for our defence needs. I think we are in a terrific position because we have federal policy which says this is the objective. There are very specific policy objectives within it, including the sovereign capabilities work that is being done at the moment, and there is an opportunity within our respective regions. The ACT is probably a really good example, because there has always been a lot of defence industry capability but we have never gathered up or organised around it and identified it as a key opportunity for furthering our economic diversification, or understanding what that collective national interest is.

In that regard it is a very useful network to understand how the opportunities to collaborate exist and how we can provide an opportunity for State economic development agendas to contribute constructively to a broader national objective while still growing that capability and that part of the pie in their respective areas. The ACT Government's point of view is that approaching our collaboration with New South Wales acknowledges that New South Wales has enormous regional activity with respect to defence, of which the capital region or the Canberra region is just one. We want to help make it stronger for New South Wales and we know that New South Wales will make it stronger for us. Building that identity around our original capability is a core part of our objectives.

**The CHAIR:** When we started out on this exercise people said to me, "Why are you looking at defence? Defence is a Federal issue." I said, "Yes. But the bases are here, the industry is here and service and non-service people live and work here. It is a very large part of our communities, particularly regional communities."

**Ms LUNDY:** And can I say skills and the education system, particularly primary and secondary that contribute significantly to the tertiary sector and how our respective universities support the skills needs. Small and large businesses tell me that the greatest risk in them not being able to grow in responding to the business opportunities is not being able to identify the skilled people to fill those roles. This relates back to the STEM agenda and creating enough of the engineered and technically qualified people who will fulfil those roles in companies that are building new capabilities, new technologies to respond to that call from Defence.

**The CHAIR:** Mr Keogh, I am fascinated by your title: Director, Innovation Policy and Diversification Strategy. What are we diversifying from and to?

**Mr KEOGH:** From the perspective of the Australian Capital Territory we are trying to diversify from a public service town and build on our strengths. We have been engaging very much over the last few years particularly with the higher education sector. We see the higher education sector as a major source of diversification into areas for international students with the ANU and the University of Canberra, but also for the research—the ANU is well known for its research. We have got CSIRO and the UNSW Canberra is undertaking a lot of research. Our plan is to grow that sector and also clearly with the defence sector. We have had some work done recently by KPMG that indicates that the value-add to the economy of the Australian Capital Territory is about \$4.3 billion from defence spending.

**The CHAIR:** Did you say \$4.3 billion?

**Mr KEOGH:** Yes, \$4.3 billion and about 25,000 jobs in total—that is, both direct and indirect. New South Wales for their strategy had some similar work done by KPMG. For each additional billion dollars of

expenditure you can grab, you add about \$1.4 billion to your gross State product [GSP] and you add about 8,000 jobs. There are opportunities with defence expenditure increasing from \$32 billion to \$52 billion a year, with \$200 billion in capital expenditure over the next 10 years. If you can grab \$1 billion of that increase you are having a major effect, particularly on a small economy like Canberra's.

**The CHAIR:** We do not mind a spread across that seamless invisible wall.

**Mr KEOGH:** That is right. On the cross-border issue we had our Canberra region—and we did call it the Canberra Region Defence Industry Capability Directory, which we launched. We worked with the New South Wales Department of Industry to identify companies in the region and those companies are in the capability directory. As Ms Lundy said, we worked with John Harvey and with the event I mentioned next Thursday night the companies that are coming do not stop at the border—companies outside the Australian Capital Territory border are welcome. The AIDN event we held about six weeks ago—again, AIDN has a broad membership and its membership does not stop at the border; it is a Canberra regional organisation—we are constantly reaching out to companies that are outside the Australian Capital Territory border.

**The Hon. JOHN GRAHAM:** When you look across the border at the broader Canberra region it would be helpful to this Committee to understand where you see that region. Where does it extend into New South Wales? Clearly Queanbeyan is part, but where else is picked up in that slice of the economy?

**Ms LUNDY:** We can actually give you a proper answer on that because it picks up all of the surrounding local government areas. That is what the Chief Minister used to describe as the capital region or the broader Canberra region. They meet regularly. They have an ongoing conversation about collective economic interests, et cetera. So that is quite formalised. We can get you a formal answer on that. Many years ago I was on regional development bodies as well and it was the same then. They have morphed a little, they have tended to pick up behind the range now and look more to the south-east but not the coastal—that is a different economic zone in some respects. It has organised itself in a different way.

**Mr KEOGH:** It tends to be to the east of Canberra and to the south-east. It goes up to Goulburn and then—

**The Hon. JOHN GRAHAM:** It would be very helpful if you could provide that so the Committee knows what it looks like from the point of the Australian Capital Territory when you are looking into New South Wales. I want to ask about the directory. It sounds like a very practical thing to drive some collaboration. Who is in the directory? What is the problem you are trying to solve in putting this directory together?

**Ms LUNDY:** That is a great question. The directory itself is really a compendium of capability for our broader region. What we wanted to be able to do was to attract business to our region and demonstrate to businesses wanting to grow that there was already a significant presence. Importantly, we included in our capability directory reference to our education institutions and also the presence of Federal agencies and departments relevant to the defence-related opportunities. By compiling it in that way is like having a ready-made explanation of what we do and who is involved. So in that sense it is very much a promotional tool both for the government but, more importantly, for companies contemplating growth and establishment in Canberra. They know who is here. They can develop their own connections through some of those businesses and see the depth of institutional presence both across the Commonwealth and the Australian Capital Territory, and indeed New South Wales and the surrounding area. It is an easy reference to that. It is also true to say that other States that have been very successful in promoting their defence capabilities or desirability to locate there have produced capability directories that look similar. We took the approach that this was less about going and finding business, and more about supporting the businesses we have and the businesses that want to grow. We are building a system that allows for continual iteration. We did not capture all the companies in the first survey so it is really important that this is not the end but the beginning.

**The Hon. JOHN GRAHAM:** Presumably one of the differences between your directory and what other States might have done is, given the enormous defence footprint you have with those Federal agencies in the Australian Capital Territory, you have scooped up much more on the opportunity side than some of the other States would.

**Ms LUNDY:** I think it is a question of what is different about our region. Because the Federal Government is present there it means that we do have a different blend of agencies, departments and companies. Many primes, for example, choose to have a head office in Canberra. Some of them do substantial work elsewhere in Australia in a number of centres as well. That characteristic of Canberra and our defence capabilities means that as a territory we are really great to collaborate with because most defence companies are interested in Canberra in one way or another. That means that it is not necessarily a case of us competing for a

presence but rather collaborating with presence because of the strengths we provide. That has formed the basis of a number of conversations, for example, with New South Wales about what opportunities there are across subsectors of defence capability to have a robust conversation and to develop strategies together.

**The Hon. JOHN GRAHAM:** From your early work in the area, looking from the perspective of the Australian Capital Territory at New South Wales, is there anything that stands out that New South Wales should definitely be doing or moving on early in this space that you have picked up?

**Ms LUNDY:** We have identified a number of areas of strategic strength or opportunity to grow and they are cyber security space, both upstream and downstream economic opportunities, ICT and systems integration, training simulation environments and technologies and, critically—and you have already mentioned it a number of times this morning through this hearing—the services sector, so the non-military capability side of defence services. This is a massive opportunity to work with Defence to build a stronger recognition of that suite of services and companies, local SMEs that supply into Defence in that way. So we are very keen to develop that aspect, that services sector, that is not about military capability or the application of force per se; it is more about everything else that supports the logistics of bases, keeping our facilities up and running and modern and current et cetera. That is an area where I think there is a lot of opportunity still. It is arguably less about what we do in and around our region and more about where the substantial bases are located around New South Wales and around the country.

**The CHAIR:** What you are saying is very helpful because, as New South Welsh people, we normally do not think of Canberra as giving any competitive advantage at all useful to New South Wales, but obviously in this defence space it does contribute to our competitive—

**The Hon. RICK COLLESS:** You are being a bit harsh, Mr Chairman.

**Ms LUNDY:** That is how we feel. We know that in terms of resources being able to be applied to these strategies it is a really efficient machine we have in the ACT Government focusing on this, and that really is part of the opportunity. We want to work with the other States because we know we can amplify who we are and what we do well. But it is only great if we are working with other States who have the scale to grab the interest and the depth of opportunity to many of the businesses. So for us it is a no-brainer to collaborate, and we are enjoying immensely working with New South Wales on this.

**The CHAIR:** I am not sure if we have got a copy of your directory. Would you be able to provide one for us?

**Ms LUNDY:** I am happy to table this; it is also available online.

**The CHAIR:** It looks like a good model—from what you said, it is a good model.

**Ms LUNDY:** We are very proud of it.

**The CHAIR:** It sounds like a very good model.

**Ms LUNDY:** One of the features of our capability directory is that we have tagged different subsectors in defence and that allows us to produce material that is sector specific. Coming back to some of your earlier evidence about how you utilise promotional opportunity such as a conference platform to present local capability, we see this as a very iterative tool that we can apply in that way.

**The Hon. RICK COLLESS:** Ms Lundy, there has been a lot of talk this morning about Canberra and the ACT, but all Defence Force bases are actually ACT land as well. Correct?

**Ms LUNDY:** I do not know if they are ACT land. I think they are Commonwealth land; they are not ACT land per se.

**The Hon. RICK COLLESS:** I live in the Shoalhaven and the Creswell base down there, the cars that come in and out of Creswell base have all got ACT numberplates on them. I am just wondering what influence that has on where there are a lot of these SMEs and businesses co-located on some of that Federal land, how that impacts on your discussions about the ACT working within New South Wales.

**Ms LUNDY:** For us the measures are not so much that business is located within our jurisdiction and then derived economic benefit from that. The ACT is so enmeshed, if you like, in the regional economy that our economy benefits from activity whether businesses or, indeed, working people reside within our borders. There is an ebb and flow, there is a constant conversation I know at the Federal level when all those cross-border issues are arbitrated upon. So in that sense we are able to be less specific about the wheres and wherefores. Those ACT plates, it is not about owning that identity but more a product of more than likely many of the

officials and defence personnel who operate in and through Creswell are from Russell in Canberra. So in that sense it is less relevant.

For businesses themselves, we are interested in an opportunity for a business to grow in relation to defence wherever they are in a region. If there is a business wanting to provide a service to Creswell and they operate out of the ACT or out of Queanbeyan, we will be doing our best endeavours to connect them with the right CDIC representative to help them make connections in that area. It is a really open, interactive process, and because the ACT has, I think, quite unusual characteristics in that we are the seat of Federal government and all the reasons I describe, we are very unselfish in how we approach that support and that ability to make the right introductions and help people network, and that is why working with both the CDIC who do, as I said, operate not just in the ACT, they see their economic region as their operating base and why John Harvey and the NSW Department of Industry have been so important. We cannot do that all; we are quite small. So if we are going to be of real service to our businesses we have got to be able to help them network effectively right across the region.

**The Hon. RICK COLLESS:** So in the case of the Albatross aerospace centre—Mr Green will certainly know more about this than I do, I am sure—is that located on Federal land or is it on New South Wales land?

**Ms LUNDY:** It would not make any difference to us in these endeavours.

**The Hon. RICK COLLESS:** So they are New South Wales businesses rather than ACT businesses, that is what I am getting at?

**Ms LUNDY:** Yes, of course. It is not something we see any ownership of; it is a product of the economic activity of that region. We do not reach out to Jervis Bay specifically because it is an ACT little jurisdiction over on the coast; that has never even come into the conversation.

**The Hon. PAUL GREEN:** What are you doing in relation to skill sets and raising that with the bigger vision in mind?

**Ms LUNDY:** One of the most important and very straightforward things we can do is make sure that our education institutions know our industry leaders. We have had several forums where we have had businesses, particularly doing it on a subsector basis, where we introduce all of our education providers to the leading businesses who are wanting to grow and, frankly, are already experiencing a skill shortage. It was fantastic to make those introductions because they were people who had never met before. There is a lot of collaboration going on between individual companies, particularly the larger ones, and universities and the Canberra Institute of Technology [CIT] and various TAFE colleges and so forth. So we see our role as very much making sure that that conversation is a dynamic one.

It goes a little deeper though. The ACT Government has had a longstanding conversation with our education institutions about what they see as the future challenges for them as it relates to an economic development strategy, and this is not usual. Major universities who are responding to the opportunities, particularly in areas of technology, have long done this. I think for the defence industry everyone senses a sharpened—given the white paper and the fact that business can now see the pipeline of funding, they are thinking about long-term investment decisions and how they will grow. So it is worth their while now to look deeper into that skilled persons supply train as to how they grow, and that has changed the dynamic and made that a much more serious conversation than I think it has been in the past and more about the businesses being engaged as opposed to governments anticipating business needs in the future. I am seeing and feeling that difference.

**The CHAIR:** That is a good summary of what is happening. This is a generalisation, but as we have visited some really clever small and medium enterprises working in the space, we have found that it is not that they do not know that help for making connections is available. It seems to me more that they have not had experience of getting that help to make those connections. Today we have heard about the CDIC, which is obviously very active. I believe some businesses know of its existence and have had some contact with it, but have not really taken the next step and utilised what is available and then provided feedback and information. It is an area of great opportunity.

**Ms LUNDY:** That is what we believe. When you think about the timing of it, the CDIC is relatively new—we are talking about a procurement environment that has changed dramatically since the white paper came out. All of the industry policy infrastructure is being built around it. What I think is an inherent strength is that defence industries have leveraged what they can out of the Federal industry department. All of the signals

are that they are willing and keen to work with State industry departments on policy and programmatic infrastructure. That is an amazing asset, when you think about the Defence national effort. I am very keen to see how that evolves.

You are right, in that we are yet to see it flow through in a comprehensive way so that we can get more detailed feedback from SMEs. Also, it will not be for everyone. Some SMEs, as we know, are very well established and understand the ins and outs of Defence. I know that Defence itself understands it has a task at hand to make itself more open. Unless it does so, Defence will only get the companies that know it, as opposed to being able to look at the broader range of capabilities of companies that do not see themselves as Defence companies but have something that could be useful, without having a much wider vision of Australian industry capability, because of the potential it may have for Defence requirements. Again, that is a real change.

**The Hon. JOHN GRAHAM:** You touched on space as a priority, and in your submission you talked about the growing national space economy. I agree that the economics of space are changing and I am interested in your perspective because really no-one nationally is in charge of our space effort. Will we be able to move on the space front without that changing? Without the importance of the space industry being noticed at a Federal level, will it become a priority?

**Ms LUNDY:** That is a great question, and I understand it will be the subject of conversation at the Council of Australian Governments [COAG] Industry and Skills ministerial meeting tomorrow, as it happens.

**Mr KEOGH:** Here in Sydney.

**The CHAIR:** We got in first.

**Ms LUNDY:** The space industry question is a critical one for this nation and a critical one for Defence. It is bigger than a question just for Defence. We believe that, as part of our strategy, the capabilities in the space sector are national. No one State owns it, but the opportunities to collaborate and build a big presence around understanding space industry capabilities as we continue to grow is really important. We are focused on achieving that and our Minister will continue those conversations tomorrow.

**Mr KEOGH:** Our Chief Minister has been critical of the Commonwealth for its slowness in taking leadership in the space industry. That is why at the COAG Industry and Skills Council tomorrow we have a joint paper with the South Australian Government on the agenda pushing for leadership. However, we do recognise that the Commonwealth Minister for Industry, Innovation and Science, Arthur Sinodinos, has recently announced an expert review group to look at the space industry, which is due to report in March next year. One of the items in the terms of reference is a future structure for leadership for the space industry. We are hopeful that by about March next year we will have a new approach to the development of the space industry.

**The Hon. JOHN GRAHAM:** A key part of the New South Wales interest in space is the research side of it, where there are some particular strengths.

**Ms LUNDY:** Australia has extraordinary capability across space, and we need to be able to tell that story in order to project into the global market the opportunities that exist.

**The Hon. JOHN GRAHAM:** Also, it mattered less previously because we could not afford to buy into the space industry, but that is now changing.

**Ms LUNDY:** The space expert working group was a really strong announcement, and we welcome it because we see it as a significant step by the Commonwealth in being prepared to tell that story and understand the depth and dimensions of activities in the space sector in all the States.

**The CHAIR:** Your testimony today has been very valuable as it forms an important part of the jigsaw puzzle in how we go forward in our work. We appreciate your coming along and your very good template for a directory.

**Ms LUNDY:** Would you like us to table the hard copy?

**The CHAIR:** Yes, please table the hard copy.

**Document tabled.**

**(The witnesses withdrew)**

**(Luncheon adjournment)**

**JOHN PEARSON**, Project Manager, Regional Development Australia, Sydney, sworn and examined

**CHRIS WILLIAMS**, Executive Chair, Sydney Aerospace and Defence Interest Group, sworn and examined

**The CHAIR:** Welcome and thank you for your attendance. Would each of you like to make an opening statement?

**Mr PEARSON:** I will let Mr Williams present for me.

**Mr WILLIAMS:** Thank you for the opportunity to speak before this inquiry. I am the Executive Chair of Sydney Aerospace and Defence Interest Group [SADIG], which was formed because a number of New South Wales defence industry groups saw the need to collaborate to provide a single voice for industry advocacy in New South Wales. SADIG has been funded since its inception by the peak national regional group RDA Australia and RDA Sydney with some specific defence projects support sourced from the New South Wales Department of Industry. I am also the managing director of H.I. Fraser, a medium-size, Australian-owned naval manufacturing and maintenance business. We have been involved in the defence industry since the 1960s.

Prior to my time in industry I was a serving submarine navigator and warfare officer on the Collins-class submarines. I am passionate about the Australian defence industry and I have been on both sides of the defence-industry relationship. In my experience New South Wales is the sleeping giant of defence industry. The reason is we have the lion's share of ongoing maintenance of a number of defence assets, including significant regional sustainment of defence operations. This is predictable good margin work that the other States do not necessarily have. All the major primes are located in New South Wales. We have a close proximity to Canberra where the decision-makers are. Finally, we have very good academic institutions and large numbers of smart people with globally competitive skill sets who choose to live in New South Wales—and I note that these skilled people are generally not willing to move interstate to work. That is a very important point.

In some ways New South Wales has been a bit too lucky and to date we have not really had to do anything to get our slice of the Defence pie. But this position is under siege from the other States that are willing to aggressively co-invest with industry to win work. New South Wales needs deliberate, focused operational plans to execute the NSW Defence and Industry Strategy 2017: Strong, Smart and Connected. These plans should leverage national alignment with the other States for the establishment of sovereign industry capabilities. Our advantage as a State has to be the Strong, Smart and Connected State.

SADIG has recognised this and we have worked tirelessly on initiatives like the Defence Innovation Network proposal over the past three years. This initiative has potential to provide gap pathways for some of the Federal Government's \$750 million Next Generation Technologies Fund to flow to New South Wales business and industry. The challenge we have had until recently was that there has been very little interest or appetite within New South Wales to support industry for leading-edge research-driven initiatives. I think we are at a tipping point where for a small amount of effort New South Wales can realise its vision to be the Strong, Smart and Connected State.

**The Hon. MICK VEITCH:** Thank you for your attendance and your opening statement. You spoke about skill sets. Do you have the skill sets in the Sydney Basin for the requirements of your organisation and if not where are the gaps?

**Mr WILLIAMS:** SADIG is an organisation that works with other industry organisations. We are not necessarily Sydney-centric. We also work with the Hunter net, the Shoalhaven net and broader organisations. New South Wales, even in the regional areas, has a whole range of very good capabilities that can be leveraged quite easily. The issue has always been connecting those capabilities and understanding where they are so we can present a coherent picture to the primes. One of the things we have found was that when Naval Group was building the submarines, they sent a French delegation out to Australia. When they approached New South Wales they said, "What's in New South Wales? Where is it? What does it look like?" That has always been a challenge—to have a coherent picture. Generally what we have had is that the Australian Defence Industry Network [ADIN] has put together a picture, the Shoalhaven net, the Hunter net and us. So what we have tried to do for the first time with the submarines is to actually put together a coherent picture with all the industry associations, with all the skill sets. We need more of that leveraging of regional industry associations, using the Department of Industry, the Defence NSW organisation, which is now being run by Peter Scott.

**The Hon. MICK VEITCH:** What is the collaboration like between the defence industry suppliers?

**Mr WILLIAMS:** It really varies.

**The Hon. MICK VEITCH:** Of course, you must consider commercial-in-confidence issues.

**Mr WILLIAMS:** The relationships with small business could do with work. The relationship between the primes and small businesses is very good. Generally, primes will go looking for a capability and they will find it and work with it.

**The Hon. MICK VEITCH:** Do you mean that collaboration with small business is not as strong as it should be?

**Mr WILLIAMS:** It has always been a challenge. Part of that is the shape of the marketplace. Traditionally, the Defence pie has been the same size for past 10 years. Until recently with the announcement of the new programs, it was the same sized pie. A lot of work was outsourced overseas. For air warfare destroyers, there were 140 procurements sourced solely overseas; there was no opportunity for Australian content. With the new programs, Minister Pyne has been very clear and forceful about the level of Australian content required.

The primes are now going through Australian industry to see what is left of it and trying to work out what is there that they can use. That is why there has been a range of roadshows by the proponents for future frigates and future submarines, and by Land400 for tracked and wheeled vehicles. The primes have taken a lot more aggressive interest in our industry. There would be a lot of benefit if Defence NSW were to have a relationship with the primes to link them easily to the skill sets they need. A prime might say that it is looking for something, and Defence NSW would say that it had it in Albury, in the Shoalhaven, or in the Hunter. Defence NSW could be a very good clearinghouse. A request might come from a prime and Defence NSW would be able to direct it to the best source. It could be a conduit to the greater industry.

**The Hon. MICK VEITCH:** Should that happen?

**Mr WILLIAMS:** Yes.

**The Hon. MICK VEITCH:** Are you aware of any SMEs that have contracts in international jurisdictions as opposed to only Australia? They might have contracts in France, Canada or somewhere else.

**Mr WILLIAMS:** A number of them do. There are two tiers in small business. There are small domestic businesses that look after small bits of kit that do not warrant someone setting up in Australia to deliver. It might be electrical or plumbing work and so on. It does not make sense for someone overseas to set up an operation to do that. There are other excellent New South Wales businesses such as Quickstep and Thomas Global that have stepped up and targeted global supply chains with the primes. They have become part of those global supply chains. It is possible, but by no means simple. The primes must have a reason to use little businesses somewhere else. The local content rules in other nations are much more aggressive. Canada has a 100 per cent offset regime. If I wanted to supply \$1 million worth of kit to the Canadian shipbuilding program, I would have to buy \$1 million worth of maple syrup.

**The Hon. RICK COLLESS:** That is a lot of pancakes.

**Mr WILLIAMS:** Yes. That requirement does not exist in the Australian marketplace.

**The Hon. MICK VEITCH:** We would call that a sweetener.

**Mr WILLIAMS:** There is so much material there we could go on for days. That means companies like H. I. Fraser, Quickstep, Thomas Global and Varley Group are competing on a level playing field with overseas companies. Often it is sexier to use someone from the United States than it is to use a company from, for example, the Northern Beaches, because that area is all about surfboards and so on. To compete on that level and to win is challenging. It also means that we cannot do it in Australia. We cannot win that work in Australia; we must get on a plane and go overseas. The decision-makers for these programs are not in Australia; the engineering decision-makers for vehicles and ships are overseas. We have to be over there, and that requires financial resources and support, targeting and missions.

**The Hon. MICK VEITCH:** What are the opportunities for SMEs with regard to international defence procurement?

**Mr WILLIAMS:** We in Australia are very technically competent and we stand up in the global marketplace. When we compete against our peers in the United States and Europe, we are very good and very

strong. The opportunities over the past 10 years have been in the procurement program gaps and in the niche areas.

**Mr WILLIAMS:** Thales might be trying to integrate a sonar into a ship and there will be an air gap there. That is where companies like Cirrus, for example, another really nice Sydney company, or Jenkins Defence, who did electronic warfare—really nice companies, really nice capability, really, really focused niche. The new programs, whether it is the land programs, warships, submarines, the opportunities there are much broader because the Federal Government has said to these primes you need to demonstrate Australian industry capability. We will be able to build out of those niches into maybe broader work.

**The CHAIR:** Can you for the record tell us who the primes are and what their different characteristics are?

**Mr WILLIAMS:** Yes. The primes are multinational businesses. We do not really have any primes in Australia with the exception of the Australian Submarine Corporation. In the marine space you have companies like Thales, a big French company; you have got DCNS, or Naval Group now, just moved in; 70 per cent government owned by the French government, 30 per cent owned by Thales, they have just come into the marketplace; Northrop Grumman; Lockheed Martin, two big United States companies who are in aerospace; BA Systems, who are in the maritime and land space predominantly, with some work; JSF and Hawk as well up in Newcastle; Sikorsky, who have just been acquired by Lockheed Martin; Boeing out of the US.

You see there are a significant number of US multinationals. The primes who are in Australia have been driven by procurement decisions. Navantia is here because we bought air warfare destroyers and LHDs. Boeing is here because we have got C17s and Hornets. Lockheed Martin is here because we have got combat systems and Joint Strike Fighters [JSF]. Northrop Grumman is here because of the unmanned surveillance aircraft. The primes are not here because it is a nice place to be. They are here because they have assets in country that they have been leveraging into maintenance work, which is very good, long-term work.

**The CHAIR:** It is quite a unique industry structure. Because of those primes it is starting to explain why our focus is very much on the small SMEs and the niche material that you are talking about.

**Mr WILLIAMS:** We can also maybe help paint a picture about the way the Australian defence industry looks. What has generally happened is we have bought a whole range of assets. Say in the Navy there are 15 different classes of ship with 15 different supply chains. What that means is there are 15 different types of oil-water separator. We end up with a market structure where there are thousands and thousands of little businesses that do one thing very well, oil-water separators for minehunters, hydraulic systems for aircraft, landing gear for aircraft, rotor blades for helicopters, lots and lots of little companies. And those little companies are turning over between \$AU2 million and \$AU5 million, thereabouts. Above that you have then got the primes. The primes are turning over \$150 million and up. What we do not have in the Australian defence industry, or it is very, very sparse, is between the small businesses and those primes we are missing the system integrated level. We do not have companies in Australia that can design and build a HVAC system for a ship.

**The CHAIR:** What is an HVAC system?

**Mr WILLIAMS:** Heating, ventilation, air conditioning for ships. We do not have companies that can do a propulsion train for a ship. The reason for that is because, say for example with the Navantia ships that we have bought, designed, from Spain. To win work that is a Spanish multinational that uses a Spanish supply chain. In Spain there are system integrators that do that medium level. They take the bits, the boxes. They then integrate the system and deliver a system. One of the real challenges the primes are having at the moment, whether it is Darden, whether it is Fassmer, Lurssen, OPVs, or whether it is Fincantieri, BAE or Navantia for future frigates, or even DCNS, is that they have come to Australia expecting to see that middle tier of system integrators. They are asking, "Where is your propulsion train integrator, where is your chilled water integrator, where is your fire fighting system or fire suppression system integrator, where is that? We see you have got lots of little companies that do bits of the system, we see there is a prime that delivers a ship but we are not seeing that middle band." That has been hollowed out over the previous 20 years of decision-making.

**The Hon. JOHN GRAHAM:** Why has that not developed?

**Mr WILLIAMS:** In the 1980s, for example, when we were building minehunters, the Huon class minehunters in Newcastle, we were building the Anzac class ships in Williamstown in Melbourne, there was a real desire to have Australian content and Australian industry involvement. The design work for those ships, there were engineers in Australia making design decisions. With the minehunter, for example, with my business, for the diving systems on board or the air and gas use discharge, there are engineers in Australia for Thales

saying, "We have got a problem here, how do we fix it?" They go to local industry and say, "You are close, can you fix this problem for us?" We get involved, we become the system integrator for the diving air system.

For me to do that work now, defence or offshore oil and gas or commercial marine, those decision-makers are not in Australia any more. If I want to get into the Navantia supply chain there is no-one in Australia to talk to. I have to talk to the engineering team in Madrid or Ferrol. For DCNS there is a minimal engineering team set up in Australia. For engineering decision-makers I have to go France. What you end up with to solve the problems you need someone close to you, so they leverage off French industry and you get that middle tier of system integrators. It is not to say we cannot do it, but it is not there at the moment.

**The Hon. JOHN GRAHAM:** It is not happening organically.

**Mr WILLIAMS:** Yes. Not yet. It could, but that takes a bit of will and it is going to take some investment to get businesses back to that and it is going to take the primes to say it is worth our while. I have been told very clearly, the first ship is on time, on budget and there is technical risk associated with using an Australian system integrator for the first time. You get that sort of collision of industry content or Australian industry participation versus on time, on budget.

**The Hon. RICK COLLESS:** It is a bit different to buying a Toyota when you buy a warship.

**Mr WILLIAMS:** Absolutely. I think the other piece to your point is in the past we have not just bought Toyotas, we have bought a Toyota, a Kia, a Caterpillar, a Kenworth.

**The Hon. RICK COLLESS:** And tried to integrate them together.

**Mr WILLIAMS:** We have these 13 different supply chains. When you say I need a spare part for my Toyota, you look around and you have a Caterpillar part and a Kenworth part and there are dealers for those but there are not dealers that can roll up. That commonality piece is a real challenge.

**The Hon. RICK COLLESS:** When the two aircraft carriers had their drivetrain problems, was that a systems integration issue that went astray there?

**Mr WILLIAMS:** The ship is designed to be operated a certain way and the Navy was looking to operate it a different way. The propulsion train in its own way works when it is used a certain way. Navy want to use it another way. There is an engineering design aspect, there is an equipment supply aspect, there is also an operational aspect and a maintenance aspect, and like all good problems it is parts of all of those together. Keeping in mind that is the second time we have had that type of propulsion train. With a ship you normally have diesel with a shaft that goes through into the water. These ships have much more in common with a cruise liner coming in and out than they do with a warship because their propulsion train is a diesel with a generator. The generator has copper cables that go into a pod and there is a big electric motor under water. It has a lot more in common with a submarine propulsion train than it does with a frigate or a destroyer.

The reality is you can leverage those skill sets learned from the LHD into submarines. In fact there is probably a lot more in common with a mining equipment set up in terms of large crushers than there is with the traditional diesel shaft in through a propeller. That is something which Defence NSW can do, is look at leveraging those new skill sets and saying, we have a whole bunch of brilliantly skilled people in the Hunter who work on high voltage machinery, and we have three massive ships here that are high voltage ships that are new to Navy, Navy is learning about them, how to operate them. That is the sort of role Defence NSW can take under its wing and leverage.

**The Hon. RICK COLLESS:** I guess the primes you talk about are such things as the frames of the ships—the big stuff—that people see.

**Mr HILLIARD:** Yes.

**The Hon. RICK COLLESS:** Under that there are all these smaller enterprises that do the fitting-out and putting the high technology stuff into the frame. Is that a fair summation?

**Mr WILLIAMS:** Very simply, if you look at a ship like one of the Anzacs which is here, you see that BAE Systems is a prime. It looks after the platform system. Saab Defence and Security is a prime; it looks after the combat system. BAE has a whole supply chain that sits under them; BAE does a whole bunch of work. However, 20 per cent of the ship has orphan systems. It is the only air system of its type in the Australian Navy. One company does that. There is a type of pump on board that is German. A German pump company does that. Small Australian businesses have found that niche in the BAE supply chain for the platform.

**The Hon. RICK COLLESS:** You talk about the system integrator. The role of the system integrator is to pull all those small bits together and make sure it works as a Toyota should work.

**Mr WILLIAMS:** That is right. Exactly. Because as a nation we want to buy a low-risk solution we generally want to buy something that is already existing and available, low risk and built to print. It does not matter which ship you buy with respect to the future frigates—whether it is the Italian, the Spanish or the UK frigate—that system integrator work has already been done, to a greater or lesser degree.

**The Hon. RICK COLLESS:** So it is virtually an off-the-shelf product rather than something that is being built specifically for our needs.

**Mr WILLIAMS:** The majority of the ship is off the shelf. There is some tailoring where we get a capability advantage in combat systems. But, generally speaking, platform systems—to use your Toyota analogy, that is your engine, your gear box, your brakes and your fuel system—are pretty much off the shelf. It might have some minor tweaking to cope with the Australian operational environment but as soon as you change something you increase the risk and you increase the price. That is traditionally where we have got ourselves into trouble in defence procurement—we have bought something off the shelf and then started to tailor it. The Seasprite helicopters were an example of that. We bought something, then started tailoring it and it never flew again.

**The Hon. RICK COLLESS:** What about the Collins class submarines. Did a similar sort of thing apply to them when they first arrived?

**Mr WILLIAMS:** Collins is a really great story of Australian industrial capability and innovation. There were two submarines short-listed. There was a German design, which was pretty much off the shelf and Collins. It was an existing Swedish design that was being stretched and made bigger. In some ways there were a lot of similarities to what is happening with the future submarine program.

When the submarine was being made bigger there were seven areas of research and development. There were seven things that had never been done before—things like the integrated ship control management monitoring system, the weld technology and a range of others. In Collins we got five of the seven right. That was an incredible achievement. Then we went a bit foul because the project was not transitioned from a build program to a sustainment program very smoothly, and there were a whole bunch of issues. After a period of time we ended up with Collins. Collins is a little bit like the girl with the curl. When she is good she is very, very good; when she is bad she is perfectly awful.

Collins is a very capable submarine. We have a good supply chain. My company was part of that Australian industry program. We started making hydraulic couplings 30 years ago and we are still manufacturing hydraulic couplings for the Collins class submarine, but we have now leveraged the skills we learnt during Collins—in terms of documentation, material traceability—into aerospace and offshore oil and gas. So, in some ways H.I. Fraser getting a chance to be involved was a bit like seed capital. Someone had a punt on us. Normally at the end of a big program, when you finish manufacturing bits, small business does not make the transition easily. You normally think that it is going to go on forever. The end of the Collins program was pretty tough for our business because we came off manufacturing thousands of couplings for submarines into not a lot. So we then had to rebuild. The scope of the work went from up here to down here, pretty much overnight. But the lessons we learnt during the Collins program in terms of certification, documentation and traceability were critical to us being able to leverage those skills into offshore oil and gas, commercial marine and rail like we do now.

**The CHAIR:** I would like to pick up on the three tiers that you were talking about. That is an interesting way to look at it. Am I right that the systems integration level really applies to big purchases—ships and big aircraft, not Bushmasters.

**Mr WILLIAMS:** No, it actually applies to Bushmasters as well. The level of system integration depends on the size of the asset. When you look at the Bushmaster you might see that there is the hull—that would be one subsystem—and then there will be cable runs and electrical systems, another subsystem. There is hydraulics, mechanics, communications. They are the big-ticket items. Under communications, Thales would be the communications sub-system integrator. They would do that themselves.

**The Hon. RICK COLLESS:** Can I interrupt? They would be responsible for making sure that the communications system works as it is supposed to work.

**Mr WILLIAMS:** Absolutely. In those communications systems there will be antennas, crypto, power, cooling and all of those things. That is a sub-system. When you go from a Bushmaster to a frigate, it is the same

philosophy; it is just that the systems are bigger. The air-conditioning system on a LAND 400 wheeled vehicle is probably more akin to a bulldozer. If you scale that up, you still need the same components for a frigate, it is just that the bits are bigger. The chilled water unit on a Bushmaster might be the same size as your bag. The chilled water unit for a Landing Helicopter Dock [LHD] is the size of a Volkswagen and there are four of them. So it is the same philosophy; it just gets bigger.

**The CHAIR:** When you look at it from the point of view of New South Wales, where should we put our effort? Where are we going to get the best bang for our effort? Most people agree that bashing metal is not for New South Wales. So the next question is: is systems integration an area where we could get some real results if we support those sorts of businesses? From what you are saying we do not really have those sorts of businesses to start off with, except if they are part of a prime, and most of the huge stuff—the big ships and so on—are not going to be bashed together in New South Wales either.

**Mr WILLIAMS:** That is right.

**The CHAIR:** That leads you inevitably to the SMEs and services and sustenance and maintenance. You began by saying that sustenance and maintenance is a big opportunity.

**Mr WILLIAMS:** With sustainment, you end up spending three to four times the value of the asset through life. For a \$13 billion airwarfare destroyer, you would spend \$52 million through life over 40 years—\$1.2 billion or a bit more. So it is a big deal. With respect to that system integration piece it is critical that the industry associations and Defence NSW have a very close working relationship with the primes because there will be times when a prime says, for a ship or whatever, "We have 80 per cent of the stuff locked in. We are not sure about this 20 per cent and we are open." Once we get that opening there is a potential. A number of companies have been able to move up the value chain from being an SME to being a system integrator because they have seen an opportunity and they have gone at it.

There are a few of those medium sized companies—Moran in Victoria, Varley up on the Central Coast and Quickstep Technologies are good examples. H.I. Fraser is the same, to a greater or lesser degree. The primes are not going to serve them up and say, "By the way it is an open book, team; we have a problem here." It is an ongoing discussion and relationship, where you need those close linkages. One of the analogies that we use in the defence marketplace is that it is like the great big conveyor belt in the sky. The project is up there and it will eventually drop. The gestation period for these programs is five to seven years. You cannot take your eye off the ball. You sit there waiting and waiting for this thing to drop. After three years half of the people will have walked away. After five years you are left with a quarter of the people. You need to be there waiting and looking; it is not a sprint. It is not as though if we do something now we will get all this work in the next six months. It is a slow-burn marathon that can have really good outcomes. Stability within Defence NSW will be critical to that because every time you get churn you have to rebuild a relationship with the knowledge pool. That is critical.

**The Hon. JOHN GRAHAM:** I want to go back to where you started talking about that map of capabilities to be able to go to the primes and say, "We have got this capability here." Will you please explain at what level you would do that? Earlier the team from the Australian Capital Territory wandered in with a directory across their entire industry. Is it about having that map of capabilities across the industry? Is it about a specific project? Is it about a particular capability so they come looking for something very specific and we just want to rapidly connect them at that point?

**Mr WILLIAMS:** That is actually a really good question. It is sort of the chicken and the egg. There has always been a philosophy that if you have the capability matrix, then you show it to a prime and then they will come to you when they need something. Or do you actually ask questions when a prime comes to you and says, "We need this"? I am all for a very proactive approach. I think you have got to understand the capability in the State not just in the defence industry but also broader as well. So linking up with broader industry associations, not just the defence associations, and then being really proactive with the primes. That is not being proactive with the shopfront in Canberra or the shopfront in Sydney; it is being proactive in Cherbourg, Ferrol, Fort Worth. Wherever the engineering decision-makers are is where you have to be proactive.

**The Hon. JOHN GRAHAM:** We have really got to do all three of those things—we have got to know what the capabilities are, map it as the Australian Capital Territory has done and chase the projects. We have also got to be able to react very quickly as well.

**Mr WILLIAMS:** I am always really nervous about Excel spreadsheets and matrix mapping. One of the things we found in the Sydney Aerospace and Defence Interest Group [SADIG] experience was when DCNS two years ago first opened their online portal and said, "We want to see what Australian industry has

got" they had thousands of companies register—everything from cleaners through to painters, welders, burners, you name it, sparkies, plumbers, in the industry and out of industry—and they got completely overwhelmed by drinking the fire hose. We had a look at it and said, "We need to put together something that is a bit more targeted, a bit more specific, a bit more useful, instead of having a whole bunch of companies with dots. We went out to our industry base—and we also sent out to Shoalhaven and Hunter as well—and said, "Have you worked on submarines? Yes or no? No, you are not in the mix."

**The Hon. JOHN GRAHAM:** Let us be realistic.

**Mr WILLIAMS:** Sorting the wheat from the chaff. We started with about 300 or 400 responses and we ended up only putting forward 30 companies to DCNS. That became a useful activity because they said—we did the hard work for DCNS, which made it useful, instead of lumping a capability matrix over the fence and saying, "Here you go. It is all here. Do your best."

**The Hon. JOHN GRAHAM:** You gave evidence about the way other companies are approaching these procurement issues with policies that really mean that there has to be local procurement, and you used the example of Canada. Is there a good map of those approaches or subsidies that are being applied in overseas companies? That would help the Committee to understand what we are competing against. I appreciate that is not an easy question to answer off-the-cuff.

**Mr WILLIAMS:** I have got a really good book but I cannot remember the title. I will take the question on notice and send you the title of that book. It was actually a thesis put together by two PhD students in Canberra. We went up to the tier 1 companies in countries like the United States of America, China, India, which see their supply chain as an insurance policy—if something goes wrong they have to have the ability at that valve at that time. Then you get the very small countries that do not have a big budget, and they do not really need to have content because it can be expensive, and they just buy all off-the-shelf. Australia, Netherlands, Canada are sort of in that middle-sized power, so we have a really difficult trade-off between value for money, which means you buy it off-the-shelf because it is cheap, versus your sovereign capability and insurance policy.

**The Hon. JOHN GRAHAM:** One of the things that might shift that equation is the Commonwealth export discussions. If we are able to leverage some of these things to then sell them overseas that could change where we sit along that continuum you are drawing.

**Mr WILLIAMS:** That is right. There is a price point there and there is a risk point. We have actually had historical examples in Australia—and we seem to have forgotten it a bit—where during the Falklands War we had trouble putting submarines to sea because our submarines were Oberon and the spare parts path was out of the United Kingdom. When the Falklands came up we had all sorts of problems trying to get spare parts and submarines had trouble going to sea. Prior to East Timor when we were trying to deploy Anzac-class frigates, for example, even trying to deploy Perth-class destroyers to the Gulf, we said to our global partners, "We are fitted for but not with close-in weapon systems. We need these things." They said, "We have got a bit on at the moment. Can you wait?" We said, "We need to go now." There was a bit of a wake-up call in Canberra. We cannot just put a weapon system on board in two weeks. There is a lead time for these things. Unfortunately, when things happen on the global scale a memo does not come out a year beforehand which says, "This is going to happen globally. You need to get ready for this."

**The Hon. MICK VEITCH:** North Korea?

**Mr WILLIAMS:** I think that memo was sent a couple of weeks ago!

**The Hon. JOHN GRAHAM:** On the question of buying off-the-shelf and systems integration, it has been a really useful description of the procurement process. We are buying off-the-shelf generally and there are a couple of reasons why we might want to change that in the Australian context. One is the operational environment.

**Mr WILLIAMS:** Yes.

**The Hon. JOHN GRAHAM:** I accept your caution about starting to fiddle around for that reason. I am interested in how much a second factor kicks in—namely, how much is it a factor that we are amending these off-the-shelf designs for combat system integration or communication system integration with our allies? Is that something that tends to be specific to Australian defence procurement that we are making some of those adjustments?

**Mr WILLIAMS:** To be honest that is not my specific area of expertise. However, I believe Chris Jenkins is—

**The CHAIR:** He is sitting right behind you.

**Mr WILLIAMS:** He would be the ideal person to ask that question because his business is intimately involved in that aspect of defence industry engagement.

**The CHAIR:** You have described New South Wales as being pretty much lucky in terms of defence and that it has not been doing too much. You have been working with the Government in developing the Strong, Smart and Connected strategy. What other free advice would you like to give the Committee as to where we should be directing our efforts and pressure to continue?

**Mr PEARSON:** We did talk about this previously but I think political will is important. We have talked about the need for Parliamentary Friends of Defence to get consistency in industry development in this State. We think that is an important aspect of what you are going through now and we support that as an industry and interest group. We would like to see more proactive outreach to the other States in areas of specialisation and capability. Because New South Wales does have very skilled people, great universities and research institutions, it can link with interstate colleagues as well to provide the services that Defence needs. I think that is a good initiative if that can be continued.

**Mr WILLIAMS:** I think also a really important thing is to actually knock on the door in Canberra and say, "We are here and we are interested." You need to start the dialogue because it has been a bit quiet. From my interaction with Federal Ministers they get yelled at by South Australia, they get talked to by Victoria but New South Wales has traditionally been very quiet indeed.

**The CHAIR:** Thank you for appearing before the Committee today.

**(The witnesses withdrew)**

**CHRIS JENKINS**, Chief Executive Officer, Thales Australia, affirmed and examined

**NEIL HODGES**, Chief Executive Officer, BlueZone Group, sworn and examined

**MARK BURGESS**, Chief Executive Officer, Quickstep Holdings Limited, sworn and examined

**The CHAIR:** Thank you for coming along to the inquiry today. Would each of you or one of you like to make a short opening statement and tell us about yourselves?

**Mr JENKINS:** I have a prepared opening statement and if that is okay I will lead with that. On behalf of Thales Australia I welcome the Committee's inquiry into the defence industry in New South Wales and specifically the opportunities to incentivise and grow the industry in New South Wales. From a New South Wales perspective, Thales Australia is part of a leading international electronics and systems group serving defence, aerospace security and transport markets in Australia and around the world. Thales Australia employs more than 3,400 people across 35 sites and in 2016 generated revenues well above \$1 billion. What I am particularly proud of is that over the last 10 years Thales Australia has exported more than \$1.6 billion of technology-based products from Australia.

In New South Wales we employ approximately 1,900 staff in eight major sites and engage more than 450 New South Wales SMEs in our supply chain. This is a vital part of our industrial base in Australia. Some of our key New South Wales sites include Rydalmere, where we develop, manufacture and maintain submarine and ship sonar systems and mine countermeasures; in Lithgow, where we manufacture the current in-service F88 and EF88 Austeyr rifles, which are now Australian designed rifles bought by the Australian Defence Force; at Garden Island we operate the Royal Australian Navy's major east coast refit, repair and maintenance facilities; in Mulwala down on the Victorian border but in New South Wales, we manufacture propellant for the Australian Defence Force and other customers around the world and across New South Wales; and particularly at our bases in Orchard Hills and Myambat we provide end-to-end logistics for the provision and distribution, safe maintenance and storage of ordinance for the Australian Defence Force.

I take this opportunity to highlight a recent announcement Thales made with assistance from the New South Wales Government. We announced an initial \$6 million investment to reactivate the port of Newcastle as a marine sustainment precinct, which will create an additional 70 new jobs for the Hunter. This investment from the Government and Thales highlights the long-term vision and investment that is required to be in the defence industry. This is the beginning of a phased redevelopment of the site, which will revitalise the port as a maritime hub and could operate in conjunction with Garden Island as the RAN expands over the coming decades with the introduction of the next generation of submarines, frigates and offshore patrol vessels.

There are particular opportunities in New South Wales. New South Wales is Australia's most populous State with the largest pool of skilled workers and world-class universities and research institutions; it has an important role to play in this critical national endeavour which will recapitalise Australia's defence forces. This is a really key point: The skill sets that we have in New South Wales make it a standalone State in terms of managing risk and delivering some of the highest-end technologies for our defence forces. New South Wales has deep industrial capabilities already playing important roles in support of Australia's defence forces. The opportunities for New South Wales-based companies from the growing investment in defence capability will be maximised by focusing on and identifying existing areas of strength and building on these for the future.

With the naval shipbuilding program, two of the largest programs in the Defence Integrated Investment Program are SEA 1000 future submarines—12 of them—and SEA 5000, the construction of nine future frigates. These two programs together are valued at more than \$85 billion and they are national endeavours; they will draw on the manufacturing, technological and intellectual power of generations of Australians from all over the country. So while the construction of these frigates and submarines will occur in South Australia, the smart systems that will go into these naval platforms have yet to be selected and represent a major opportunity for the defence industry in New South Wales. What we are talking about here are the smart systems that provide the integrated eyes, ears, communication and training systems so fundamental to the effectiveness of the RAN's future force, and this harks back to the question around combat systems.

Most importantly, these are areas of strength for New South Wales as a result of the long-term investment in sonar and underwater systems by Thales at our facility in Rydalmere in Western Sydney. The Thales capabilities developed and delivered from Rydalmere are at the heart of the New South Wales offering into the Navy's next generation of submarines and frigates. In the 1980s Thales undertook a technology transfer

from Europe to deliver the Scylla sonar system for the Collins class submarines. Since that initial transfer of technology we have made a long-term and patient investment in the Rydalmere facility to build it into one of the company's global centres of excellence for underwater systems. This includes sonars, mine countermeasures and other sensors.

Thales has worked hand-in-hand with the Defence Science and Technology Group to develop the next generation of sonars and underwater systems, creating world-leading sovereign capabilities for Australia. That capability now serves not only the Royal Australian Navy but has also generated advanced technology exports. Thales has exported over \$400 million worth of sonar products that have been manufactured and developed in Rydalmere to 11 countries including the United States of America, France and the United Kingdom. This success reinforces Thales' decision to invest substantially over the long term to create an international hub for underwater systems in Western Sydney. The Commonwealth Government's substantial increase in defence spending has led to a rise in competitive federalism, with each State and Territory eager to maximise the economic impact for companies based within their boundaries.

The scale of the current investment in defence capability means that in order for the Australian Defence Force to get the platforms and systems it requires, each State needs to focus on its strengths. We believe the New South Wales strengths are the smart systems and sustainment that enable the next generation of platforms to deliver the highest levels of capability for the Australian Defence Force. If New South Wales were to capture its fair share of these systems it would drive investment and employment well beyond the time frame of individual programs and would generate second and third order economic benefits for the New South Wales economy. Thank you.

**The CHAIR:** Jumping forward for a second from the systems integration opportunity that you have just outlined for us, I asked some witnesses earlier today about the longer-term sustainment and maintenance of submarines. It was recognised that it is a very long-term decision and so on, but that step you have taken in terms of Newcastle is obviously a great beginning and gives us a leg up to be able to mount a strong case in that space. So well done.

**Mr JENKINS:** Every time we make these investments, we are looking at them as being decades-long returns. If you look at the submarine program, it first started with this sonar development work in 1985 in Meadowbank and we moved the site to Rydalmere in the mid-1990s. If you look at that work that was started then, we had only 30 people in Australia doing a certain amount of technology. Today we have nearly 3,400 people—in fact, we have over 3,400 people generating some of the most advanced technologies, not all sonars but across the broad spectrum. It has gone from 30 people in 30 years to 3,400. What we would see in the Hunter, based on that initial investment, is that we start with 70 people, we continue to grow that and as Australia's defence needs and the commercial shipping needs of the area increase, that would be another huge success story potentially for the State.

**The CHAIR:** I am sure with your effort it will be.

**Mr JENKINS:** Thank you.

**The CHAIR:** Mr Burgess would you like to talk about Quickstep?

**Mr BURGESS:** Yes, thank you. I am the chief executive officer of Quickstep, as of 2½ months ago. We are a carbon composite manufacturer and we also invest heavily in associated process technologies for the production of carbon composite parts. We employ 220 people in Australia, of whom between 190 and 195 are based at our Bankstown facility in Western Sydney, and 95 per cent of our revenue is generated by the Bankstown facility with 95 per cent of our revenue from the export market. We have, particularly on the back of the JSF program, enjoyed substantive support from the New South Wales Government, both in terms of investment in capital equipment and associated training to support the ramp-up of JSF production.

I would very much like to see one of the outcomes from your investigation to be a continuation of that support, but I would also like to see—and I know that there are steps in this regard already—more structured and consistent advocacy both within Australia, on behalf of producers in New South Wales, but also internationally. I noted that the speaker when I arrived was talking about the importance of influencing decision-making with prime contractors and in the engineering decision environment and the procurement decision environment. That external advocacy, which I have had personal experience with in the US at a state level, has been highly effective. I would like to see something akin to that here.

**The CHAIR:** Do you now have a monopoly position in terms of your contribution to the JSF?

**Mr BURGESS:** Yes, we produce about 35 different parts for the JSF aircraft. On average, each of the three variants has about \$250,000 worth of content. We are the sole source globally of some of those parts, but not for all. We have a really important role on that program from an Australian industrial content perspective, and we expect to be a part of that supply chain for the duration of the production contract. We are also working with Capability Acquisition and Sustainment Group [CASG] at the moment on bidding into the sustainment phase.

**The CHAIR:** You mentioned the good support you have had from the New South Wales Government and the advocacy element of that support. What other support have you had from the New South Wales Government and what is required?

**Mr BURGESS:** We have had substantive support in terms of the capital investment required at the Bankstown site, particularly laying down sufficient capital to meet the production rates required at the full rate of production on JSF. That has been an extremely important investment for a business of our size at the stage of development that it was at. We have also received most welcome support on the training side. I would like to see more structure around that—that would be very helpful. We faced some peculiarities in terms of an absence of, for example, avionics manufacturing and maintenance training available at TAFEs locally. It has been offered in the State, but quite some distance away from the site. As we continue to look at new contracts, our desire to continually fuel the pipeline of skills is substantial. We have grown by over 100 employees in just the last three or four years, and for a business our size that is quite a pipeline of employee growth to sustain and continue.

On the advocacy side, we are experiencing what I would describe as an increasing level of support from Federal and State government. We have an operation in Victoria as well, in Geelong, so we also seek and have received some State advocacy there. That structured advocacy for me is certainly an area where collectively industry and government—particularly at the State level, where the immediacy of the impacts of value creation and jobs creation is much more evident, tangible and local—could all invest a lot more effort. We had Peter Scott at our site recently and we had a long conversation about structured advocacy and about how appropriate it was at a State level. As I mentioned earlier, I have seen that operate extremely well in a US context. I think that is something we can all learn from.

**The CHAIR:** I apologise for the bells, but that is the main business of Parliament. We could hand out earplugs, but that might defeat the purpose of the Committee.

**Mr HODGES:** Can I offer some technology for that?

**Mr JENKINS:** We have just the technology for you, don't worry.

**The CHAIR:** Mr Hodges, would you like to tell us about BlueZone? I know you have some suggestions that we should be looking at.

**Mr HODGES:** Continuing on the theme of Mr Jenkins, the theme of underwater systems is our passion. New South Wales today has the opportunity of becoming the lead for the unmanned autonomous surface and subsurface vehicles. Nobody else is doing this currently. I ask you to think about a future where autonomous vessels, both above and underwater, are patrolling our shores and entering hostile environments without the risk to human life. To achieve this truly sovereign capability, we must start down a collaborative path now. With government support, industries, universities and TAFEs can work together to be a leader in this area. Otherwise we will continue to rely on overseas imports.

Defence is actively acquiring autonomous surface and subsurface systems today. Unfortunately, nearly all of these are imported. The opportunity exists now to build on work that has already been completed in universities and companies like ours to further develop unmanned surface and subsurface vehicles. Recently, the University of Newcastle competed in the program Maritime RobotX Challenge, which was an initiative that came out of the US Office of Naval Research, and did very well. The uni had taken autonomous technology from the mining sector and moved it into the maritime sector. It has already completed and demonstrated remote control algorithms and is now ready to go into the development of a robust obstacle avoidance key for unmanned vehicles.

The BlueZone Group is an experienced provider of integrated systems and unmanned systems to Navy and Army. This experience can be used to manage relationships between government, academia and the end user. We are in the business of development support for leading-edge autonomous technology for use in Defence and government agencies, which will also increase export opportunities. The benefits would be growth in smart technology development applicable to land, sea and air across different industry sectors, defence export

opportunities and building upon existing work coming out of New South Wales universities and next-generation technology innovation hubs. We are looking at New South Wales being able to take a lead. The shipbuilding industry is pretty much now shared between States, but there are still opportunities to look beyond the current build and to start with smaller unmanned surface and subsurface vehicles that can lead into bigger unmanned systems, which are coming. The Americans are looking at them now; if we do not start looking at them now we will always be importers of the systems. I think there is now great opportunity to start down that path.

**The CHAIR:** Mr Jenkins, I congratulate Thales on the future submarine contract; obviously, you have played a very important role in that. A previous witness spoke about the problem with some of the procurement arrangements in that the prime companies involved may take decision-making back to their head offices in France, Spain or wherever, which leads to an absence of decision-making, particularly in the engineering area, in Australia. I imagine, given your experience with Thales, that would not be the case. Obviously, there are head office decisions to be made but surely one of the benefits for us in the future submarine project is your on-the-ground capacity and knowledge of the Australian environment. Would I be right in saying that?

**Mr JENKINS:** Yes, in many parts. I think the comments around what primes may or may not be doing in terms of creating work in Australia—other primes I will not comment on as I have no particular view—but Thales's role in the future submarine program as a shareholder of DCNS and as a longstanding representative of French technology transfer to Australia over 30 years on the Collins class I think has probably given Defence some confidence in the way the French go about technology transfer and certainly how DCNS, now called Naval Group, would approach the topic. I think that is all that could be said in that area.

The key point from Thales's perspective—and I think it is something that most primes acknowledge and it is very clearly put forward now in the recently released Australian Industry Capability Plan that the Federal Government announced—is its key programs of defence acquisition and sustainment in Australia are seen as vital parts of stimulating industrial activity, knowledge base and competitiveness in Australia, which is a great acknowledgement. So defence acquisition processes implemented through the Capability Acquisitions Sustainment Group, are driving towards maximising the levels of Australian content but not non-value-adding Australian content—things like skills engineering works, the real value-add that will help sustained defence capability advantage through the life of a new platform or system for the whole of life.

That strong drive and clear policy for industry is a very clear billboard for all primes to be following today, whether they are from France, Spain or Italy in the case of the SEA 5000, or the UK for that matter. The Government has made very clear what it expects Australian industrial primes to be doing and how they should work with the supply chain in Australia to maximise the amount of knowledge that stays on the ground and develops and grows in Australia. Thales has practised that model in Australia for its entire time here in Australia and it proves quite successful. If you wanted to cross check, I am pretty sure most of the supply chain that we work with are pretty happy with the way that Thales goes about that spread of industrial activity in Australia.

**The CHAIR:** Yes, we have checked already.

**Mr JENKINS:** Thank you.

**The Hon. MICK VEITCH:** I spent this morning talking to some of our witnesses about collaboration between jurisdictions in Australia. I am keen to explore some of the competition. You were talking about the Victorians and South Australians and their approach. I know that with LAND 400 the Queenslanders and Victorians are currently involved. That competition between jurisdictions for the defence dollar is pretty critical for Australia. Mr Hodges spoke about unmanned vehicles. What are some of the opportunities for New South Wales that we can focus on that arise from that competition?

**Mr JENKINS:** I really think that the States heavily subsidising works to locate works from Defence into the area is not the best use of money in the end. Businesses need to be sustainable for the long term on their own merits and our businesses look at the long-term business case and work out: Does it make sense to establish, in the case of that LAND 400 project, a build facility that will set up a project for a period of time and then that project will end and then what will be left? In the shipbuilding sector it was called the valley of death for a period of time where projects came, projects went and there was an aftermath.

Projects need to be in the context of a sustainable business enterprise, the sorts of things we have talked about—and I think all of these businesses at the table here have larger sites than just that one project; just a project. Projects are components towards a sustainable business. What we have done in sonars is a multifaceted set of projects that has also generated exports. The exports mitigate some of the workload topics over longer periods of time. We have exported commercial sonars and defence-based sonars. It is a diversified but very highly focused set of skills that makes it a long-term enduring enterprise.

The only support that we would seek from the New South Wales Government—we are not asking for any money; that is not the point, but what we do think, though, is that it is very important for New South Wales to be on the front foot in ensuring that this national enterprise of things like submarines and future frigates is not just focusing on South Australia where the ship gets built; it is all of the knowledge that Australia has, all of the engineers that are coming through university today or kids that have not even thought to be engineers and encouraging them to be part of that future workforce that will not only create the system in the first instance but make sure it stays at the cutting edge of performance right through the life of that ship, which could be 40 or 50 years.

The only encouragement I give to the New South Wales Government is to say: This is a whole-of-nation project that is happening in future submarines or future frigates. Let us make sure that we are getting all of the knowledge and all of the skills that New South Wales has to help mitigate the risk for the nation and deliver the best set of programs for Defence and ultimately the taxpayers who are paying for it.

**Mr BURGESS:** I would like to add a couple of things and echo a lot of what Mr Jenkins has said. I think interstate competition benefits the foreign original equipment manufacturers [OEMs] more than it benefits anybody else. Industrial policy is a collaborative effort rather than a competitive effort. I completely agree with Mr Jenkins' sentiment about business sustainability. There is a lot of presentational benefit of large-scale programs being attracted to a specific place but you have to consider it on the basis of sustainability.

Our business is nothing like the scale of Thales in Australia but the way we look at this is that we have a very capable manufacturing base in Bankstown. I could come to you guys and say, "We've got an R and D site in Geelong. I would like you and the Victorian Government to bid each other up on how much money you can give me to attract the R and Ds to New South Wales." I do not believe it is in anybody's interest to do that but I could do that because the State rivalry allows that to happen.

Our approach would much rather be, "We have a sustainable business now. We need your support in ensuring its long-term sustainability by investing and staying at the cutting edge of manufacturing technology, of securing advocacy that we can win on a competitive basis, good business, largely in the export environment because that is from where we will derive sustainability." We will have a similar parallel dialogue with the Victorian Government. Our research and development capability as it exists now is in Geelong. We want to build that and grow it and try to come up with a business strategy where those two things are mutually supportive and we have cordial and positive relations with both State governments. The reality is you could easily play that. You could take advantage of that State rivalry and in my opinion it would be to the detriment of industry and certainly the taxpayers.

**Mr HODGES:** If there is any money going around, I am quite happy to take it off you, but seriously, I am going down the unmanned systems. I see there is a great opportunity there for New South Wales but we need to target the universities and the TAFEs and have courses in that sort of activity. At the moment we have opportunities with sensors coming out of Thales and composites coming out of Quickstep and putting those things together. We have got all the skills but it is difficult getting universities to do study programs to target some of the stuff that we are importing from overseas. There are pieces of equipment that can navigate underwater. They are wrapped around American controls that we can take into this country but we cannot even open them to fix them if something goes wrong.

I was listening earlier to a previous gentleman saying there was conflict where I think it was a submarine could not get a part. We are still at that level. We have got to start doing that but we need universities and research establishments to start running those courses to produce that kind of technology out at the end that companies like ours can put together as Australian built sovereign capability systems, whether it is above water, below water and everything else in between. If we do not start doing that we will always be looking for overseas suppliers. We can do it.

**The Hon. MICK VEITCH:** That is an interesting point. What sort of dialogue do you have with vocational and tertiary institutions about skills requirements. Is it regular?

**Mr HODGES:** We have a post-doctoral student with us at the moment who was leading the robotics program at the University of Newcastle. We have employed several people straight out of university, and they have been with us for many years. We encourage that, but there is no support. There is no overarching program setting out what we will do and what we will aim for and then get those skills coming out of universities and back into industry. One of the problems we have always had with universities is dealing with intellectual property [IP]. For a company such as ours to be truly commercialised and commercialisable and exportable, we

must have an industry partner. If universities wrap up the IP so tightly that we cannot access it, it is no good to anyone. They are the barriers we must break through.

**The Hon. MICK VEITCH:** What sort of supports do we need to provide to SMEs to assist them through the defence procurement process?

**Mr HODGES:** I do not think Chris Jenkins can talk as an SME.

**Mr JENKINS:** I work with 450 of them.

**Mr HODGES:** We are a proud Thales SME partner.

**The Hon. MICK VEITCH:** In his opening statement Mr Jenkins talked about the number of SMEs, and he is working with them. This is an opportunity to explore how we can better guide them through that process. I am keen to hear your comments about that.

**Mr HODGES:** There is no question that it is difficult for SMEs. However, they must have a diversified portfolio. We have an office in Western Australia and one in Victoria involved in the oil and gas sector. However, that is complementary to what we do. There is a lot of technology in the oil and gas sector that comes across to defence and vice versa. An SME involved only in defence would struggle to survive. You have to have a spread. We experience peaks and troughs all the time. You can run a program for 15, 16 or 17 years and then it is suddenly pulled away. If that happens and the SME does not have a diversified portfolio, they will have to shut the doors. It is very difficult and you must have continued work. You need sustainment and support. Thales is a prime contractor across many different platforms. As an SME on its supply chain, it is important for us to talk to them and to try to be involved in different areas to sustain ourselves.

**Mr BURGESS:** We may not be that representative, and I probably do not know enough about the SME landscape in Australia to know whether we are. However, 95 per cent of our product is exported. That percentage will probably not diminish much because of the nature of the components we make and the fact that Australia will never build aircraft alone. Even if there is significant progress with unmanned, it is possible that the airframe or the aero structure will be done offshore; it may be done by a third-party supplier. It is impossible to say.

The support an SME like mine is looking for is on the export advocacy side. I completely agree with Mr Hodges in that, while most of our revenue now comes from Defence, it is not a sustainable business model. We have to have diversity in our customer base and our product base, and it must span defence and commercial markets. We are an SME with limited means, but Australia and the New South Wales Government have significant means available to them to open doors and to apply influence and leverage to get people to see us or to allow us to see them to get the opportunity to bid for work and to collaborate. We have a successful business model, but we need to develop it further. However, for my company, it will be an export-driven future.

Statistics are thrown about at the moment about how good a defence importer Australia is and what a poor defence exporter it is. That must be brought back into balance. It is impossible for a country this size to have capability in all areas. The Americans cannot manage that, so Australia will never be able to. However, it is important to foster and to grow centres of excellence and not to be hoodwinked by the glamour of doing the end product. Frankly, the value is not in the end product; it is in the supply chain and in being a specialist in the one part that goes into every Joint Strike Fighter [JSF], not building them. That is an extreme example, but the point is valid. We must foster centres of excellence and invest in existing businesses which are already sustainable and which are on a good trajectory and make them stronger. That is what we are looking for now.

**Mr JENKINS:** I would like to make a number of comments. Only an SME can give that perspective for it to be valid. Australia can aim higher than simply building component parts for international projects. In fact, it is essential that our defence forces have access to knowledge and capability on the ground in Australia to develop more than unique solutions. My company produces the Bushmaster Protected Mobility Vehicle, which is an important example of capability for the Australian Army and many others. Defence needs to adapt capability over the life of a platform. The Bushmaster changed from two different variants at the start to seven different variants throughout the Afghanistan conflict. We were able to increase its protection level for soldiers as the attacks became more severe. That enabled Australia to do things in a unique and important way in that contest in the Middle East. Therefore, it is important that we set our sights high to generate real capabilities with all of our supply chain and our industrial partnerships.

The Australian knowledge base involves bringing together Quickstep's expertise in composites and BlueZone's expertise in autonomous vehicles. Usually there will be a prime at the centre. That gives Defence the confidence that there is substance and a financial base, if nothing else, to deliver a complete system capability.

By bringing those kinds of partnerships together, we get very powerful outcomes for defence capability delivery. We also get very powerful outcomes in terms of industrial capability and growth in Australia.

I mentioned the Bushmaster example, but there are many others. I think Defence is leading the way in that it is expecting primes to step up and to be much more the industrial partner with SMEs to create growth in the SME base and to engage in fair and balanced utilisation of all knowledge to best meet its needs. That demand is on primes. I feel that we are driving that hard at Thales. The State Government has offered very good support for that over the years with organisations like the Australian Industry Defence Network in New South Wales. They regularly support the gathering of primes and SMEs in that environment. However, I encourage the State Government to do more of that in creating this industrial partnership. I think that would put New South Wales in a very strong to position for the future major projects we talked about earlier.

**The Hon. NATASHA MACLAREN-JONES:** Mr Hodges, your submission refers to the San Diego model. Is there anything unique about that that we are not delivering in New South Wales?

**Mr HODGES:** There are opportunities. The San Diego model has centred activities around one area so that they can operate and they have all their people there. The Thales initiative in Newcastle is fabulous. That is in my submission although Thales has not announced it. That is a wonderful opportunity. I refer back to the point Mr Jenkins made about sites being built and then closing down. What happened in Newcastle during the late 1990s and the early 2000s was a classic case. Minehunters were built there on a fabulous greenfield site and were delivered to the Royal Australian Navy, and then the place folded. It has been resurrected, and that is fantastic. You have got an opportunity there in a waterway to be able to test unmanned underwater vehicles and such like, in that area. It is purpose-built for small ships and boats and small vehicles like we are looking at. It is all there. New South Wales is uniquely placed. It is two hours drive between Newcastle and Sydney. Sydney obviously has Garden Island and has all the infrastructure for supporting the major war vessels. Newcastle is an ideally located place for the smaller specific areas that we have been talking about here that you can take as a growth model from there.

**The CHAIR:** Listening to each of you today, the skills issue is one that we have addressed a little bit. Superficially interaction and partnerships between universities and industries seems to be pretty good. We visited the University of Wollongong when doing our background check on Thales and were very impressed with their research into welding—something that never occurred to any of us as being so important, but obviously is—and the robotics of that. Is there anything else you can think of that we might be able to pursue in terms of improving those relationships with universities?

**Mr JENKINS:** I think the biggest thing that is going to negatively affect our sector and the State as a consequence and all of Australasia is the STEM shortfall coming through schools—science, technology, engineering, maths. The prominence of science and engineering as a very good thing and an exciting thing is really important. We have got some great universities in this State. At Wollongong the welding actually made the Bushmaster story a success—direct contribution from the State to the safety of Australian soldiers on deployment. Recently this week we announced a teaming with the University of Sydney in a range of our areas of development as part of our research and development investment in the State. Those things kind of happened quietly inside the boundaries of the university. What would be helpful I think is to have a catalyst of really positive messaging from State Government level about the future as the State sees itself as a technology leader.

We have some of the best universities in the world, not Australia, the world, and presenting that image, capitalising on what industry is doing itself and with the State and amongst itself, investing in some really brilliant technologies. If you bring that together with a very positive message I am hopeful that kids today who have not even thought they might want to be an engineer might start thinking, "You know what, I would like to be an engineer because I will get to work on unmanned vehicles with BlueZone and I will get to export to the world", and there will be composites made in Australia that are world-leading through Quickstep, the global market opening up with Thales. This State has the perfect message to sell publicly I think and unless we change gears on that I worry that we will see a fall-off in engineers and scientists coming through the schools, coming through the universities. That means we have to export that work and that is the beginning of the end for the kind of clever stuff we do.

**Mr BURGESS:** Can I add a couple of things? I agree. I think collaboration with world-class universities is very good. In terms of filling the pipeline with talent, it is too late. The individuals in those universities have made their career choice already. The average age of my workforce is 49½ years old. It is not a great place to be. It is a generational issue. I think the STEM, encouraging younger people to find what we do in our industry exciting, challenging, rewarding, is a really important thing. It is difficult but I think some structure around that and a lot more effort.

The second point I want to make—it is mildly controversial I guess—but certainly we, all of us, operate in a global marketplace. That global marketplace is not just for sales, it is for talent. We have been hit a couple of times recently. I will give you a classic example: NDT technicians. There is no skill shortage for NDT technicians in Australia.

**The CHAIR:** What is NDT?

**Mr BURGESS:** Non-destructive testing. That is true but I cannot pay the same wages that the oil and gas industry can pay for similar skills. We do not have much of an aerospace centre here. I can go and secure skills from Brits who want to emigrate here and they have got the right skill set and the right experience. Then they turn those offers down because the current visa scheme says after two years you leave. That puts me at a distinct disadvantage and is actually highly counterproductive because that lack of NDT capability constrains my ability to grow and probably runs a risk of costing us 12 Australian jobs. A perverse consequence from that. That is another area that is a really important one. It does not affect us hugely but it is something that really concerns me because they are some key skills in a global talent pool that we are effectively precluded from accessing.

**Mr HODGES:** Feeding on from both of these gentlemen, what we see and the kids who are coming out of school in these areas, they are tending to go towards the electrical trades in our area. They are going towards electrical trades because they can see that career path in becoming an electrician, wiring houses, doing something like that, they can see that, it is obvious to them. Harder, much harder to get electronic-trained students coming through because they cannot see what opportunities there are in the future for them. Thales obviously take on electronics-trained people, we do as well. It is not seen as an obvious career path for them. We lose a lot into the more traditional trades than the smart trades that we need, the future technology. If Australia is going to take that leap beyond importing all this smart technology we need to show them that there is a career path there, there is interesting stuff being done in Australian companies but it needs the support of governments and universities to show them that way.

**The Hon. RICK COLLESS:** This issue of education comes right back to pre-high school years, does it not, to initiate an interest in the sciences amongst the younger generation? I think a lot of kids as they get into high school look towards the softer subjects—if I can use that expression—the ones that are easier to get high marks in. Let us face it, science, maths, technology and engineering is hard stuff to learn and requires a lot of study and a lot of hard work to get to the top. What changes do you think we need to put in place to give more incentive to pre-high school young people to develop that interest and that fascination, if you like, for science, such as you obviously had at a young age?

**Mr HODGES:** I think it is showing them the exciting stuff that we are doing. For example, an underwater vehicle. We import nearly all underwater vehicles into Australia. If we say hey, study really, really hard and come and sustain somebody else's equipment coming in from overseas. That is not nearly as exciting as study, then come and work for us and develop your own autonomous system that can be used with Australian defence, and possibly exporting that overseas as well. We have lost an engineer just recently because he could not see the future being exciting enough with us because currently there is no appetite. It is changing, definitely changing, defence is definitely changing at the moment and there is getting more appetite for sovereign capability development, but that is only very recent. We have to try and change that.

**Mr JENKINS:** There is no silver bullet. It is a social change that is happening as well. It goes a bit to which exams are easier, which are not. A lot of kids come out of high school without any understanding what they want to do with their lives, what will give them a creative thrill during their life. I find that absolutely tragic. So many wander around and go from one course to another in university and eventually perhaps not completing any of them. I think that we were all inspired in different ways. Some of us are older than others but the space program, the science revolutions of the sixties and seventies and all that kind of thing. Since then there has been the demise of the automotive sector.

I speak occasionally at schools to people considering their year 11 and 12 courses and what they might go into—I am spruiking engineering, as you do. The message I got from a lot of kids is "Our parents have told us do not get involved in those areas because manufacturing is dying and that is what engineering is". I say no, no, no, that is not it. Even the idea that artificial intelligence, robotics and so on, will replace engineering. The point of them is engineering science is the ultimate in creativity for those technologies which will change the world. You can be part of the courses that will help change the world. You will not be overtaken by careers and jobs that are changing; you will be in the leadership. That is the whole idea. All of that evangelism is simply to say that the New South Wales Government could help—even though it is not a silver bullet—just with a TV campaign or some other campaign that advertises the really amazing technologies being created in this State and

the work that is happening in universities that leads to real things being generated, exported and used in defence, infrastructure and around the place. No children have any perspective on some of these technologies, and their parents are not helping because they are saying, "Do not get involved in manufacturing; look at the automotive sector." I think there is potential for a campaign of advice about some of the works that my company and others are doing—as well as the universities. It could say, "There is this really amazing stuff out there." The problem at the moment is that there is university by university advertising, which creates a lot of confusion. Who wants to hear that? Every company says that.

If the State Government was to say, "We believe that this State has the intellectual capacity for the future of Australia. We think we can generate a massive contribution to the future of Australia. This is the sort of stuff your life could encompass if you take in science and technology," we could find some ways to encourage that, or at least to create that passion. That would really be a help.

**The Hon. RICK COLLESS:** Do you think there is a problem with the relatively high wages being paid, particularly in the mining industry for tradesmen? Talented young kids are being encouraged to go into the trades and have a starting wage of \$100,000 a year, whereas if they do engineering they start on \$60,000 a year. Is that an issue, do you think?

**Mr JENKINS:** Yes, but there has always been a competitive force between—

**The Hon. RICK COLLESS:** Traditionally it was the other way around—if you went to university you had a better starting salary than you did as a mechanic.

**Mr JENKINS:** That is true, although I remember a lot of competition when I decided to do mechanical engineering all those years ago. There were a lot of people out there, having left school at the end of year 10, getting some money and buying faster cars and doing all those fun things.

**The Hon. RICK COLLESS:** I recall that too.

**Mr JENKINS:** I was thinking, "Gee, why can't I do that?" I am doing okay now. The point is that that tension will always be there. The issue is what people want to do with their lives. If people want to do that work it is great. It will earn a level of remuneration over a period of time and a particular lifestyle. If people want to shape the world and be part of the leadership that can help change Australia's future then that is probably not the direction; they would probably do better in science, technology, engineering and maths. Life is a gift; you do not want to be doing something that you are not that interested in. I think there is not enough good information—compelling information—about what STEM can provide as a career path. I think that is something that the State Government could do.

**The Hon. RICK COLLESS:** It is across all the sciences, I think. It is not just engineering.

**Mr JENKINS:** No. It is true of medicine, biology and all of these areas. We have the best universities in the world. We have some of the smartest people coming through our universities, which also helps create international partnerships for the future, which will truly be a global market—even more than it is today. That is a fantastic advantage for us to capitalise on and do a bit of good marketing, which is just information. Information that will be retained by the receivers is what is needed today. It is not coming through any of the traditional sources at the moment. It is all bad news out there, which is not exactly accurate when you look at what our companies are doing.

**Mr BURGESS:** Forgive my ignorance with regard to New South Wales State education policy. One of the things I have seen done well elsewhere, and one of the things I cannot seem to get to the bottom of here is that it is one thing to phone a school and say, "Would you like your year 8 to come around to my factory? We build parts for JSF." It is quite another thing for that to be woven into the curriculum and for 15 schools in my locality to call me and say, "We have this coming up in three weeks time; could you spare us 1½ hours?" That is the way we need to approach this. It has to be structured and part of the education policy as opposed to me going around. I want to encourage the local community to understand what it is we do and to make it fun, interesting and exciting for them.

I do not believe it is an either/or choice. I think we need to recognise that trades are the right choice for a lot of people. Degrees are the right choice for a lot of other people. We need to increase the total going for both in technical skills.

**The Hon. PAUL GREEN:** Mr Jenkins, first of all I want to say, thank you for your brochure. I am very disappointed that the Shoalhaven does not have a location on it—not at the beginning nor at the back.

There is no mention of Shoalhaven. Mr Hodges that is also just two hours down the road from Sydney. We would welcome a shopfront of Thales down there.

**The Hon. MICK VEITCH:** You should advise the panel where you live, to be fair.

**The Hon. PAUL GREEN:** I live in the best place in the world—the Shoalhaven. We know that you are doing some good work and the university there, as mentioned by the Chair. That is fantastic.

**Mr JENKINS:** We do have a project team working at HMAS *Albatross* on the helicopter aircrew training system.

**The Hon. PAUL GREEN:** So we will get a white point in this brochure, will we?

**Mr JENKINS:** As a young engineer in the eighties and nineties I spent a lot of great times off Jervis Bay testing sonar buoys with a team from HMAS *Creswell*. It is truly one of the most beautiful places in the world.

**The Hon. PAUL GREEN:** A dot in your brochure is worth a lot of reputation.

**The CHAIR:** I think there is a white dot there; you just missed it.

**Mr JENKINS:** At Twofold Bay we have our ordnance facilities and all those sorts of things. I take your point. I will visit you shortly.

**The Hon. PAUL GREEN:** Defence does employ 9.1 per cent of Shoalhaven people so it is a key area for us, and SMEs are doing really good work down there. That brings me to a couple of things which we have talked about. Unfortunately, as we are coming to the end of the questions I get to ask the dregs of the questions! One of my boys tried for the Navy and the other tried for the Army. They got rejected; one was colour blind and the other had a hip issue—Perthes disease. Both of those guys would have liked to go on to do something. I am just wondering if organisations—SMEs or Thales or others—work alongside the Navy so that those people who are rejected are quickly followed up and given these opportunities that could exist. I know that my boys would have liked to have done something that was similar. Is there a bit of a void there? Those sorts of young individuals could be picked up—you might not get them all but you might get some—because their hearts and souls are normally into it if they have applied. That might be an opportunity for businesses to look into.

The second point is what Mr Burgess talked about. We need to be smarter. It is not just about the product that we are trying to buy or get in but the deep maintenance on those products and the lifetime servicing of those products. That is very important to New South Wales. Do you have any comment on what we could do better to secure that?

**The CHAIR:** There will be a question eventually.

**The Hon. MICK VEITCH:** It is like a second reading speech to a bill.

**The Hon. PAUL GREEN:** I have been listening patiently to you guys all afternoon.

**Mr JENKINS:** The questions are very serious and well put.

**The Hon. PAUL GREEN:** Sorry, what was the last point? Was it well put?

**Mr JENKINS:** Absolutely. I refer to the point about people who apply to go into the defence forces and then may get bumped out, and what they do next. One of the things is that there are not so many people interested in science and technology. If they are going into defence they probably have a bit of an angle towards technologies and so on. There is not, at the moment, a way of connecting those people to a career path or studies or whatever. That could be university, but it might not be—they may not have the marks. There could also be apprenticeships and all those sorts of things.

We take on many apprenticeships throughout the year. Part of what we do—I am sure the other guys do the same—is to open our doors to show young people what is happening inside industry to try to bring people in. Perhaps there is something for us to do with Defence. I will take this as an action of ways to work with them on the ones that are rejected on health or from a capability point of view and say, "Can we find a way that they might have an interest in the defence sector on the industrial side of it?" We do not want to miss anybody from the catchment. I have forgotten the second part of your question.

**The Hon. PAUL GREEN:** The second part was about the real opportunities that exist in maintenance and servicing in lifelong products?

**Mr JENKINS:** The sustainment side of it is absolutely the really rich important part of the economic return on investment in capability at the front end. My business roughly speaking is 50 per cent provision of capabilities acquisition, through the acquisition process, and 50 per cent through the sustainment of those aspects. But back to how you get rid of the boom-bust cycle of projects that come and then go, and so on. Part of that equation is that you build the capability and knowledge through the acquisition cycle and you retain that knowledge to help sustain the capability. Sustainment is not just basic maintenance—stuff like painting a ship or something—it is really keeping that platform at the most advanced level of performance capability it can be because it is going out to do very hard things in usually contested areas. So sustainment is very high-end intellectual capability in engineering and in science. It is economically a very important part of the equation and it helps a sustainable business base. It is extremely important for this State to focus on sustainment. This State has a very strong position in maritime and aircraft sustainment and through ordnance and a variety of works with Army—rifles, for example, and Lithgow. This State is very well positioned to do well out of this future spend, particularly I would say in the maritime sector.

**Mr HODGES:** If I may continue on? As Mr Jenkins has said, sustainment is not just painting things and fixing things; it is obsolescence management of parts that become obsolete just because of age. The minehunter program has been running for the best part of 17 years and there is about to be a program to extend that life to 35 years. We are keeping equipment that was designed and assembled in the 1990s going through until 2035. I would much rather be in sustainment than in sales in defence. That sustainment business is what keeps us going.

**The Hon. JOHN GRAHAM:** I want to particularly ask about the Thales Australia export experience. Where are you exporting to the moment?

**Mr JENKINS:** It is quite a list. A large part of our export base is in air traffic management systems, which is parallel with defence because you actually have a lot of our project management, engineering management activities and knowledge base applied in the area of air traffic management. We export a large amount of sonar systems. Interestingly, the sonar sensors built at Rydalmere go into the French nuclear submarines and the United Kingdom's nuclear submarines. Australia, having the technology transferred from Europe, is now exporting back into that market. The antisubmarine warfare low-frequency sonars used in the European frigates we are hoping might become part of the future frigate program in Australia: the SEA 5000. We build those sensors—effectively they are big underwater speakers—at Rydalmere and export them to the rest of the world. We export mine countermeasures to about 20 different countries, including the United States of America, Japan, Netherlands and United Kingdom from Rydalmere. So it is a very large base. We export a large number of seismic oil and exploration towed sonar systems to the United States. In Australia we were able to solve a problem that the United States had not been able to solve. In this particular sonar configuration we sold over \$300 million—

**The Hon. JOHN GRAHAM:** So it really is commercial and military?

**Mr JENKINS:** Commercial and military. That towed sonar system was an offshoot of what we learned in the Collins class submarine towed radar and sonar development and as a consequence of that Australia has been the beneficiary of a lot of export money in sonars.

**The Hon. JOHN GRAHAM:** Looking at it from your company's perspective, what is the path to growth on that export side? Where is the potential? What needs to happen to allow that to unfold?

**Mr JENKINS:** One more key area, if I may?

**The Hon. JOHN GRAHAM:** Yes.

**Mr JENKINS:** Another key area is protected vehicles. We have exported more than 130 or 140 Bushmasters. There is a very important program in the United Kingdom for more than 200 vehicles and we are bidding into that. What do we need to do? The thing that we are finding is very good support from the Federal Government at the moment to provide that government-to-government dialogue, particularly around defence technologies. Australia buys a lot of stuff from overseas. The ratio with the United Kingdom is 22:1—we buy 22 times more from the United Kingdom than we sell to the United Kingdom. We buy a lot from Spain with ships and so on. We buy a lot from the United States. In the world of defence trade, which happens between partner nations, strategic partners, Australia has been over previous times a net recipient and seemingly quite happy to be. I think what we are seeing now is a much stronger, more strident view that Australian technologies are actually world leading, they are competitive, and our strategic partners would benefit from buying more Australian capability. So we are seeing strong support from the Federal Government in pressing those messages.

The only other thing I would add to that is energising this local investment in research and development and product capability, parts but also some complete systems that solve unique problems that Australia is solving—whether it is a sonar or an air traffic management or a protected vehicle. The ability to solve those problems with our local research and development makes for a very strong future export catalogue of capabilities. If you take an Australian Government willing to press those capabilities into export sales and an Australian industrial base able to create them, that is a much better trajectory for us to be on than we have been I think. The industry's success in exports has been largely supported by industry, notwithstanding the global supply chain activities which has been a very strong government consistent program for the past seven years.

**The Hon. JOHN GRAHAM:** I am interested in the question of systems integration with our allies. To what extent is that a factor in how we build and procure? To what extent are our military alliances a comparative advantage when it comes to what we might develop specialities in, build here and export?

**Mr JENKINS:** The Australian Defence Force works in a unique way because of the scale of the continent we have and our maritime boundaries being as extensive as they are. We also have a relatively small force that needs capability multiplication by virtue of technologies—specific technologies, sometimes unique in their capability. The Australian Defence Force also works alongside international forces—most often the United States but others. Interoperability is a simple way of describing that we have to work together. It does not always mean that we have to use the same technologies but quite often it does lead to having compatible technologies. It happens particularly with combat systems in ships and submarines and in aircraft—for example, an F-35 Joint Strike Fighter. Having those known capabilities between ourselves and our strategic partners will help our forces to work more friendly together.

**The Hon. JOHN GRAHAM:** It sounds to me that there is potentially a massive comparative advantage when you look at other countries. Is that the case and is it underutilised?

**Mr JENKINS:** The qualification to it is that Australia does very strongly work towards having these interoperable capabilities. The qualifier is that because we have a relatively small force with a particular regional reach that is quite important, Australia has been able to bring an advantage to the interoperable part of the equation by having complementary performance attributes to perhaps the United States. The United States will field very large battle groups, for example, into a maritime contest; Australia will have very much more discrete quite often unique capabilities that we bring to bear in those circumstances. That complementarity is a critical advantage that forces like the United States actually value. So getting that right balance between interoperability—it could be the same combat system, communication systems, complemented by perhaps unique sensor solutions, things like sonars and so on—bringing those together creates a complementarity that is very valuable to our strategic partners. I think that is the area where Australia operates and it is a way to get the force multiplication benefit from a little bit of technology or specific bits of technology complementing interoperable technologies with other nations.

**The CHAIR:** Thank you so much each of you. We all appreciate the time and effort you have given to us. You have given us some absolutely direct suggestions, which is really valuable when you are trying to do this sort of work.

**(The witnesses withdrew)**

**(Short adjournment)**

**HARRY BAXTER**, Communications Manager, Defence Materials Technology Centre, Victoria, sworn and examined

**The CHAIR:** Thank you for your time this afternoon. Would you like to make an opening statement and tell us a bit about the centre?

**Mr BAXTER:** Yes, I would. Thanks for the opportunity to speak to the submission, which I think you have. I pass on the apologies of Dr Mark Hodge who is the CEO of the Defence Materials Technology Centre [DMTC]. Until last night he was very much looking forward to being here today. You have our submission and I know you have already heard evidence from Professor Linton at the University of Wollongong. It has been very interesting for me to sit in the background and listen to the last couple of witnesses, because a lot of the things that I think we will talk about are much in common with that.

The DMTC is an independent not-for-profit company that operates in the Australian defence and national security sector. Despite being headquartered in Melbourne, DMTC is very much a nationwide endeavour. Our programs operate on a collaborative model—it is a co-investment model—and that is an approach which we believe allows our industry and research partners to leverage the expertise, the investment and the capabilities of each other. DMTC very recently, in fact even since we put in our submission, has achieved ISO 9001 accreditation. We are very proud of that and we believe that that is a really important independent verification of our program structure, our program delivery framework and our commitment to business excellence.

DMTC operates on a series of contracts with defence and national security customers, with industry and the research sector. The DMTC was established through a competitive process that the Commonwealth ran back in 2007-08 and that was under an initiative announced in the Defence Industry Policy Statement of the time. That foundation contract has long now been completed and we have moved on to deliver a number of additional contracts, one of which confirms our role in the new Defence Innovation Hub, and we certainly do work in partnership with the Centre for Defence Industry Capability [CDIC], which I am sure you have heard about in your hearings today.

The New South Wales defence strategy document that was released earlier this year focused on the DMTC's presence in the Illawarra principally through our partnership with the University of Wollongong. Wollongong was a founding member of DMTC and is also represented on our higher education advisory panel, but it is probably important for me to note that DMTC also works in a range of other areas across New South Wales—in Sydney and its surrounds, in the Hunter, the Illawarra and the Monaro regions—and we could be doing more, which is one of the things that we are keen to talk to you about as part of today.

Our submission makes a number of other points about current and future opportunities to do work in New South Wales. It talks about our benchmarking programs and our welding capability development programs, which have already been mentioned today, and it also talks about our education program, which again is something that we are very proud of and we think confirms our dynamic relationship with both our industry and our research partners. But I will not repeat a whole lot of that. As one final note can I say we are very much looking forward to coming back to Sydney for the Pacific maritime event in Darling Harbour in October; we will be an exhibitor there. I might leave it there. I am happy to take any questions that you or the Committee have.

**The CHAIR:** In the last session I promised Mr Green that he would be the first to ask questions here, and given your important work and associations in the Illawarra, which is so close to the Shoalhaven, I know that he is champing at the bit to put some questions to you.

**The Hon. PAUL GREEN:** Page 5 of your submission says, "Since 2008, DMTC has supported more than 40 Postgraduate candidates through scholarships and professional development courses", and you go on to talk about that. What sort of follow-up do you do on those people after those programs to see where they are and if they are still in the industry or what they are doing?

**Mr BAXTER:** We definitely do follow that up because we are really interested in seeing how that works. A lot of our people have gone on to work in not necessarily the defence industry but certainly in related industries; a lot of them have gone on to choose academic positions at universities, which is also a really good outcome we think. So yes, we do follow that up and from time to time we have put it in our annual reports and we have an annual conference each year where we profile people who five years ago did their PhD funded

through DMTC or whatever. So we keep as much of a watching brief as we can on where those people are going and on what is happening with them.

**The Hon. PAUL GREEN:** In your submission you talk about government assistance. Please clarify that statement.

**Mr BAXTER:** One of the ways in which DMTC can help the New South Wales Government to build the momentum with this is in relation to the development of young people, and that is what Mr Jenkins spoke about. That could be through science, technology, engineering and mathematics [STEM] related programs or career-type initiatives or once people get to university and have the opportunity to participate in funded pathways for postgraduate or postdoctoral study, which positions them well for a career in defence or a related industry. There are those opportunities.

**The Hon. PAUL GREEN:** Do you know of opportunities for school students? An earlier comment was that the minute students get to university, it is too late to redirect them into the defence industry.

**Mr BAXTER:** In terms of DMTC's role alone, that is pretty limited. We look at people once they have come out of school, but I am aware of a number of Defence and related initiatives that are running in schools. I think they are terrific things that universities and companies could support. There is the F1 in Schools program and a bunch of related things. I imagine you could get more information on those programs from the Department of Defence. They are all good examples.

**The Hon. JOHN GRAHAM:** I want to ask about the intellectual property model you are using for your projects. How important is that model for your centre?

**Mr BAXTER:** We think our intellectual property arrangements are absolutely fundamental to our success and also to our credibility with our industry and research partners. Intellectual property is a difficult thing, but the benefit in some respects of DMTC's work is that we work most often in the pre-competitive phases of the process. Unlike some of the previous witnesses you have heard from, who are very much at the leading edge of procurements, we work in advancing the technologies that are really the enablers of those things.

**The Hon. JOHN GRAHAM:** What makes this model possible, because it might not be possible later in the cycle?

**Mr BAXTER:** It is definitely more complicated the further on you get. That is not to say that it is easy in research and development, because obviously there is the contest for ideas. One of the previous witnesses referred to the universities taking a protectionist view of their IP. That is a difficult thing to work through.

**The Hon. JOHN GRAHAM:** Is your model unusual?

**Mr BAXTER:** I am not sure if it is unusual. We would like to think it was a leading model. Certainly now it aligns very much with the new model that the Defence Innovation Hub has.

**The Hon. JOHN GRAHAM:** That is the point you make in your submission. Has it been picked up by universities or has it been picked up by other research organisations?

**Mr BAXTER:** I am not sure I can answer that except to say that DMTC has a very vibrant group of universities and research partners on board. They have found that this model can work.

**The Hon. JOHN GRAHAM:** You have said that your model for intellectual property is possible but can be difficult. Please tell us about the pressures and difficulties.

**Mr BAXTER:** Fundamentally, one of the tensions with intellectual property is that it is often not thought about until too late in the process. Then companies and collaborators are left with no other option but to lawyer up and start arguing about the process. Our model defines the intellectual property approach that is going to be taken right at the very beginning of the process. No-one engages in a DMTC project without being well aware of that. We also seek to clearly document the IP that each of the partners is bringing in to the project, so background IP. We say that background IP is always retained by the partners that bring it in, but any intellectual property that is developed as a result of the collaborative work that is done under the DMTC's oversight is owned by the DMTC. Then we can license that out for the commercialisation and the utilisation of that by industry partners, which is the end goal. The fact that we are a not-for-profit organisation allows us to do that, allows us to hold that IP not beneficially for ourselves but beneficially for Defence and for the industry partners who will take it on.

**The Hon. MICK VEITCH:** Has your IP model been contested or challenged at any stage?

**Mr BAXTER:** It has, yes.

**The Hon. MICK VEITCH:** Has it stood up to the challenge?

**Mr BAXTER:** Yes.

**The CHAIR:** The default position is that the IP belongs to whoever created it effectively, unless there is a contract to transfer it.

**Mr BAXTER:** The default position is that each of the collaborators will bring something to the table, and that is their IP and they own it.

**The CHAIR:** And you clarify and define that.

**Mr BAXTER:** And we define that upfront. The IP that is developed as part of our project, because we are all about applied research which means taking something to a technology readiness level, is foreground IP that is owned by DMTC beneficially for use at the other end.

**The CHAIR:** What is good about your model is that if you did not define it and specify that you own it in that way, the argument about who created it would be to decide who actually owned it.

**Mr BAXTER:** That is right. Our agreements also define fields of use in which that IP will be practised. One of the objects of DMTC being an Australian not-for-profit company and firmly connected to our Defence customer is that our prerogative will always be to feed the benefit back to Defence and to Australia first. Most often, those are the fields of use that we go down. But we are willing to negotiate licences with people who want to use it for commercial applications, which again is a terrific outcome, or even for exports into other areas.

**The Hon. RICK COLLESS:** When there is a commercial opportunity for the technology you have developed with your partners, who has the final say when that is released? If we use radar as an example, when it was first developed it was licensed but now the whole world benefits from that technology. A lot of the stuff you are developing will possibly have a strong commercial value down the track. What is the process for releasing that commercially?

**Mr BAXTER:** Our model relies on the commercialisation being undertaken by industry not by ourselves. We will typically only be involved while the technology is developing. We do not then have an ongoing role.

**The Hon. RICK COLLESS:** So it will be up to the individual partners then as to when it is released?

**Mr BAXTER:** So they pursue the commercialisation of that under licence from us or under whatever arrangement we have come into. Where it goes from there is really subject to the market forces and obviously if it is a royalty-bearing thing then we get to benefit from that in the future and that is a good outcome.

**The CHAIR:** I am very interested in some of the opportunities you think might exist. You talk about a few things such as medical countermeasures. Can you just explain to us what that is?

**Mr BAXTER:** I will give you my best impression of a cook's tour of medical countermeasures. I am not a specialist in that by any means and if I need to provide you with more information, I am happy to do that on notice. Essentially what we are doing in the medical countermeasures space—

**The CHAIR:** And who are you partnering with?

**Mr BAXTER:** We have got a number of different companies on board and universities. The University of Western Australia is one. We have some companies that are right up there known for being innovative medical technology companies—Planet Innovation, MiniFAB and others are on board with our program. What that program is really seeking to do is to look at an indigenous, as in country, Australian supply chain for some vaccines and therapeutics that currently we rely on purely through importing. That has a direct application not only for our soldiers who might be in tropical environments or facing either bio-warfare threats or just tropical disease threats but also if we can establish and prove that Australian manufacturing capability for some of those products, that obviously has got downstream benefits for commercial and civilian use in northern Australia and elsewhere. That is one that is particularly interesting to us at the moment. We have got out at the moment a call for expressions of interest for the second phase of that program.

**The CHAIR:** What does the second phase mean?

**Mr BAXTER:** That is just a second round of projects that we are doing. We have four projects underway at the moment and we have just put out a call for a few more. The other opportunity that we talk about in our submission that we have already had some conversations with Defence NSW about, because we think that the defence strategy that was released is a really sensible framework that these things could be pursued under, is some of our industry capability development initiatives. Welding was one that was undertaken previously and has been rolled out. I think you visited the Illawarra and saw at least some of the applications of that.

**The CHAIR:** We did and we were mightily impressed.

**Mr BAXTER:** That is very good to hear. We have already done those kinds of programs in areas like welding and computer numerical controlled [CNC] machining, so it is essentially robotics. Given the Federal Government's commitment to a sovereign shipbuilding program in Australia and given what Thales has done up in Newcastle, and other announcements that have been made, we see some real scope to do more of those kinds of programs in areas like corrosion management or composite materials, additive manufacturing and things like that.

Those are programs that really target both the capacity and the capabilities of industry and it really looks at companies which might not have ever conceived of themselves as being a defence company. They might be in the mining industry or the gas industry and we say, "Well, welding in a defence environment is very different but there is no reason why you couldn't use this program to benchmark your skills, see what additional accreditation might be required and see how far down the path you might already be to achieving that accreditation." We see that as a really important step in helping small and medium enterprises [SMEs] particularly achieve what we would call colloquially a level of defence readiness—I do not think anyone has ever formally defined that term—

**The Hon. PAUL GREEN:** We know shovel ready but not defence readiness.

**Mr BAXTER:** —to get companies to a place where they understand the kinds of requirements that defence and the prime contractors will have, to see the delta perhaps that exists at the moment between what they currently do and where that requirement is and to put them on a growth path to achieving that. That might mean an investment, a pretty moderate investment in a lot of cases, in new equipment; even just going through the process of getting accreditation is not something that comes for free. That is a time and a process that has to work through and we see that State governments already support this program but could do more to roll it out in some of those other priority areas that I have flagged here.

**The Hon. PAUL GREEN:** That is very good—upskilling; great.

**The CHAIR:** The accreditation issue seems to be quite a big one for a small to medium enterprise, particularly in this defence space?

**Mr BAXTER:** It really is, and if I can reflect back on a previous example that we had, although the company I am thinking of was not in New South Wales. There is a real tension between needing the accreditation to win the work but also needing the work to fund the accreditation so there is a real vortex that some companies find themselves in. We found that through projects like ours, through our industry capability development program, where we can work with some of the primes to perhaps even provide actual examples, actual bits of the candidate type of steel that is involved, for example, and say to an SME, "Here. Go and have a go at welding that type of steel and see if you can hit this kind of benchmark" and if they can do that, if they can prove that, they can go and get accredited without having to have won any work, without having to have invested a significant amount in that upfront. We see that as a really important step for particularly the "S" part of the SME chain, the very small companies, to really determine whether the defence industry is for them and, if it is, what they need to do to progress and to build their capabilities.

**The CHAIR:** As to multispectral sensors, is that something like the stuff that Thales is doing?

**Mr BAXTER:** No, that is in a different kind of application. Thales is talking about sensors in the submarine context. What we are talking about in our sensor program is information sensors that can be flown around on CubeSats or deployed on unmanned systems. Our sensor program is dealing with the Army and the Navy particularly. Their requirements for pulling information off sensors involve low-altitude spaces on tiny satellites to see what is ahead, the topography of a bit of ground, or something like that. The unmanned system or CubeSat might be a commercial, off-the-shelf thing, but the sensor and the information on it is critical; that is the valuable bit to Defence and that is what we need to work on to find a better way to get that information.

**The CHAIR:** I am trying to understand how you work. In that case, did Defence identify that need and ask for help, did you identify it, or did an academic working in a dark room come up with it?

**Mr BAXTER:** That is a very good question. There is a diagram attached to our submission. It says that we will not do any work without there being an articulated Defence need. There are three parts to what we consider to be a viable project. One is an acknowledgment by our defence customer that this is something in which they are very interested. Often we have defence people in our stakeholder groups and on our decision-making bodies to determine what projects will go forward to ensure that happens.

The other thing we need is an Australian industry footprint so there is some kind of pathway to see it come to fruition. You will never see a Defence Materials Technology Centre [DMTC] project involved in the production of heavy aircraft because that is not something Australian industry is either capable of or interested in doing, and it is not something Defence has said it requires. The third part of that is the research expertise that must underpin taking those ideas from very basic research—which we call TRL 1 or 2 levels—through to being ready to commercialise and for an industry partner to adopt. That is at the TRL 7, 8, or 9 level.

**The Hon. NATASHA MACLAREN-JONES:** Can we get a copy of that diagram?

**Mr BAXTER:** Of course.

**The CHAIR:** Compare that to the other example you used, which was the work you are doing on manufacturing and sustainment technologies for the F35 Joint Strike Fighter [JSF]. That is something initiated by Defence and through you it is going to the first phase, which is research and capacity development. From there it goes to Australian industry.

**Mr BAXTER:** That is a really good case study and a good example of how our projects work. We had some preliminary discussions over a long time with the air vice-marshal leading the Australian JSF program and the Defence Science and Technology Group, which advises him on the scientific elements of the program. The air vice-marshal wrote a letter of support to Australian industry saying that Defence was looking to collaborate through DMTC on a range of industry capabilities that will be beneficial to the JSF program in the longer term—that is, not only looking at today but also forecasting, particularly in regard to the sustainment requirements that will need to be met in Australia.

We then put out a call to industry and the research sector for expressions of interest. Minister Pyne released that on our behalf at the end of March this year. It essentially said to the industry and research sectors that we were looking to collect some ideas that we wanted to turn into viable projects. We said that we wanted to develop some partnerships between the industry and research sectors to take back to Defence to present a program of work and to ask what it thought. We have been going through that process since March. We have roughly 40 or 50 expressions of interest. Some were already teams; that is, industry and research partners who got together effectively to form a consortium. Others were just a research partner or an industry partner on their own saying they had an idea but that they needed help from the DMTC.

We then looked at those 50 expressions of interest and noted that some formed a sensible group with some kind of capability, and that some were from left field and were unlikely to be considered by Defence given our understanding of its requirements. We could then take back to Defence a comprehensive proposal on behalf of all of those industry and research partners. It could be a portfolio of projects that we wanted to take on over the next three to five years. As I said, the benefit of that for the defence customer is that it involves developing technologies in a precompetitive environment. The other benefit for defence customers is that because of our co-investment model, they contribute roughly 40¢ in the dollar; that is, they would contribute one-third or two-fifths of the funding required to get a program of work that would leverage up to a much bigger value over that time frame. That proposal is now being considered by Defence. We are waiting to hear whether it will give the go-ahead for the entire program or only some of it.

**The CHAIR:** It is a good model. The Committee has heard about the lack of communication and the difficulty in getting an idea about what is required, how to go about it, and how to get collaboration between researchers, and SMEs in particular. That clarifies it for the Committee.

**The Hon. MICK VEITCH:** Your submission refers to vacation programs involving masters and PhD students. The Committee heard today about STEM and year 11 and 12 students in New South Wales. Do you do any work with them?

**Mr BAXTER:** Our program as it currently stands starts when they go to university.

**The CHAIR:** Your evidence has been very valuable. It is good to know that that gateway has now been provided. You are doing good work and I encourage you to keep it up.

**Mr BAXTER:** Thank you.

**(The witness withdrew)**

**(The Committee adjourned at 15:58)**