



COMMONWEALTH OF AUSTRALIA

# Official Committee Hansard

## SENATE

FOREIGN AFFAIRS, DEFENCE AND TRADE REFERENCES  
COMMITTEE

**Procurement procedures for Defence capital projects**

FRIDAY, 12 AUGUST 2011

CANBERRA

BY AUTHORITY OF THE SENATE

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**SENATE**  
**FOREIGN AFFAIRS, DEFENCE AND TRADE REFERENCES COMMITTEE**  
**Friday, 12 August 2011**

**Senators in attendance:** Senators Bishop, Eggleston, Fawcett, Kroger, Ludlam and Stephens.

**Terms of reference for the inquiry:**

To inquire into and report on:

Procurement procedures for items identified in the Defence White Paper, *Defending Australia in the Asia Pacific Century: Force 2030* and in particular:

- a. assess the procurement procedures utilised for major defence capital projects currently underway or foreshadowed in the Defence White Paper, including the operations of the Capability Development Group and its relevant subcommittees;
- b. assess the timeline proposed for defence modernisation and procurement outlined in the Defence White Paper;
- c. assess proposals arising from the Defence accountability reviews, including, the Mortimer Review, the Pappas Review and the McKinsey Report (2010), in regards to enhancing accountability and disclosure for defence procurement;
- d. make recommendations for enhancing the availability of public information and parliamentary oversight and scrutiny of defence procurement in the context of guaranteed 3 per cent real growth in the Defence budget until 2017-18; and
- e. assess the effectiveness of the Defence Materiel Organisation including:
  - i. its role and functions,
  - ii. its processes, management structure and staffing, in particular as compared to similar organisations in the United Kingdom, the United States of America, Canada and other comparable jurisdictions and large Australian commercial enterprises,
  - iii. its full costs, assessed against the timeliness and quality of its output and the service it provides to the Australian Defence Force, and
  - iv. the extent to which it value-adds to national defence and to the long-term viability of Australian defence industries.

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**THOMSON, Dr Mark John, Private capacity**

**DAVIES, Dr Andrew John, Private capacity**

**Committee met at 09:05**

**CHAIR:** I declare open this public hearing of the Senate Foreign Affairs, Defence and Trade References Committee. Today the committee will continue to hear evidence on its inquiry into procurement procedures for defence capital projects. I welcome you all here today, and I welcome in particular our witnesses. This is a public hearing and a *Hansard* transcript of the proceedings is being made.

Before the committee starts taking evidence, I remind all witnesses in that in giving evidence to the committee they are protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee and such action may be treated by the Senate as a contempt. It is also a contempt to give false or misleading evidence to a committee.

The committee prefers all evidence to be given in public but under the Senate's resolutions witnesses have the right to request to be heard in private session. It is important that witnesses give the committee notice if they intend to ask to give evidence in camera. It is important for witnesses to understand that even though the committee may decide to hear evidence in camera, the Senate has a discretionary right to publish such evidence if it feels it is in the public interest to do so. That rarely, if ever, occurs. If a witness objects to answering a question the witness should state the ground upon which the objection is taken and the committee will determine whether it will insist on an answer, having regard to the ground which is claimed. If the committee determines to insist on an answer a witness may request that the answer be given in camera, and such a request may of course also be made at any other time.

The committee is hearing evidence today in relation to its inquiry into the procurement procedures for items identified in the defence white paper *Defending Australia in the Asia-Pacific century: force 2030*. I draw attention to the five terms of reference which call on the committee to, amongst other matters, assess procurement procedures utilised for major defence capital projects currently underway or foreshadowed in the defence white paper.

Finally, on behalf of the committee I thank all those who have made submissions and sent representatives here today for their cooperation in this inquiry.

I welcome Dr Mark Thomson and Dr Andrew Davies. The committee has received your submission, No. 8. Do you have any amendments to make to your submission?

**Dr Thompson:** I have two publications that I have produced since the time of that submission that are relevant to the inquiry; whether they want to be taken as formal submissions or simply made available to members I will leave up to you.

**CHAIR:** If you wish you can table the documents and then they will be a part of the committee's record.

**Dr Thompson:** I would like to table them.

**CHAIR:** Dr Thompson would like to table two documents. I think everybody is happy with that. Would you like to make an opening statement?

**Dr Davies:** Thank you for the opportunity to appear this morning. As you just noted, Dr Thomson and I have provided a submission to the inquiry and we have both written extensively on the subject matter of the inquiry. All of those thoughts are on the public record, so I intend to keep these introductory remarks short and look forward to any questions that might follow. To avoid repetition Dr Thomson and I have agreed that I will say a few words about the preapproval part of the acquisition process and he will discuss the post-approval part. We are here in our personal capacities, and the Australian Strategic Policy Institute does not have an official view on this or any other matter.

It seems to me that many of the problems we see in the acquisition process are traceable to the very early stages of projects, from the initial concept development through to the first pass approval. For reasons I will expand upon shortly, too often the government is presented with a range of options that are narrower than should be the case, are overprescribed in terms of performance, or both. In many cases the root cause is an overreliance on a top-down approach to capability development. I will have to simplify for the sake of brevity, but the process can be characterised by a series of steps starting with broad brush government strategic guidance as articulated in defence white papers. From that, one or more military strategies are derived, which often include a set of indicative planning scenarios which are in turn used to identify the required equipment.

That sounds entirely reasonable, and indeed it would be if all the equipment so identified was readily available and affordable, and if the scenarios themselves actually made good sense, but that is not always the case. Sometimes the process produces some very odd results and some very expensive options or high risks from a project delivery point of view—solutions that do not seem to offer much in the way of actual value to government in terms of military options. Let me give one example: the land-attack cruise missiles to be fitted to our future warships and submarines which emerged in the 2009 white paper. The United States has fired hundreds of these weapons, far more than the Australian Defence Force will ever be able to muster, during various campaigns. The effect has been operationally useful but hardly decisive, even against weak powers. Our scaled down capability will have even less impact. Nonetheless, the capability is now prescribed for our future submarine even before we know what the impact on project cost and risk will be. The future submarine is probably the best example of the top-down process driving us down a particular path. We seem to be moving towards designing and constructing what I describe with tongue only slightly in cheek as a conventionally powered nuclear submarine, with all the cost and risk that will inevitably ensue from that. Maybe that is the right solution for Australia, but I think it is far too early to rule out other possible solutions.

If one thing is clear from the work of Mr Rizzo and the recent ANAO report, it is that defence has a limited ability to take on major engineering work and as a result we must choose the projects on which defence expends that limited resource very carefully. That will sometimes require taking a bottom-up view—rather than regarding high-level requirements as being almost carved in stone, the right approach is an iterative process that matches aspiration and market realities. And there needs to be contestability at every step of that process so that ultimately government is presented with a range of options with different mixes of cost, risk and capability to choose from.

**Dr Thomson:** Just to give a bit of context, it has been more than a decade since I worked in the Department of Defence, but I have been an active observer of Defence from the outside, and the things I have to say today really come from being an outside observer of Defence. I should say, having spent the last few days going through the Rizzo report and the Black report on Defence, I continue to learn things I did not know. Defence is a very complex beast indeed.

You would have received the submission that Andrew and I prepared for the committee which dealt with the first set of terms of reference. With regard to that, one of the documents I tabled, the 2011-12 ASPI Defence budget report, deals in great detail with the realism and affordability of the present Defence Capability Plan and, I think, is directly pertinent to the terms of reference. I am happy to answer questions with regard to the planning aspects if you would like to pursue that.

The second document I have tabled, *Serving Australia: control and administration of the Department of Defence*, looks not just at the Defence Materiel Organisation but at the entire defence enterprise, of which the Defence Materiel Organisation is a part, and I believe parts of this are pertinent to the committee's present inquiry. Moreover, with the expanded terms of reference which have now been given to the committee, which look at the Defence Materiel Organisation in general, beyond simply its remit for procurement, I believe the issues that are canvassed here are directly relevant.

What I would like to do now by way of an opening statement is to say something about the recent tranche of reforms to procurement and to defence overall that have occurred. With your indulgence, I will not draw a clear distinction between the two because I do not think that we can sensibly talk about DMO in isolation; it needs to be seen as part of the organisation which it is set up to serve and in relation to the way in which that organisation itself is going to be administered.

Over the last 12 months or so we have seen a number of incremental changes to the way in which defence procurement will proceed in Defence, with the introduction of gate reviews, early warning indicators and a project performance office. We have seen a renewed emphasis on implementing the recommendations of the Mortimer review. By and large, I think the sorts of changes we have seen on these fronts are moving in a positive direction and will result in incremental improvements to DMO performance. In particular, I believe the recently announced changes to the way in which capability development will be conducted within Defence and the new organisational arrangements that have been put in place for doing so, under a dedicated capability undersecretary and with explicit contestability of the ideas that are put forward, are a positive development which in the long run will lead to better outcomes.

I would like now to say something specifically about the Rizzo report and the reforms that came from that and, second, the Black report and the initiatives that have been put in place to improve accountability in Defence. Reading the Rizzo report, I learnt a lot. The Rizzo report identifies glaring failures at multiple levels within the organisation in the context of one particular activity; that being the sustainment of the amphibious fleet. The recommendations that come out of the Rizzo report are, by and large, unchallengeable because they are broad and

butter stuff for any organisation. If Navy is going to operate complex vessels, it needs to have engineers that can advise it about how to operate complex vessels. If Navy is going to have a workforce that can do the job at all levels with regard to technical engineering, it needs to do some workforce planning. So we have a series of recommendations which are just common sense. The thing to reflect upon is why, 13 years after the defence reform program created the structure we have at the moment, these bread and butter issues were so glaringly not fulfilled and we now have to come to the point of remediating them. As far as the recommendations go, they all make good sense, but they stop short of changing the basic structure which Defence and DMO operate under. That is a structure by which shared service provision dominates the control of inputs that are necessary for the service chiefs to deliver their outputs. This arrangement was put in place 13 years ago. The Rizzo report leaves it the way it is.

The Black report on accountability has a much larger remit. I commend it as an exercise. It seems to have been exhaustive and systematic. It employed a range of different methodologies to understand how decisions in Defence were made, how individuals were held to account, how corporate planning was or was not conducted in Defence. Once again—perhaps not as alarmingly as in the case of the Rizzo report—it points to area after area where basic corporate housekeeping has not been executed, where central planning has produced lots of volumes of paper but has failed to deliver clear goals for people in the organisation to fulfil. Goals have been pencilled in, but they have not been measured, they have not been part of a performance regime, and they have not been linked to the allocation of resources.

It shows that the budgeting system is broken down. It shows that performance management at the organisational and individual level is broken down. It shows that decision making is far less than what it needs to be, and that corporate planning in an organisation spending \$25 billion a year is all but absent. The recommendations it makes—much in the same line as the Rizzo report—are good as far as they go. They talk about putting in place those basic corporate housekeeping measures that should improve the performance of the organisation.

What it does not do, once again, is challenge the underlying business model that Defence and DMO operate under. There is a possibility here that adjustments will be made to that. There is a shared services review under way within Defence. Having read the press releases and the two reports, I cannot predict the future but I do not see a lot of appetite for fundamental change. So I suspect we will retain the model we have at the moment. I will say something about that at the end.

I make some points about the specifics that came out of the Rizzo report. There has been a lot of commentary about the appointment of a couple of associate secretaries. In reality, the associate secretaries are not an additional layer of management. What appears to have happened is—over the last decade or so—that deputy secretaries in Defence have grown in number to the point where they have become unwieldy. So a couple of associate secretaries have been appointed to collect up a bunch of those deputy secretaries, make them subordinate, and reduce the number of people at the head table. At the end of the day, this is hardly a dramatic move. The alternative would have been to push some of those deputy secretary positions down one level and just have a couple of dep secs running, as they did a decade ago, all of those things.

The Rizzo report does not put in place a headquarters. That is the great irony of the Department of Defence: there is no designated headquarters; it is a federation—a federation made up of the services and an increasing number of organisations which provide services to the services. The governance arrangements within Defence are built around consulting all of these stakeholder groups to inform decisions by the secretary and CDF. That does not change. In serving Australia I make the argument for change in that regard.

The Black report places a great emphasis on personal accountability. It is hard to argue with the emphasis it places on it time and time again through the document. It talks about providing rewards and it talks about providing sanctions. But when you go to the specific parts that talk about the rewards and sanctions, you realise just how difficult this will be. In the case of rewards, it suggests against providing financial rewards. That might be the right point, but what it suggests instead is that people can be given training and development opportunities or promotion opportunities as part of rewards. I would suggest that training and development is what people should be given to do their job, not as a reward. It has always been the case that people are rewarded by promotion or absence of promotion.

In the case of sanctions, I think it is fair to say that the arrangements under which the Public Service operates make it very difficult to provide the sorts of timely sanctions that occur in the private sector. So on both the reward side and the sanction side, I think that without more radical change in the Public Service Act, for example, it is not going to be possible to execute the personal accountability to the extent that it is outlined.

There are three things that I think are excellent within the changes that have been made. One is the move to reduce the number of committees and streamline decision making in the organisation—I absolutely support that. It is a suggestion of bureaucratic genius to put a sunset clause on every committee in Defence unless they have got an approved business case from the secretary and the CDF so that in 12 months time, unless a committee has been ticked off as being essential, it will cease to exist. It is a great idea.

The report outlines a very detailed approach, indeed a recipe, for introducing corporate planning to Defence. One might ask why \$25 billion of taxpayers' money was being spent in the absence of a robust corporate plan in the past, but nonetheless, as far as it goes, it is a positive step forward. As I have said already, contestability and capability development I think is a laudable goal.

So what is missing? I would suggest it is that there is still an adherence to a central planning approach in Defence: the notion that, at the top of the organisation on Russell Hill, the music of the spheres will be orchestrated by the senior leaders to allocate inputs to various parts of the organisation to flow resources horizontally to the organisation, to the services, and somehow provide effective and efficient delivery of capability. That is true in the maintenance of materiel, in the sustainment of Defence bases and in capability development—the long process of the capability lifecycle from conception all the way through to delivery.

I think the final opportunity to improve things is to move to a model where much greater control of resources is put into the hands of the service chiefs. So the service chiefs then can realistically be held to account for the delivery of capability because they will have real control of the resources necessary to deliver what they are being asked to deliver. At the moment what we have in these two reports and the reforms that have come from them are very sensible steps to be taken to improve the present model, but I think the present model is at the heart of the problem. I will leave it there, thank you.

**CHAIR:** Thank you very much, Dr Thomson.

**Senator KROGER:** Picking up on the issue of accountability, ultimately who is accountable? If we have a federation, not a headquarters, and service chiefs centrally from where resources are applied—presumably to ensure they have reasons for their existence and to develop their own policies and so on over a 12-month period, who is ultimately accountable here?

**Dr Thomson:** Ultimately, the minister and the government are accountable for the performance of the Department of Defence. Within the organisation, where I am sure your question was directed, the way in which things occur at the moment—and I would argue way in which they would occur to an extent under the improved accountability arrangements—the ultimate accountability, the first place that things would come together where you would find a person or persons responsible for ensuring that adequate resources are devoted to all of the individual parts of the organisation in order to deliver the capability the government wants, is at the level of the secretary and the Chief of Defence Force. They are the ones who make decisions on, for example, providing sustainment resources to DMO, providing money for facilities to Defence Support Group and providing funding for the Chief Defence Scientist so that each of those groups can provide inputs to, for example, Chief of Navy in order to keep the submarines running.

Decisions are made literally in the same manner as central planning in the former Soviet Union. Decisions are made at a very high level about the allocation of resources in order to provide the inputs of production to the people who are producing—ultimately the service chiefs. Because the decisions about allocation of resources are made at this very high level, they are ultimately the only people who can be held to account. The reason is that there are lots of things in Defence where it is plausible that economies of scale can be achieved and savings can be delivered by aggregating activities. For example, one area where I think it is a no-brainer is information technology. If you had each of the groups in Defence pursuing their own information technology regimes you would be duplicating the governance and technical regulation of IT. You could impose a technical regulatory regime over IT and have people do it individually, but I think best practice is to have a corporate-wide IT delivery function. That is one area where the shared services model makes sense.

In other areas, like the maintenance of a base, at the moment the Defence Support Group takes care of the maintenance of the base. So there will be someone on the base who deals with the base commander and tries to serve their needs. But at the end of the day the base commander does not get to make calls about whether money is spent to remediate the mess, remediate the gym or provide something else within the inputs to the maintenance and conduct of the activities on that base. A higher level of output might give a better outcome. My argument is that we need to, where there are not compelling arguments for economies of scale or for leveraging a concentration of technical expertise, give it back to the services and let them get on with the job.



One of the points that does get made in the Black report is that when it comes to those things which are exclusively within the chain of command, the conduct of operations for example, military know what they are doing. There has long been an urban myth that you cannot trust the military with money, that you need to have civilians oversighting them to make sure they are doing the right thing. I think civilian oversight is important but we trust these people with the lives of young Australians on military operations and they do an exemplary job of managing the risks and delivering the operational outcomes the government asks of them. I think we could also trust them to make decisions about whether we spend money on putting new tiles in the mess, or something else on a base, and we could claw a lot of the control of resources back to the services.

**Senator KROGER:** Surely that is a very real problem if you do not have accountability throughout that chain of command. I will use an example. A place that I visited was one of the suppliers for military clothing and to determine who was accountable for whether or not that supplier ended up with a contract again just seemed to be an extremely convoluted way to resolve what was, I think, a contract worth \$1 million. It was incredibly convoluted and it seemed to have cost that amount of money in making a decision because there seemed to be no-one who was making that final decision. No-one was accountable for the decision that was made, so they were passing the decision on. It is not just the large hardware that we are talking about here. I am also concerned about maintenance at the bases for relatively small things.

**Dr Thomson:** I agree. I think part of it is that we have created large bureaucracies in order to try and deliver small things, whereas they could much more efficiently and effectively be delivered through local control. I should temper my comments about both Rizzo and Black in terms of the shortcomings I identified. I think Defence is full of very hard-working people who are dedicated to delivering good outcomes to the people in the services, whether they are in the service or are public servants helping them, and delivering good outcomes to the government and the country overall. But they are hampered by a profoundly dysfunctional system that disaggregates control of resources from responsibility for delivering things. I think there is a great deal of frustration because of that.

**Dr Davies:** When the Minister for Defence announced the Rizzo inquiry, he released publicly the advice that he had received from the secretary and the CDF the reasons for the failure of the amphibious fleet. You could be forgiven, after reading that advice, for concluding that it was nobody's fault, that it was in fact just an emergent property of the system and everyone was trying really hard, but a major national capability had fallen over. When you read the Rizzo report you find that there are systemic problems all the way through the system and, so, to a very large extent it was everybody's fault and it was nobody's fault.

**Senator FAWCETT:** It is worth placing on the record though that, going right back to 1993, there is actually a Parliamentary Library paper that records Defence's perspective on the very start of that process. They actually highlighted back then that if this whole disaggregation and outsourcing and dumbing down occurred, then Defence would lose technical capability to the point where they would not be able to deploy ADF units in the future. I think that rather than point the finger of blame at Defence, government needs to take a good look at itself and ask: have the systems we have put on them caused this dysfunction rather than Defence themselves.

**Dr Davies:** Yes, that is certainly true. The amount of technical expertise within the services has declined since that 1993 decision. But I think it is fair to observe that Air Force has done a much better job at managing that process than, for example, Navy has. It has been, at the very least, uneven.

**Senator KROGER:** Dr Davies, you raised in your opening remarks—and I think these were your words—aspiration versus market reality. I think you were suggesting that in many areas perhaps Defence did not have the industry expertise or business expertise to function in certain areas and that we needed to bring that in. Is that what you were saying?

**Dr Davies:** Yes, that is right—and engineering expertise. Just going back to that comparison of Air Force and Navy I referred to, essentially all of the construction and design work of Air Force's equipment is outsourced. We buy equipment largely off the shelf. We do some local modifications, but they are relatively minor, whereas with Navy we do a lot of shipbuilding here. Even an apparently off-the-shelf design like the air warfare destroyer has a significant amount of local design change and local engineering input. I think it has become very clear that there is a very small pool of talent within the Department of Defence that can manage projects of that sort. What I was leading to was the observation that if we decide that we need to do developmental and engineering work, we have to be very selective about that so that the talent pool is not spread over too wide a set of projects. We identify those things that we absolutely have to do ourselves, and we focus our best talent on that. But what we tend to do is just spread it over a whole bunch of both project development and sustainment activities, and the results speak for themselves.

**Senator KROGER:** From your statement then, in terms of taking in all the various necessary factors in considering projects, we do not factor in the need to ensure that we are keeping building up our own skills base, which might be a separate costing into a particular project. Are you saying that we do not do that as a primary consideration?

**Dr Davies:** I think it is uneven. As I said, I think Air Force have actually done a very good job of dealing with the brave new world of post the 1990s reforms. I think Navy have suffered from the downsizing of their engineering capacity while the decisions have been made to keep those major engineering enterprises here in Australia. So I think there has been a tension between the large-scale policy decisions that have been made and the implementation within the department. Having said that, I think Navy have not done as good a job as they might have of managing their engineering staff. A recognition of that is that one of the things that has come out of the Rizzo report is that Navy have stood up a new two-star position to manage the engineering trade within Navy. So I think there is a recognition that while external factors have played a large part, so have internal management factors.

**Senator KROGER:** Finally, with a relatively small defence force, there could be a problem in the timing of, for instance, building a ship here—one in a decade or something—and the skills that might be required to support that do not necessarily carry over for the next time that happens in Australia. Would that be a problem with a relatively small defence force?

**Dr Davies:** Yes, I think you are right. I think we actually have the worst of both worlds. We have a limited number of resources to throw at a problem and we have a very uneven workflow. So there is a surge while we build one class of ships, and then a hiatus, and then a lot of those skills need to be relearned. We have just seen that play out in the air warfare destroyer project. The BAE shipyards did a fine job building the Anzac frigates. Fast forward 10 years and all sorts of problems emerge when they start to construct the first modules for the air warfare destroyers. A more even workload makes it much more manageable to keep that skills base in place.

**Dr Thomson:** And this is true within the department and within industry overall. With the new submarine project at the moment, there is no-one left in the department who remembers how they did it last time. The scale of Australia's defence effort and the chunky nature of a lot of those big acquisitions present a challenge for both Defence and industry in maintaining skills and continuity.

**Senator KROGER:** So do you think that would have been an effect on the decision with the subs? That we do not have the skill set to be able to do this anymore so we should be looking at offshore solutions?

**Dr Thomson:** Andrew will have to lots to say about the submarines, but I will make the following point. Although the white paper is very prescriptive about the nature of the next submarine, and it is very ambitious—as Andrew put it, the world's largest conventional nuclear submarine—my understanding is that there is under active consideration a range of options. They range from off-the-shelf production, invariably in Australia, of German submarines, for example, all the way through to a bespoke design that would be pursued. There are costs and benefits. The higher aspiration submarine would perform different strategic roles, and ultimately the government will have to make a judgment about how bold and ambitious their strategic aspirations are for Australia's underwater reach. In making that judgment, they will have to be cognisant of the very substantial costs and risks that go along with that more ambitious program compared with the lesser costs and lesser risks of an off-the-shelf option, but one that would have less strategic weight attached to it that Australia would be able to exert in the years ahead. All of these things and the costs and benefits all need to be considered together. It is going to be the hardest decision that a government is going to make in the defence sector, I would suggest, in the next decade.

**Senator MARK BISHOP:** At the outset, may I congratulate both of you, Dr Davies and Dr Thomson, for your persistence in analysing the strengths and weaknesses of defence procurement over the years. You often probably think you are a lone voice in the wilderness, but the constant consideration you give to these issues in your publications and forums like this is much appreciated, by those of us who both read your reports and listen to your commentary and by the powers that be who also pay attention to your remarks. So thank you very much for that work.

There have been a whole host of reports now over the last 18 months—the work you, Black and Rizzo have done, the constancy of work of ANAO, discussions outside the Parliament and in forums such as this. And it seems to me they can now be reduced to a set of propositions. Firstly, that the three services in varying degrees have lost a large degree of intellectual horsepower and skill with respect to capability needs. Secondly, as indicated by Black, the CDG, as a representative of the three services, also lacks the level of skills needed to carry out its job. Thirdly, the DMO is also struggling. I think it is attempting to improve its skill base, but it has become the meat in the sandwich between the military and the services and CDG and industry, as both the agent of the military and Defence. The design of that hierarchy of responsibility and accountability seems fine on paper, but it

breaks down constantly through poor administration, lack of discipline and inadequate flow of information at all levels. Industry seems to struggle with its role, and we heard representatives from four or five different organisations yesterday raising issues about skills development, skills retention, lumpiness of work and inadequacy of contract definition but without really coming forward with any serious suggestions or solutions.

I want to ask you the following four questions for your comment. The government has put out now its plans for changes—the new horizontal hierarchy, the associate secretaries you spoke of, a revamp of CDG, and with DMO left over there on its own for the time being. Does the new model that will go forward now for the foreseeable future address the heart of your concerns—that is, the effective reinstatement of the old force development structure? Secondly, is it implicit in your submission to us that the military management of the CDG, and hence now a swing the other way to civilian control, was too compromised by its service origins and power structures? Thirdly, if the Black report, the Rizzo report and the ongoing overview by the minister's office do address some of the identified CDG shortcomings, what is to be done with the elephant in the corner over there, the DMO—if anything?

Finally, are the indicators of incremental reform that both Dr Davies and Dr Thomson outlined deliberately in your opening remarks going to be sufficient to prevent continued poor analysis, poor decision making, that we have been subject to on more than one occasion in more recent years? If the pair of you could go through those either individually or jointly, because they seem to me to be part of the problem.

**Dr Thomson:** They are good questions.

**Dr Davies:** Thank you, I will have a go at the first two questions, although I am sure Dr Thomson will have something to add.

**Senator MARK BISHOP:** All right.

**Dr Davies:** Does the new model address the heart of our concerns? The new model goes some way towards addressing the concerns that we expressed in our submission and that we have written about more broadly. But the test is the results that it produces, and what is really required is a reduction in the amount of diffusion of responsibility and decision making. Decisions need to be crisp, they need to be clear and they need to be well informed. I think what the reforms do will help the level of information and the quality of information that is going to decision makers, but it is hard to see how they will address the other problems, that there are basically too many people at the big table. There are too many viewpoints being represented at the table, and as a result decisions belong to everyone and they belong to no-one. I think that is a fundamental problem.

You asked if it was implicit in our submission that the military control of the CDG had compromised decision making. I think that is a little unfair on the people in CDG. That is not quite how I would characterise it. I think the people in CDG and the effective military control of the capability development process in those early stages have done a very good job of accurately reflecting the values, the ethos and the military strategies of the services. I think the professional military judgment has been very well captured and reflected in the process. What I would say is that it has been untempered by the other considerations you need even to be doing broad-brush sketches of what a military capability could look like, and that is project management experience, market knowledge and deep technical understanding of the level of maturity of technologies that are being prescribed in the capability proposals that come forward. I think you need both of those things.

I think if what we see is civilian control of the process, we will have an equally unhappy outcome. What we actually need is a careful blending of military experience and civilian perspectives, project management experience, market knowledge, technical expertise. You need the top-down and the bottom-up approaches to actually work together in an iterative fashion. The strategic guidance says we should be able to achieve this objective, but there is actually no technology on the world market that lets us do that. What is the next step down the process? Or alternatively, what are the risks in trying to develop that technology to meet that requirement? That is a dialogue that has to happen, so that ultimately when proposals go to government it is not, 'The department has thought about this and here is the one true vision.' Rather it is: 'There are a range of options here. To meet the highest-end requirement will require a development project and we estimate the risks to be as follows.' And then a step down to perhaps at the bottom, 'Here is an off-the-shelf piece of equipment that meets 80 per cent of the requirement, but could be delivered on time and on budget with a high degree of reliability.' They are the decisions that government actually has to make, and I think what the CDG process has failed to do is to provide the full range of perspectives required to make that decision properly.

**Dr. Thomson:** Through efficient division of labour, the final two questions fall to me. You are of course right, Senator, the elephant in the room is what to do with DMO. There are three models that have been put forward by the Kinnaird and Mortimer reviews and by various commentators. The first is to reabsorb DMO back into

Defence—just put a dep sec in charge and tell them to get on with it. The second is to leave them as a prescribed agency, which I would describe as being half an arm's length away from Defence, with some independence, with a line of reporting to a minister for defence materiel on specific materiel issues. And the third, and most radical suggestion, is an executive agency where they would be a full arm's length from Defence and would have a different reporting chain and operate on much more explicit commercial grounds. Let me talk about the merits of those three.

I think we can dismiss the executive agency option. It has some attraction, because it would allow DMO to fully embrace a corporate culture and *modus operandi*. Like the commercial sector, they could get the personnel they needed at the price they needed to pay from the market. My feeling is that that would have two adverse effects. Because DMO also does sustainment, it would aggravate the problems that Mr Rizzo identified. It would put Defence sustainment far too far away from the services, and it would also do so for procurement. If you went to an executive agency model, you would have to recreate an interface, a DMO on top of Defence, in order to manage the contracts. It just would not work.

So it comes down to either reabsorbing it into Defence or leaving it as a prescribed agency. My feeling on what we have seen over the last five years or so with the prescribed agency approach is that it has allowed the organisation to chart a somewhat different course in a range of areas. Some of the good things that DMO have done—like pursuing professionalisation of its workforce, requiring people to become members of professional organisations which their nominal skills correlate with—could have been done within the Public Service as well. I think it is fair to say—at least my expectations were—that the prescribed agency would see DMO chart a less public service approach to personnel management and to hiring of people from the private sector. I do not think we have seen nearly as much as a lot of people anticipated would occur. That is a disappointment. But I do not think that is a reason to push it back into Defence. I think we need to keep with the prescribed model approach, half an arm's lengths from Defence, and encourage DMO to get the skills it needs. We have got to have a symmetric situation where billions of taxpayers' dollars are at stake across the table when the negotiations are occurring. Private firms can hire in professional negotiators; they can compete with Macquarie Bank for people to sit across the table. The Commonwealth interests need to be represented at the same level. So I think we should stick with the prescribed model and push harder to improve the skills and the commercial, business and technical acumen of people in DMO.

The critical point, of course, is the appointment of the new CEO. That will be the indicator I will take. If the appointment of the new CEO of DMO is somebody from the private sector who has a reputation for driving organisations, driving change and producing results, I will be heartened. If the appointment is a deputy secretary from the department of whatever, who has done a fine job of implementing a particular program, then I will be disheartened. If there is an appointment from within DMO, I will have to see who it is, but there are probably people within DMO who could carry forward a positive and reform oriented agenda, and that would be okay. My preference would be to go out there and see what we can get from the private sector. So I think that leaving DMO as a prescribed agency was the right thing to do. The question is whether that can now be capitalised on to continue further good results. The next question is looking at it in total. Is this going to prevent poor decision making? I restate Andrew's point about—

**Senator MARK BISHOP:** I might just intervene. Every organisation makes mistakes.

**Dr Thomson:** Yes.

**Senator MARK BISHOP:** Human beings make wrong decisions. They make poor decisions—we all do that. It would be grossly unfair to single out the DMO or Defence for that. I do not mean 'poor' in that sense. I mean systemically incompetent decisions.

**Dr Thomson:** The sort of thing the Audit Office routinely uncovers.

**Senator MARK BISHOP:** Yes, that is what I am talking about, not just bad decisions.

**Dr Thomson:** I think you are quite right. Let me just riff off what you have just said. No matter how beautifully DMO and Defence are refined to be a top-shelf organisation performing like a Swiss watch, the fact is there will be times where off-the-shelf options are not available because of backward interoperability or because a specific requirement for a capability is not available in the market or simply because the sequencing of our demands are different to the sequencing of mature projects. We are going to be stuck with risky projects. Things will go wrong. There will be adverse outcomes in Defence projects.

I think what we need to learn to do is to discern between the sorts of things the Audit Office finds, where billions of dollars are being spent without an audit trail or where decisions appear to have been made without reference to extant policy within the department—a whole range of things like that. We want to try to extinguish

those sorts of things, but develop a mature attitude when things go wrong in inheriting risky projects and accept that that is part of the cost of maintaining the capability edge that the government wants the Defence Force to have, and I think most Australians want the Defence Force to have. I think that is going to be a difficult thing to manage—perceptions. Given everything we have, is this going to prevent what we might call unacceptably poor decision making?

As I said, all of the steps, as far as they go, are positive and will improve things. In some areas, returning control to the services would lead to better outcomes because it would clarify accountability and remove what is, at the end of the day, moral hazard. Moral hazards occur when somebody is doing something for someone else and they have different priorities and they do not bear the consequences. All of these interfaces in Defence, between the support groups and the services, introduce moral hazards where people can shrug their shoulders.

To answer your question, I think there will be some improvements. I think there are opportunities for still further improvements by returning more control to the services. Overall, even with the raft of reforms we have on the table now and the initiatives underway, it is worth remembering that we have been around this buoy a few times. We have had the Mortimer review, the Kinnaird review, the Defence Management Review, which Elizabeth Proust delivered, and the Defence planning guide. There is a bit of a groundhog day feel about some of this, where the problems get identified and there is a program to fix them. What it is going to depend on, as in the case of the appointment of the head of DMO, is how hard the government and the senior leadership of Defence together drive the reforms and keep their eye on what is going on. To that end I would encourage the parliament and the committees to do likewise, because I think the thing which does motivate governments and senior leaders is public scrutiny. External oversight is essential.

**Senator MARK BISHOP:** Thank you. I have one question arising from your comments. By way of introduction, 20 to 25 years ago the industry superannuation funds industry started to develop. At the outset it was quite partisan between union and employer in a whole range of the industry funds that were established. As the funds grew and turned into multi-multi-billion dollar organisations, professionalism became a way of work in those funds. And a lot of the funds, instead of having partisan people from an employer or a union background for the chair of their organisation chose to appoint essentially very senior, perhaps retired, personnel to be the leader of their fund in a management and industry sense. A similar situation occurred with Mr Lowy when he was appointed by the previous government to head up the soccer federation to try and revamp that. People who did not have a vested interest representing a firm or financial interests have been appointed to a range of organisations to revamp them, to make them modern, to drive them into the future. And by and large that has been successful.

You made some commentary on the CDG—and it is emerging as the sort of next test—to too many people at the head table. And the government in its wisdom has, in the process of revamping the CDG, appointed reps from Finance, Treasury and PM&C, so they are included in the loop. That is a very valuable development, notwithstanding the fact that there is a hidden jewel in the government's crown that is probably not paid sufficient respect—that is the ANAO with the expertise they have developed.

I constantly get lobbied or told that we need to have some wise man or woman who is not corrupted, who does not have commercial interests and who is not biased to perhaps show leadership at that level. Dr John White is often referenced as such a person. I have never met the man, I do not know him, but conversations with people like yourselves, industry reps and company reps say people like that are needed. Is there any value at all in the government searching for such a type of person who has no interest, financial or otherwise, in playing some sort of role at CDG level to get that ship properly sailing?

**Dr Davies:** I think the short answer is yes. A small but highly expert advisory group, or maybe even an individual, but probably two or three people with slightly different backgrounds would be a really useful addition in terms of contestability and of injecting expertise into the process. They would perform a role a little bit like some of the steps in the systems engineering process—things like critical design review it is called—but it would be at the conceptual level rather than at the engineering level. I think there is a lot to be said for that sort of model. There are some very talented people around. I think John White is one of those people. And if they do not have a dog in the fight, give them an advisory role to the Minister for Defence as well as to the capability development process. I think there is a lot to be said for that.

**Dr Thomson:** To add to that, I think it is realistic for Defence, over time, to develop the technical expertise to analyse risk and the differences in levels of capability. But I think one of the areas which is most difficult, in part because of the infrequency of big projects, is really getting a sound grip on the commercial and contractual complexities of some of these big projects. Bringing in honest brokers from outside to advise within Defence or to advise the government on those could only improve the extent to which the government was making well-informed decisions.

**Senator MARK BISHOP:** Thank you, gentlemen. I will now defer now to my colleagues. I do have some other issues but perhaps if there is time later I will come back to them.

**Senator LUDLAM:** Thank you for your submission. There are a couple of issues that I would like to pick up that you addressed in writing. The first one is a clarification. In part C of your submission, under accountability, you noted that there are two documents in preparation. Were those the ones that you tabled?

**Dr Thomson:** One of them I tabled, the other one I am meeting with my co-author this afternoon to discuss the final revision in response to editors' comments. It is a journal article.

**Senator LUDLAM:** So, not far away. The other one was the special report that you have just tabled for the committee.

**Dr Thomson:** Yes.

**Senator LUDLAM:** You use some pretty strong language in the introduction to that piece of work, which I have only just had time to skim. One of the things that you bring up on the third page is the issue of secrecy. We do not need anymore think tanks, we do not necessarily need a whole new analyst community, we just need reliable information coming out of Defence. What would be on your wish list that you do not have at the moment?

**Dr Thomson:** I am heartened to say that there is a report that at least makes a nod in that direction by talking about the corporate plan having clear performance targets and those targets being reported publicly through the annual report and I think it actually says to the parliament. Let me give you three examples of where I think greater disclosure would lead to better public and parliamentary scrutiny and thereby, over time, to better outcomes.

The first one would be the performance of the capital investment program in terms of the approval of projects. In the Defence budget brief which I tabled this morning, I went through and did some statistical analysis which took a little bit of ingenuity and a whole lot of data collection from diverse sources. What it shows—to cut a long story short—is that the plans that existed in May this year for approving projects first pass and second pass were clearly and manifestly unrealistic. They were beyond credibility. The rate at which projects have been approved since the introduction of the two-pass process has been very much smaller than what is an enormous bow wave of future approvals that are planned. And this matters. Industries are out there waiting for these approvals to occur so that they can get their cash flow going and ramp up the projects.

Given the plans as they existed in May this year—they may have been moderated and I do not have the information to test that—they were simply unworkable. I had to spend several weeks of analysis to come to that conclusion. I would think that if we are talking about spending billions of dollars of taxpayers' money, that sort of thing should be readily available, so that the taxpayer can see whether there is realistic planning occurring or not. That is one example.

The second example would be the submarines. There was a time when you could pick up the portfolio budget statements or the annual report and see what had been planned for the performance of the submarines for the year in terms of availability and see what was achieved. It is now a secret. Well, it is a secret until Ian McPhedran walks down to Osborn and counts the number of submarines up on the hardstand. These, I would argue, are issues of public concern.

The third example—which is probably not as good as the first two—is disclosure of outcomes with personnel in Defence. There was a great deal of legitimate public concern earlier this year about the way in which females were treated within the Defence Force and the way in which the Defence Force responded to that. I think greater disclosure of reporting of incidents and their outcomes is in the public interest. We would get more informed commentary and we would get better outcomes in the Defence Force as a result if that sort of thing were made public.

**Senator LUDLAM:** I took up an issue yesterday which you have not addressed directly in your submission apart from in point 2, where you said, 'Industry needs to be involved in the early stages of capability development.' You have provided fairly commonsense examples of why you think that is the case. I am interested to unpick the issue of divergence of interest about how far upstream do you want industry to go, because the answers that you will get, right at the outset of capability planning or drafting a white paper, will depend on what the contractor is trying to sell. They have an interest to sell equipment, to maintain their workforce, the skill sets and all the things that we have heard about. But I would have thought you would want to keep some of those considerations absolutely separate from setting Defence policy at the highest level. So where is the firewall between the security interests of the country and the business interests of the contractor? How do you separate those interests out where they diverge?

**Dr Thomson:** That is a very good question. Do you want to talk about platypuses?

**Dr Davies:** I will just make the observation that the sort of expert advisory panel, the model that we just discussed, is one way that you could get that industry expertise but you have people who do not actually have a dog in the fight.

**Senator LUDLAM:** From Senator Bishop's last question?

**Dr Davies:** Yes, that is right, yes. That is one way to do it.

**Senator LUDLAM:** So we do not have that at the moment?

**Dr Davies:** Another way to do it is to pay someone to gather the information from industry. So pay a third party, an industry consultancy firm, to gather that information rather than have the contractors who will subsequently be bidding into the process, directly involved.

**Senator LUDLAM:** And that is not a DMO responsibility? You would not—

**Dr Davies:** They do some of that, absolutely. But the way the CDG and the DMO have been operating, I think DMO's industry knowledge and ability to tap into that knowledge base has not been sufficiently integrated into the early days of project development.

**Dr Thomson:** Let me put my 10 cents worth in there. Industry does have a vested interest. It has a responsibility to its shareholders to get the best outcomes it can. But my expectation would be, by engaging industry at the early stages of a project, that they would be free to pitch their idea, and you would want them to do that. You would want to know what the options are, what the possibilities are. The way you counter that is you engage industry broadly, right across the board and find out what opportunities there are in a whole range of different areas so that, for example, in the last white paper, there was the multi-role patrol boat or offshore—

**Dr Davies:** I am not sure.

**Dr Thomson:** It is going to be a mine hunter and it is going to be a patrol boat and it is going to be—

**Senator MARK BISHOP:** And oceanographic.

**Dr Thomson:** It is going to be all things to all people. If you talk to people who actually build boats for a living, you might actually temper your aspirations and I think that is a good example of where—

**Senator LUDLAM:** That is the one you have used.

**Dr Thomson:** Yes, getting good information upfront would have tempered that sort of thing. But I think there is also a very important point. We discussed earlier the question of the punctuated nature of our acquisitions having a big effect on skills in Defence and in industry. I think it is very important to talk to industry very early on so that you do not find the situation where British Aerospace runs out of capacity to build modules, halfway through the initial build of their warfare destroyer project. There was no shortage of people in industry, if you wanted to listen to them, who were saying 10 years ago, 'Wait a minute. We have just finished Collins, we have just finished Anzac. You want us to sit on our hands for five years and then you want us to build this and then you want us to sit on our hands again.' There are cases where industry has a vested interest and they need to be kept at arm's length but so long as the government has a commitment to build ships in Australia—which we can have a debate about if you like—the fact is that there are a number of companies but there are only a finite number of shipyards, there are only a finite number of shipyards, and there are only a finite number of engineers. It is a national resource that needs to be factored into the plan and unless industry is involved at the early stages it cannot occur.

**Dr Davies:** I would like to make one comment that harkens back to some of the comments we made earlier. There is also the question of the Commonwealth being a smart buyer. One of the ways of filtering information from industry to filter out what is blatant rent seeking or industry pitching a capability that actually they do not have—making promises that in practice will not be kept—is having a level of expertise within the Commonwealth to be able to evaluate those promises, to look at what is realistic and to know from experience what can be done and what cannot. In my own project management experience within the Defence intelligence world, we were contracting for software. I actually happen to have a substantial team of software engineers working for me and there were times when industry would make a pitch and they would say: 'We can do this. It will take this many lines of code. It will take this long.' My guys would just shake their heads. 'No, that's not going to happen'. If Defence does not have the engineering capability to make that assessment then it is very hard to be a smart buyer.

**Senator LUDLAM:** The tension, it would seem to me, in the instance of the shipyards, is that we do not necessarily want Defence planners looking around to give these people something to do: 'Just build us a ship so that you keep the workforce stood up and you keep the skills base intact.' That is risky as well, isn't it?

**Dr Thomson:** Absolutely. The potential for the tail to wag the dog is enormous.

**Senator LUDLAM:** Let us talk about submarines, on the subject perhaps of the tail wagging the dog. You have made some broad-brush comments in this submission and in a few other places that it appears that the scheduling of Force 2030 looks to be in a bit of trouble. I think that is the backlog that you were referring to before. You said you would have some more thoughts subsequent to the May budget and that you would update us at that time. Do you have any additional observations apart from what you have already spoken of?

**Dr Thomson:** Not beyond what I have said today and documented in the submission I have given.

**Senator LUDLAM:** You have also noted that a new submarine project is a contemporary case. The previous example you noted was the air warfare destroyer, about broad capability as opposed to very specific capabilities being specified by politicians and ministers. Do you want to give us your current view of the submarine project, given the amount of speculation that is going on about whether we might just get something off the shelf from Germany or somewhere?

**Dr Davies:** One of the observations I have made is that, while I am sure what Dr Thomson said is right, there are a number of things under active consideration. One of the aspects of this that I find a little unsettling is that in the relatively few public statements made by people close to the submarine project, they seem to spend more time explaining what off-the-shelf submarines cannot do rather than what they can do. I think that there is a base of support for an ambitious submarine project that tends to be driving this.

I do not think it is a case of the industry tail wagging the dog, but the government has been very clear: the submarines of whatever sort will be built in South Australia. It is a very clear articulation. Those submarines could be licensed built submarines from a European design, for example, or they could be an indigenous Australian design. That is an instance where the industry decision has been made before the selection process has actually settled on a solution. That happened with the air warfare destroyer as well. The ship builder was selected before the ship was selected.

We are getting a little bit away from procurement towards the subject of ship building, but if Australia is going to make an ongoing commitment to ship building—and I think that is actually a discussion we need to have; we used to have an aerospace industry, but nowadays we do not design and build aeroplanes anymore and the Air Force still has capable aeroplanes—on an ongoing basis then we need to do it strategically. This sort of on-again, off-again, on-again, off-again planning just makes it very, very difficult to manage that national capability.

**Senator LUDLAM:** Does ASPI have a view of where submarines fall on that line? We make our own uniforms, we do not make our own fighter aircraft. Where should submarines sit?

**Dr Davies:** I think submarines are right up there with fighter aircraft in terms of complexity and degree of engineering challenge.

**Senator LUDLAM:** Chair, I will come back later if there is time.

**CHAIR:** Thank you. That is a very interesting answer, given a lot of the evidence we have heard over the last day and a half.

**Senator STEPHENS:** Thanks very much, gentlemen, for your submission. I want to go back to some of the evidence we heard yesterday which was more generally about systemic organisational failure. Paraphrasing some of the evidence we heard throughout yesterday, it seemed to me that the message at the end of the day was that there were several reviews, each with recommendations. The recommendations, particularly around organisational change and cultural change, have been adopted in principle, but not in practice. The message we got yesterday was that one of the most fundamental things that needs to happen within the Defence force is to apply the disciplines that are already in place, so that when recommendations and systems have been established, middle management has the responsibility for ensuring that those disciplines and guidelines are adhered to. If that had happened and some of the poor decisions that have been made along the way had not become magnified and amplified as the expenditure blew they might not have occurred. Dr Thomson, given this special report and the comments you make in here, to what extent do you think what is supposed to be happening is happening already if there are decent systems in place to address some of these critical issues?

**Dr Thomson:** I think the statement—or the presumption—that a lot of the problems that arise today arise because systems and processes and procedures are not being followed, is fully consistent with a lot of what is in the Rizzo report and in the Black report. The Rizzo report goes on to identify some dysfunctional arrangements and some things where the system is actually broken and needs to be fixed. But in the broad, my own experience with Defence, my own discussions with industry and my discussions with Defence itself, and looking at what the Black report says, it would appear to be the case that the organisation in a lot of areas does have policies and procedures.



Every second ANAO report is all about this. It is about: 'Here is what we did. We went into Defence here is what it's about.' It might be management of ammunition or cradle-to-grave management of naval capabilities or decision making in a particular area. 'We went through this and we asked them to document their adherence with their own policies, and they could not. We found clear deviations all the way through.' So, absolutely. I guess that is why in both the Rizzo report and the Black report they make mention of the need for cultural change. It is all very well to put in place a corporate plan in place of whatever the last planning document was, but unless there is a cultural change where people begin to see it as part of their day job to be much more rigorous in applying policies and procedures then we will be back to where we were before.

Having said that, one would hope that the very highly paid and, hopefully, well-trained people performing a lot of these functions will still have some latitude to do their job rather than be slavish adherents to policies and procedures. At the moment, it is clear the dial has gone too far to one side.

**Senator STEPHENS:** That is a helpful observation. The second issue that came out of yesterday, and one we touched on again this morning but on a much more macro level, was the very clear message from the industry witnesses that it is very important for Defence forces to understand the commercial environment in which many of these industries are operating. The big projects are one thing, whether it is a submarine or a ship or an aircraft and the expectation of government in how industry would manage those long delays and protracted contracts. But we heard yesterday about much more simple and straightforward supply chains and some of the frustrations for those industries. Across other sectors we have the opportunity to, and we do it in Defence, bring Defence personnel into the government departments and decision making, we bring the industry into that department. To what extent do you think it might help if we placed some decision makers—not key decision makers, but some informed decision makers—into industry to understand some of that commercial reality around the kinds of complicated contracts that the Defence forces are seeking to secure?

**Dr Thomson:** It could only help. I have heard on many occasions the most common story that is recounted and that is somebody from industry recounts an interaction with someone from Defence who appears to take the view that profit is something that is a bad thing. Profit is in fact the reason why people put their capital forward and invest in a business. Perhaps if someone spent their entire career in Defence, disjointed from the commercial world, they might well form that erroneous view and allowing them to see firsthand would probably improve their understanding. I think there are other avenues too, some of which are outlined in Rizzo and Black in terms of greater training and, very importantly, longer continuity of appointments in some of the areas that deal with capability development and with procurement. We have had for a long time a situation where people, typically people in the capability development area, are very highly performing officers from the ADF. They will come in from, for example, an operational posting or from a unit somewhere out in the field and they will do 18 months or so and then they will go back out to that area.

It is important that capability development is informed by people with hands-on, recent, real operational experience. But by the same token, that needs to be balanced by people who have enough experience in the field to understand the commercial realities of the people they are dealing with; the technical aspects, the contractual aspects, the legal aspects. That takes time and there are recommendations here for longer tenure. I agree that is a good thing and it needs to be pursued along with the opportunity for people to look on each other's side of the fence. But it is going to be difficult, really difficult, if you look at how military careers are structured and the preconditions that are necessary for people to qualify to go the next step up the ladder. You start saying you have to spend three years rather than 18 months. It is going to take some really adroit balancing of the costs and benefits of changing career paths within Defence.

**Senator MARK BISHOP:** But even three years is not enough, is it? If you took a multibillion-dollar mine that is being opened by BHP or Rio or someone like that, the key personnel sign up, perhaps not in contract but that is their career, for seven, eight, 10, 12 years—that is their job—not 18 months or three years.

**Dr Thomson:** The conclusion to draw from that is that the core cadre of people in capability development and in DMO need to be people who are there for those sorts of periods of time, supplemented by people who come in from the services on operational postings. But the way you enhance that first tranche is you take people who have ended their military career and you transfer them into the public service to provide them with a second career. I remember when I worked in Defence, there was one person who had been in the capability development area for 15 years. Prior to that he flew aircraft off *HMAS Melbourne*. He was the most valuable person in the entire division because he had two things. He had real military experience that he brought to the table and he had 15 years in the one division. He had seen it all time and time again. It is that combination of balancing people, some with active military careers and some from technical, commercial, academic and military backgrounds who are making a commitment to a long-term career in capability development or procurement.

**Dr Davies:** Might I just add that, while that sort of continuity is absolutely vital to get good outcomes, one of the things—I suspect it is not just the Department of Defence; I suspect it is in the entire public service—is that when things go wrong there is always a tendency to assume that if we only we had more process, if we only had more information, then we would have made better decisions, and actually there is no substitute for improving the quality of analysis. And often, rather than adding to the amount of information by collecting more and having more processes and more committees and more paper circulated, actually getting the few right people in the room with the key information they need and the ability to think about it and make a clear recommendation is actually much better than layering over more processes.

**Senator FAWCETT:** In fact I think the last couple of statements you have made probably actually encapsulate many of the things that most of these reviews have highlighted, and that is about giving leaders the opportunity to make informed judgment based decisions—that flexibility, that freedom to manoeuvre, as opposed to being constrained by process. And your concept of the federation is the other part I think that feeds into this argument, in that originally you had the three services and you had a number of support elements which were there to provide things for the services to do their job, so the services could make judgments about priorities and directions and things and they were then accountable for the outcomes. Since the shared services model came in, each of those subordinate services have grown to be federated partners on an equal level. Hence, you no longer have that freedom of manoeuvre nor the accountability of the original masters, if you like, the three services.

So I think in those two statements you have actually encapsulated what a lot of the problem is. So more process is not actually going to help, because you are actually limiting even further the freedom of manoeuvre for commanders to actually make good decisions based on the information. So I think that was a really valuable summary.

To come back to your submission, in paragraph 4 you talk a bit about the concept of retired military officers and ex project managers, and you talk about it in the context of Capability Development Group as you have just touched on there. Could that also have a role in DMO in terms of people—not necessarily full-time on the project but in an internal accountability loop to guide people who are working on a project so that there is that corporate knowledge being applied, and mentoring and growing people who may have only had the three years in a project?

**Dr Davies:** Yes, I think is the short answer. And that is especially important given the Rizzo review, and that the ANAO are constantly highlighting the shortage of real expertise within the department. You have to get absolutely the most you can out of the expert individuals that you have, and having them in a mentoring role or an expert advisory role I think is one way to do that.

**Dr Thomson:** And with the introduction of gate reviews that actively oversight major projects through their life, I think having people from the previous generation of project managers would undoubtedly add value to the process.

**Senator FAWCETT:** Paragraph 5 you talk about the old FDA, Force Development and Analysis Division, and I note your comments earlier about the recommendations of the Black review and the minister's decision to appoint a new associate secretary in that area. Do you actually see that the associate secretary that has just been appointed is going to fulfil largely the same functions as FDA? Do you see it is going to be a different role? And do you see that that will actually achieve the same outcome that you are referencing when you mention FDA here?

**Dr Davies:** I think the intent is probably to have something that looks a lot like the old FDA, and I think that is a positive step. The role that they play can only be as good as the analytic capability they are able to tap into. This reinforces my previous comment about improving the quality of analysis rather than improving the quantity of process and the quantity of information. One of the strengths of FDA was its in-house analytic capability and it takes a long time to grow that sort of capability. I think the new associate secretary would do well to start thinking about where that analytic capability is going to come from. I think in the first instance it might be from external contractors. The RAND corporation, Access Economics and those sorts of bodies of expertise external to the department are probably going to need to be tapped into in the early days at least until that in-house analytic capability can be built up.

**Senator FAWCETT:** In terms of rebuilding capability, you made the comment during some of your discussions that Defence's engineering capacity—and you were talking particularly about that the Navy—is limited, therefore they should be very careful about what projects they take on so it does not get spread too thin. It has become obvious in the evidence that we have received that that capability has been downsized as a result of all the successive government reviews and initiatives around efficiency. Do you think that the current state, which is not ideal, should constrain our future directions in terms of not taking on the projects, or do you think, just like

we are talking about building skills again in things like capability development, we should have an active plan to reinvest in our engineering and technical capacity—to a thought-through level—rather than say that it is no longer a course of action open to us?

**Dr Davies:** Yes, and I think the Navy have recognised that. They have made a senior appointment who has exactly that responsibility—to build up the capability to a level that can support not only the acquisition processes but also the support processes. I think the same model applies to the one I just talked about. If there is not the in-house capability to do that, go out and find it and contract for it; do not try to do major projects with amateurs or people who have insufficient experience to manage them. Get professionals to do it. Whether you grow them yourself or whether you hire them, you really need the right level of expertise to manage a major project.

**Dr Thomson:** I am not a proponent of the high-end challenging submarine project, but I argue against people who say we should not do that because we do not have the industrial or the capability development or the engineering ability to do it. My argument against it is on a strategic ground but I do not think you should close off your options simply because of the difficulty of doing something. You need to recognise that if you do choose to build 12 very large bespoke submarines you have to take into account the reality of the skills and industrial base you have and recognise the risk that that brings with it. You cannot pretend that risk away, you have to look at that risk and stare it in the face. It has to be part of your decision making but I do not think we should throw up our hands and give up on doing things. We should simply take an objective and sober recognition of the risks that some of these options carry because of the present state of our engineering and other expertise.

**Dr Davies:** I think if we make the decision that we do need to go down the path of the challenging development project, then we need to be prepared to pay for the expertise to manage it.

**Senator FAWCETT:** In paragraph six of your submission one of the things you touch on again is the whole off-the-shelf acquisition strategy and you make the comments that you believe that Defence, in some cases, has essentially treated it as just a benchmark as opposed to really pursuing that as an option. We heard evidence yesterday that the underlying thinking is pushing people towards off-the-shelf acquisition as a preferred model, which is at odds with what you have written here. I guess the main point of my question around off-the-shelf is that part of it is the actual equipment and part of it is the through-life support. You can have an off-the-shelf piece of equipment with a large amount of Australian industry and Defence involvement in the through-life support or you can outsource the whole lot. Do you recognise that there is an inextricable linkage between the ability to grow and retain a technical capability and competence within Defence again and the fact that we cannot outsource everything?

If we completely militarise off-the-shelf and commercialise off-the-shelf, both acquisition and through life support, we are on a downward spiral to the point where we will not recover, and we will not have the capacity to recover technical expertise.

**Dr Davies:** I would argue that Air Force's experience suggests otherwise. I think Air Force, more than any of the other services, are the recipient of off-the-shelf equipment and they have ability to manage their fleets. The Airworthiness Board, for example, is almost an exemplar of how a service can receive off-the-shelf equipment but still maintain the expertise to be a smart operator.

**Senator FAWCETT:** You made the comment before that Navy have these projects in Australia where it is all off-the-shelf whereas with defence aviation—whether it is the F111, which was quite comprehensive, the classic Hornet, things like the fatigue management program, the CH47 Chinook or the Black Hawk—there are many programs where that expertise, to quite a deep level, is resident in Australia. That is part of the reason why Defence has been able to actually maintain some of those skills. But Air Force are still struggling and the whole creation of DTTA was in response to and recognition of the fact that they were going to lose those skills, like Navy have, when the technical services division was stood down after CSP. So it is not right to say that the MOTS-COTS and all that through life support from overseas that the Air Force is still retaining because a lot of it is actually done in country. The point I am making is that by actually having a lot of it done in country we retain those skill sets.

**Dr Thomson:** I think there is a strong argument. I think Australia needs a defence industry sector that can repair and maintain and do a certain degree of upgrades on the full range of platforms it has. That is a strategic imperative. If you are going to have a defence force you had better be able to take care of it by yourself. The question is the extent to which it is necessary to pursue construction and build projects in order to preserve those particular skills. I think what we have seen in Air Force is that we have been able to stand up the industrial capacity within Australia to maintain the aircraft, and to an extent upgrade them, without having built the aircraft here. I do not think the assembly of the FA18s, for example, contributed much at all to the ability to do the centre barrel replacement.

I think it is very important that we have the industry capabilities to maintain our aircraft and other assets and, more importantly, to fight the aircraft and other assets. We need the ability to make near real time adjustments to some of our platforms. If you just read the history of warfare as systems and countersystems come in, sometimes battle is turned by the ability to tune your system or to remove a vulnerability or exploit an adversary's vulnerability. We need the ability to do that. But the question is how you get that ability. Some of it will be in Defence and some in DSTO, and a lot of it is going to be in Australian defence industry. The question is how you get it.

My view is that you work out what you want and you pursue it quite deliberately as a goal. Let me give you a somewhat flippant analogy. If I want a teflon frypan I am not going to initiate the moon program. If I want the ability, for example, to update the threat libraries on EWSP systems for the ADF, I will not initiate a project to build an ESM system or other complex electronic warfare systems and hope as a happy by-product that I get the ability to have the war fighting capacity to update threat libraries in near real time. What I am going to do is go out and say, 'What do I need? What is part of Australia's preparedness posture for conflict, what are the capabilities to be able to have?' I specify them and I ask what is the most cost-effective way to deliver them. And it may be that some parts of the capability will reside in DSTO and some parts will reside in a close arrangement with an ally where we have reached back to their capacity to help us do that. And some of it may be, given the sovereign risks that are inherent, that we need to stand up somewhere in industry the ability to do this. I will put out a tender for it. I will not do something else and hope I get that capacity. I will put out a tender for that capacity and have someone in industry maintain it for me if that is the most cost-effective way.

**Senator FAWCETT:** With that close link between industry capability and defence capability, would you support some of the suggestions that have come up that we should be taking Industry Division and making that part of Capability Development Group so that there is that very close nexus of understanding where we need industry capability to support our national defence capability.

**Dr Thomson:** I think Industry Division does lots of things. Industry Division, for example, engages with industry on the intricacies of contracting in terms and conditions and liabilities when things go wrong. I think that is DMO's job. I do not want Capability Development sitting down with Industry to go through the entrails of that. There is some Industry Division stuff that belongs quite properly in DMO. There is some strategic industry analysis as presently undertaken in the strategy division within R1 adjacent to the capability development area. Whether it lives in the strategy division or in the capability development sector, I do not think really matters. Wherever it lives, it is going to require the strategy people, who have to do the risk analysis about what our posture is, what self-reliance means in the 21st century, which is an evolving concept being driven by the realities of technology—wherever it lives, it is going to require close cooperation between the capability developers, who should, as part of defining the capability, not simply be looking at the asset, or indeed not simply be looking at the asset and the personnel and the doctrine; they should be looking also at the industry support that is necessary through life for that capability to ensure that it can cost-effectively be maintained and effectively be fought in a conflict.

**Dr Davies:** We actually have a set of articulated priority industry capabilities, the PICs. The problem with the PICs is that you read the document and you can argue about whether some of the things in there should actually be priority industry capabilities, but some of them obviously are—like systems integration and electronic warfare. But then you read the statement that the government has decided that no market intervention is required. In other words, we will identify these things; we hope that they will be an emergent property of everything else that we are doing with the industry and the contracts we are letting, but we are not actually going to put any money into ensuring that those capabilities are available. I think it goes back to what Mark says. If you identify that something really is a priority industry capability, then contract to have that capability provided with some assurance.

**CHAIR:** The last comment you make in paragraph 6 is:

Each and every proposal put to government should include a bona fide off-the-shelf option from an existing production line. Although this was a clear recommendation in the ... Kinnaird review, Defence has watered it down to mean local construction of an off-the-shelf design ... or in some cases just a hypothetical off-the-shelf benchmark.

Obviously there is a policy objective view of maintaining a domestic defence building capacity. But to what extent is there also hidden in that some increased vulnerability and weakening to Australia if we are not committing ourselves, if you like, to local construction? Does that weaken our defence capability should that be needed in some situation? Is that not a consideration which should be given more emphasis?

**Dr Thomson:** By way of clarification, I think that since we made that submission the government has reiterated the desire to have an off-the-shelf option provided all the time.

**CHAIR:** But it is watered down, you say, by the Defence—

**Dr Thomson:** It was, but the government has since made a decision that—

**CHAIR:** But they made it before and Defence still watered it down.

**Dr Thomson:** Indeed.

**Dr Davies:** That comment was actually based upon a remark made at the Australian Defence Magazine conference earlier in the year by a Defence official that the off-the-shelf option was a benchmark rather than that it must be delivered.

**Dr Thomson:** Senator, in answer to your question as to whether it potentially weakens our strategic posture, I think it is important to focus on the outcome. The outcome that should be focused on capability development is the through-life capacity to operate the capabilities that have been developed—to operate them in a war-fighting environment. To do that requires the ability to repair, maintain, sometimes to upgrade, but also to support with spares and munitions and so forth, and that totality is what constitutes the capability. If you look at it that way, and include a MOTS option as well as a domestic option, if you keep your eye on what the totality is, you would have to augment the MOTS option with whatever was necessary to make up the gap. It may be that you had to have extensive stockholding of spares, munitions and parts. It may be that you have an agreed arrangement with an offshore provider, negotiated at a government-to-government level, to assure you of support, but that will have sovereign risk associated with it. Or you may wish to stand up an industry capacity to provide those various support and resupply functions within country to support the MOTS asset itself, and then that would have to be compared to the totality of a domestic Australian construction, which may well, as a by-product, provide you with the industrial capacity in country to produce spares or parts or munitions. You compare those two options in their totality. I agree: if you were simply to focus on the asset and forget about the essential sustainability and preparedness for war fighting, you might, by taking a narrow view, sell yourself short in the long run.

**CHAIR:** So where are we now do you think with this issue?

**Dr Thomson:** Looking at the Rizzo report, they helpfully go through and look at the amphibious ship project and the air warfare destroyer project and they update the status of both of those projects in terms of what they have done to put in place the in-country ability to support those platforms. My reading of it was that there has been some progress made, they have recognised what they need to do, but they probably have not got as far now as you would have wanted them to. One of the recommendations of the report is to go through the DCP and to reconfirm that adequate resources and support are going to be available for each of those assets when they come into service. I think it is one of those areas where, once again, there are policies in place to tell us what to do but they are not being followed with as much vigour as we would hope at this point.

**Senator HUMPHRIES:** You have argued persuasively for a greater role for Defence chiefs to have more control over aspects of the acquisition program. Would you say that sustainment of those acquired assets would be a more important area for those services to have direct control over?

**Dr Thomson:** That is a critical question; I have grappled with this over a long period of time. In my opening comments and discussion about the nature of shared services, I made the point that there are some things that are naturally aggregated together because of economies of scale or the coalescence of rare skills that can be shared among a bunch of different activities. The question is: is sustainment of that nature, or would it be better to put sustainment back into the services? If you put sustainment back into the services, what DMO would then have would be an oversight function. Indeed, they would have support function; they could come into the services, assist them with contracting for through-life support, provide guidelines and regulations for best practice in contracting for through-life support and managing it and so on and so forth. So there is an alternative model that pushes sustainment back into the services.

If you look at the way Navy operates at the moment—and indeed if you look at the demands that support places on Army—you might be tempted to go with that model and to push sustainment back into the services.

But then have a look at what Air Force has done. Once again because they have a cultural affinity with the technology that is at the heart of their service, Air Force have actually exploited the opportunities that exist by having sustainment co-located in the same organisation as procurement. In fact the system project officers for some of the Air Force assets quite seamlessly switch from doing support and acquisitions of various sorts and they have managed to exploit or to harvest some synergies from having acquisition and sustainment done next to each other.

It comes down to a question of judgment. Do we keep sustainment within DMO and push together the activities of procurement and sustainment to fill in the gaps we were just talking about there, to ensure that when things are being acquired that the support is taken fully into account because the people who are going to support

it are sitting next to them? Is that the best option? Or is the best option to pursue the clearer accountability that giving sustainment back to the services would deliver? At the end of the day it is a judgment call. On the basis of what I know at the moment, I believe we should be keeping sustainment within DMO and pushing it closer to the acquisition function so that we ensure that all the aspects of through-life support are fully taken into account and that you can pool the expertise of the people doing the acquisition and the people doing sustainment together. To get a better outcome in both areas I think that is the better option, but what I would argue it needs to be augmented with is a dual line of reporting.

The military are pretty clever at this, especially Army. Unlike the Air Force and Navy, which are platform based, the Army is a Lego set of different things that get put together at different times for different operations. The Army is very used to having units or subunits assigned to them that are under their command but at the same time for a range of reasons they have reporting back to their core—logistics command, for example—so that there will be dual lines of reporting. My argument would be that we keep sustainment in DMO, but the people in DMO who are doing the sustainment not only report to the chief executive officer of DMO, but they have a clear line of accountability back to their service to ensure that they are responsive and mindful of what the service needs in terms of sustainment. I do not think you can get adequate responsiveness simply by looking at the contractual interface—the service level agreement or the material sustainment agreement or whatever they call it this week—I do not think you can get the outcomes you need purely through contractual means.

**Senator HUMPHRIES:** Would you make that decision on an acquisition by acquisition basis or a service by service basis? Would you give the service chiefs the autonomy to say, 'On this occasion we will just use DMO, on that occasion we will bring it in-house, on this occasion we will go to the private sector'?

**Dr Thomson:** I think you have to make a decision upfront about how you do it. In some cases it will be sub-optimal and there will be a cost incurred, and but I think on balance keeping sustainment within DMO is the right thing to do, principally because of the opportunities or the benefits of pushing sustainment and acquisition as close as possible.

**Senator HUMPHRIES:** You have talked about the need for more accountability. You say that reinforcing some of the guidelines which already exist would be helpful because some of them are not being followed when decisions are made about particular acquisitions. You talk about the need to develop a core of experienced professionals within the military with respect to CDG. What does that say about the potentially greater role of the private sector in taking on some of the present functions of DMO? DMO is a complex combination of DMO employees, people seconded from the services, private sector contractors and so on. Are we getting the balance right between those three sets of resources within DMO or should there be a greater emphasis on one or other of those?

**Dr Thomson:** My instinct would be that, in some areas, we could do with less military personnel but perhaps more retired military personnel. There will always be a role for people from the private sector to come in and augment the workforce on specific activities where the DMO does not need to maintain a particular sort of expertise continuously but only needs it on a particular basis from time to time. But it is a large organisation with a lot of projects, so I would not think there were too many of those instances. What I would hope DMO will do is, over time, develop a cadre of highly professional people who can do most of the things that need to be done.

**Senator HUMPHRIES:** You say that reliance on short-term military appointments to projects in DMO should be minimised, but you also agreed with a comment made by Senator Stephens before that placement by DMO personnel out in the private sector would be a good idea. Are you objecting to the short-term nature of those military appointments or are you saying that, as a whole, exchanges like that are unhelpful because it involves military personnel rather than—

**Dr Thomson:** I think it is important to draw a distinction between someone from DMO, be they military or civilian, going to industry for a period of time to see how things are done on the other side of the fence. I would call that a secondment. The thing that is occurring in DMO is not that the military is putting some people in there now and again to understand how procurement is going on; many military people are running projects and they are part of the core workforce doing some of the most difficult tasks. There is a reason for it, having spoken to people in DMO: it is very difficult to get people with high levels of engineering and commercial expertise into DMO because they are restricted due to the Public Service framework they work in with the sort of offers they can make to people. Very often, the best person to do the job is someone in uniform, who has an engineering degree and has some operational experience. That is the best person they can get to do the job. As I said, I would like to see fewer military people in DMO in the procurement area, although you do need some of them. But to do that you would have to fill the very yawning gap that they would leave. I think that you could fruitfully fill that yawning gap with longer term appointments of people who have developed experience in DMO over many years.

But to do that—coming back to my point about DMO being a prescribed agency—you are going to have to give them the latitude that was implicit in both the Kinnaird and Mortimer recommendations for setting it up as a prescribed agency. You have got to let them go out there and hire people in the marketplace so that when they sit across the negotiating table it is a meeting of equals.

**Senator HUMPHRIES:** And on more private sector employment conditions than on public sector ones?

**Dr Thomson:** Yes.

**Senator HUMPHRIES:** It has been put to me that one of the problems with people at relatively junior ranks working within DMO is that sometimes these relatively junior officers will be effectively reviewing and second-guessing decisions made by their superiors within a military hierarchy. You make reference to projects being conceived and developed by relatively junior military officers on short-term postings from field units and you criticise that. Do you think that is a significant problem within the way that DMO works and should you avoid that to the extent that you have military officers within the DMO structure by making sure that they are at a much more senior level?

**Dr Thomson:** The point about conceiving projects is Defence Capability Group, not so much DMO.

**Senator HUMPHRIES:** Yes, sorry.

**Dr Thomson:** To answer the question in that context—and I am sure Andrew will want to jump in—I think it is a problem. Having worked in that part of Defence in the past, you would have people come in, excellent operators, people who were respected by the people they had commanded, who had spent 15, 20 years in the service in a series of operational positions, and they are landed there and they are told, 'You've got to get a replacement for the SM-1 missile on the FFG.' It has just thrown people way into the deep end and they, quite naturally, will pursue with enormous vigour getting the very best solution they can for themselves and for their service members by way of replacement. They are not the right people to be doing that. Their input is essential so that the capability or upgrade is developed cognisant of the needs and imperatives that the operator has. But it needs to be an input; it should not be the driving seat for capability development.

**Dr Davies:** Particularly between the first and second pass, when projects are going from basically conceptual frameworks to solid proposals that the government has to sign up to and will be subsequently contracted for, the ability to make design trades, to trade off capability and risk and cost and schedule is very, very important. If you have people there whose riding instructions are, 'We want this capability; this is what we're going to have,' it circumscribes the ability to make those important engineering trades or to put up a set of options to government to say, 'Okay, this is the one with the capability that was originally identified, it will cost this much, take this long and have these associated risks, but here is the next step down.' If the person who is responsible for developing those proposals is under the instructions that the next step down will not be put on the table, it makes it very difficult to have the full range of options.

**Senator HUMPHRIES:** Only very recently another term of reference was added to this inquiry to do with the management structure and staffing of DMO, its role and functions and so forth. You have already covered a lot of this with respect to the things you have had to say today but, implicit in that term of reference, is also the question about how our DMO model works compared with those of other countries such as the UK, the USA and Canada. Do you have a broad comment to make, given the comments you have made about the shortcomings of the Defence acquisition model we have got at the moment? Do you have any comments to make about how well we perform that function, compared with other countries in the world?

**Dr Davies:** I actually had a comment in my initial comments that I took out at the draft stage that said that this inquiry's business would be so much easier if we could point to another organisation in the world and say, 'We really wish ours performed like that.' But certainly, at least, in the English-speaking world I do not think any of us would want to have the American procurement model or the British one. I think the conclusion is that this is a really hard business. My suspicion is that the Germans do it fairly well. But there are probably some aspects they do well and some aspects not so well. There is a fine line between recognising that it is a very complex business that will sometimes go awry and learned helplessness, and I think there are times where our Department of Defence has slid into learned helplessness: 'This is a complex business—it's hard, we can't do this.' The results of all these reviews would suggest that there are a lot of things we could be doing better, but let's not kid ourselves. We could have the best defence procurement system in the world and things would still go wrong.

**Dr Thomson:** The easiest comparisons to make are with the United Kingdom, in part, because they are relatively transparent in what they do. I think it is fair to say that with respect to the developments that have occurred in Australia over the last 25 years and the developments that have occurred in the United Kingdom in terms of how they structure their defence force organisationally, how they perform procurement and

sustainment—I think there has been leapfrogging and changes all along the way—we have mirrored each other. For example, the Brits have been doing gate reviews for quite some time. I think the suggestion was made by a previous inquiry by this committee to have an ANAO report on Defence projects. The Brits were doing that already. So we learn from them. I think in that regard we have followed broadly parallel tracks, but I think it is important to also learn from their mistakes. The Gray report recently came out and it really has a similar feel to the Mortimer and Kinnaird reforms before them. There have been other lessons coming from the UK that I think we need to look at carefully to inform this question about what should be done by the services and what should be done by a provider to the services, like DMO.

**Senator MARK BISHOP:** I must say on that point raised by Senator Humphries, I spent some considerable time in June/July of last year with the Department of Defense in the United States and they made it quite clear in the discussions we had, facilitated by DMO, that a lot of the reforms that were being done in this country have been done over the last 10 years in both the services and DMO. They regard them as pacesetters. They studied them intensely because of their own need to reduce costs for other reasons in the United States. They regarded a whole lot of the reforms that we had done, because they were much more familiar with the detail than I had thought they would be at assistant secretary level in Defence. They were of the view that we were some considerable numbers of years ahead of them in terms of necessary reform practices to purchasing and acquisition of capability. I will just put that in the mix.

Dr Thomson, you made the comment about the utility of continuing parliamentary scrutiny and public review as effectively as a agent of change or as a force multiplier to get more and better change. I do not know whether it was a decision of this government or the previous government, but now the Reserve Bank publishes its minutes on a regular basis. They are scrutinised closely in the financial press and you have interpretations of what is meant by a particular phrase and the aficionados have a wonderful day out. Whichever government made the decision to publicly release some version of the minutes, it adds information and discussion points in the public domain about what the Reserve Bank, as a key player, thinks of the developments in the economy. In your mind, is there any value in that type of model being implemented at CDG level and the like? The constant complain is about the lack of information, lack of knowledge, lack of continuity and lack of assuredness. Is there any value in, to some extent, releasing publicly on a regular basis a version, subject to obvious security considerations, of the discussion at that level to inform both public debate and those who take an interest in these matters?

**Dr Thomson:** I am going to make a statement that I never thought I would make—certainly not on the public record—against transparency and let me explain why I do not think that would be a good idea. Firstly, a lot of the discussion that goes on within the DCIC or the DCC is of a very frank nature about commercial and strategic issues. I do not think it would be in Australia's interest to have it aired, and I do not think it would be in the Commonwealth's commercial interests to have those sorts of detailed discussions, which have a big potential commercial impact, aired publicly.

I think there is a second, more important point. The Reserve Bank is a statutory body. It has independence from the government. For that reason there is a good argument that, because it is independent, it also needs to be transparent because, although it is independent, it ultimately is doing something for the nation and the nation should be able to know what it is doing and why it is doing it. A committee within Defence ultimately is providing advice to government. That advice to government will go up through cabinet. The confidentiality of the advice that the department gives to cabinet, I think, is very important to enable the government to, once again, have a frank discussion, to canvas all of the options and come to a conclusion in the public interest. For the same reason why I think cabinet confidentiality leads to better government and better decision making than the alternative would be I think that the machinations of committees within Defence which ultimately advise cabinet equally need to be kept confidential.

**Senator FAWCETT:** I just want to come back again to the issue of through-life support and your comments, Dr Thomson, about keeping acquisition and sustainment as close as you can. You made the comment about the SPOs, the system program officers, seamlessly moving between the two. I think it is important to recognise that they are actually under considerable stress. If you consider the engineering workforce as a pyramid, those SPOs form the baseline of the pyramid where people grow their skills and experience, and they then form the growing pool for design engineers, chief engineers et cetera. Some of them cannot fill their design engineer positions. To get chief engineers they have to recall reservists. Part of the reason that strain is there is that blocks at the base of that pyramid are being knocked off every time we do a MOTS or a COTS through-life support acquisition. So you are quite right, Air Force or aviation has made a very good fist of how we have used this shared service or the DMO through-life support, but it is already proving not sustainable and it is actually causing considerable stress. So whilst in theory there is that seamless transition between acquisition and sustainment, what we are seeing is



that often those two things conflict in terms of priority and some of the skill sets are not there, from an engineering perspective, to actually manage the acquisition at the SPO level. So in the light of that, would you still maintain that we should not revisit whether we should be doing more in-sourcing rather than outsourcing and whether we should actually be having a more focused approach on which elements of sustainment we should actually be saying, 'Well, we'll do this in Australia with Defence and DMO involvement'?

**Dr Thomson:** I come back to my model about making decisions between competing options, some of which will be MOTS and some of which will be bespoke domestic production. I argued that we need to put our arms around all of the aspects of capability—sustainment, doctrine, whatever—and ask, 'Of these options, what is the most cost effective way to deliver the capability?' I do not see any reason why that model cannot embrace the sustainability of the services workforces themselves. If it turns out that it is more cost effective to do something in-country—if it turned out to be more cost effective then that would be the case. My instinct, not having crunched the numbers in a particular case, would be that in most instances if you needed more people—if you needed more engineers in the Air Force, for example, the best way to get more engineers would simply be to make a decision and hire them and grow them, send them through ADFA and give them jobs to do rather than hope that those people will be a happy co-lateral benefit of a procurement decision you make. If they are needed there will be a job to do.

**Senator FAWCETT:** There is a flaw there, though, in that you are assuming that we can create a training stream that will also give experience. To have people in CDG or DMO at the acquisition level who have the knowledge to actually add value to the whole process they will need experience, and the experience is at that SPO level.

**Dr Thomson:** We have seen here, in the case of Navy at least, that the SPO is severely understaffed just to do its sustainment function. So before we initiate a procurement project in order to grow people to populate the SPO, the first thing we need to do is go out and directly address the shortcomings we have to do sustainment. If we need people to do sustainment, we can hire them to do sustainment. My instinct is always to look directly at the outcome and try and pursue it as the outcome rather than as collateral.

**Dr Davies:** I am going to say what Mark just said but in different words. The ability to be a smart buyer that I described before and to have the in-house expertise to even evaluate off-the-shelf options properly should be regarded as part of the end-to-end capability. If there are times when a premium has to be paid to sustain that in-house capability then I think on balance it is probably worth doing. It should be part of the business case for the competing options. If one of the collateral effects of an off-the-shelf purchase is that some of that in-house capability withers on the vine, that has to be costed in.

**CHAIR:** As there are no further questions, we have probably reached the conclusion of this session. It has been very useful. I thank you very much for the evidence you have given and the comments you have made.

**Proceedings suspended from 11:26 to 11:48**

**GRIFFITHS, Mr Richard David, Chair of the Board, Australian Association for Maritime Affairs**

**RENILSON, Professor Martin Robert, President, Australian Division, Royal Institution of Naval Architects**

**GEHLING, Mr Robin Charles, Secretary, Australian Division, Royal Institution of Naval Architects**

**CHAIR:** We will resume for the continuation of this inquiry and welcome witnesses from the Australian Association for Maritime Affairs and the Royal Institution of Naval Architects. Professor Martin Renilson is on the conference call; is that correct?

**Prof. Renilson:** Yes.

**CHAIR:** We welcome the three witnesses and invite you to make an opening statement or two separate opening statements, if you wish to.

**Mr Griffiths:** On behalf of the Australian Association for Maritime Affairs, AAMA, I would like to thank the committee for its interest in our formal statement to this inquiry. Since our statement was submitted, the terms of reference for this inquiry seem to have been greatly expanded by adding an inquiry into many aspects of the Defence Materiel Organisation. I propose to confine this opening statement to some more observations—and they are no more than that—on the DMO. I can understand how an outside body can be made responsible for procuring clearly identifiable items such as cans of baked beans or more ammunition for an existing gun or other items or even capabilities off the shelf—even large and expensive items like additional transport aircraft but from an additional production line. There is clearly a need for efficient procurement processes in all of that and, unless particular modifications are also needed or there are pressing time constraints, there should be little need for operational input.

I do not understand how a procurement agency that is dedicated to procuring such items in the most business-like manner can also be made responsible for managing major war-fighting projects where scientific research and operational, strategic, intelligence and tactical inputs will need to direct the project throughout its development and the production if the end product is to be useful throughout its life and service. The project management skills required seem to me to be quite different between maintaining the supply of baked beans and building a fighting ship or submarine. If the skills are different, then I fail to see the justification for insisting that the responsibilities must remain within the one procurement agency.

Furthermore, it seems self-evident to me that as much as possible the people who will be required to fight and possibly die in the outputs of major defence capital projects—in this case ships and submarines—should have a major say in their capabilities. We should never again find ourselves in the reported position when cabinet was finalising its position on the Anzac frigate project and when Prime Minister Hawke had to stop an interminable round of second guessing by saying, 'Let the admiral have his gun,' referring to the five-inch gun which has since proved so valuable. If that is true, and the admiral involved said that it was before he died, then it calls into question Australia's defence decision-making processes and accountability at that time—and we must never go back to those days. Thank you.

**CHAIR:** Thank you, Mr Griffiths. Mr Gehling.

**Mr Gehling:** Thank you, Chair. Professor Renilson will make our opening statement.

**Prof. Renilson:** Thanks very much for accommodating my inability to travel. I planned to be there but in the end I was unable to do so. Naval architecture is the branch of engineering that is responsible for the overall design of a ship that is a merchant ship or a warship. The naval architects integrate the various specialist disciplines to create the design. So naval architecture is then really the systems engineering before systems engineering was actually a term invented. As such, the naval architects are generalists, not specialists, and can see the big picture in terms of the overall design of the ship.

The Royal Institution of Naval Architects, or RINA, is the learned professional body founded in 1860 to advance the art and science of naval architecture. We are an international body that exists to promote and serve the interests and needs of the members. We are involved at all levels in the design, construction and operation of ships, boats and marine structures. RINA has members in over 80 member countries, so we have a fairly large interest in this field.

The comments in our submission are made on behalf of the Australian division and have been agreed by the division council. Although both Mr Gehling and I have our own points of view of course, today we will be representing the division council's viewpoint. Please bear in mind if you are asking particular questions that we will be reflecting the viewpoint of the Australian division. Our submission is based on three important points which we believe: the first one is the vital importance of the Department of Defence in being an intelligent

customer; the second one is the need to maintain a continuous stream of work to the industry; and the third one is the importance of Australian conditions for the design of warships. Our first point, the vital importance of defence being an intelligent customer and all that that entails is probably the most important point of our submission. If defence is not an intelligent customer, then poor decisions can be expected at any of the stages in the procurement process and we would say regardless of the systems which are put in place to prevent this; in other words, the systems are not going to overcome basic inabilities. Therefore, concentrating on trying to improve the situation by imposing more systems or procedures or changing these will not in itself work. The focus needs to be on having good-quality, appropriately qualified and current—I want to emphasise 'current', as we have done in our submission—staff in the correct positions to influence the procurement process. Thank you, that is just an opening comment.

**CHAIR:** Thank you, Professor .

**Senator HUMPHRIES:** Thanks very much, chair. Thank you for two helpful submissions. Could I start with the maritime affairs association. Under the heading 'Procurement staff within DMO' you talk about the involvement of ADF personnel within the DMO structure and you say, 'The problem of course is that postings to procurement projects may be seen to be detrimental to their normal career prospects.' Is that a common phenomenon and why is that the case?

**Mr Griffiths:** I think it is just because they are out of the operational environment. If you have personnel who are procurement personnel, then I can see that it would not necessarily be detrimental to their career. But for a lot of naval procurement, particularly the capabilities required for ship building and submarine building, the operational people want to be out operating and learning what they need to do next, and going back to help with a project takes them out of that field. It is just a fact of life. As we said, we cannot see a solution except to get people who are keen to participate in the project and who are good people and to try very hard to allow them to maintain their careers. But therefore it does require a lot of turnover of personnel. If you have a long project life, this means that you are going to get a lot of different opinions coming in to the project team trying to make their mark, trying to make their point, but always causing delay and friction within the system. The solution, as we say, is to keep the projects short.

**Senator HUMPHRIES:** I will come to that point now. Certainly when you look at the enormously extended time frame involved with many defence projects these days, the difficulty in carrying a concept from the beginning to end of that process is tremendously difficult and necessary changes in the environment in which these projects operate causes all sorts of problems, as you point out. How would you specifically approach some of the major decisions that government had to make or is in the process of making to apply the principle you talk there about having shorter-term smaller projects? For example, looking at Australia's requirements for submarine capacity, how would you approach that task given the principle you have stated here?

**Mr Griffiths:** Well as I understand it, and I was never a submariner but I was associated with some aspects, you are really looking at 12 submarines which could be split into three projects quite logically because you would not have quite as much at stake. When the Collins class submarine project was being established, one of the problems that I have been told about was that there was no lead boat; in other words, they tried to get the building of all six boats done as quickly as possible. The first boat was being built and then the second boat was being built while the first boat was still being built and they did not learn any lessons, so you ended up with the same problems appearing right through the class. If they had at least allowed an 18-month gap between the first boat hitting the water and the second boat being built, they could have started to solve some of the problems that they later found in all the boats. Logically therefore I would suggest that if you are going to build 12 boats you have three different projects. Maybe you do not need a lead boat for the second and third tranches as you would for the first, but you would nevertheless have them distinct, discrete projects so that you could implement any lessons learnt and you could also implement changes to the strategic and intelligence environment in which they are being built. If we are going to build 12 boats, it is going to be 15 years from the time the first one is being laid down until the time the last one is hitting the water.

In about 1980 we were looking at passive sonar as being a solution to a lot of things and silencing submarines was a vital point. They are now so silent that I think the pendulum is swinging back towards active sonar which requires a different sort of submarine. If we built a submarine right now you might be putting a lot of emphasis on the silencing of the submarine; whereas you might need to change your whole tactics in 15 years time if active sonar becomes a major issue. But I suggest you talk to the submarine institute about those sorts of issues. I am merely giving an example of the sorts of things that I can see a project officer having to deal with in such a long period of a build whereas in four or five years—six years maybe—that can be dealt with.

**Senator HUMPHRIES:** Noting that you are not a submariner, you may have heard the previous witnesses from the Australian Strategic Policy Institute imply that the capacity to build submarines is something that may be beyond Australia's ken and that perhaps like tactical jet fighters we should be buying them off the shelf from somewhere else. What would your reaction to that evidence be?

**Mr Griffiths:** There is no off-the-shelf submarine that does what we need it to do. The nearest ones in the world are Japanese. Other than that, the only other solution would be to go nuclear where you might be able to get on to production runs, et cetera. Whether the Americans would sell us their best nuclears—they are the main ones we would look at, I think—whether we could afford nuclear, whether we have the technological capability to maintain it in service is something that submariners may have some views on that but I do not think any of us know a lot about it. Nuclear technology has been so well compartmentalised by the Americans, and through them the Brits with theirs, that I do not think we know a lot about running nuclear submarines. So we are faced with a dilemma: we either build our own submarines or we have no submarines; and if we have no submarines it changes our whole strategic environment.

**Senator HUMPHRIES:** If I could ask a question of the naval architects. We have heard a lot about the way in which services have shared some of the expertise that they might have had a couple of generations ago in favour of importing it from the private sector or from bodies like DMO. Taking the landscape overall with respect to engineers and let us say naval architects in particular, what do you think the level of expertise is like today in Australia in those fields compared, say, with the period of the Vietnam War?

**Prof. Renilson:** I am not sure you want me to comment there?

**Senator HUMPHRIES:** Yes, go ahead Professor Renilson.

**Prof. Renilson:** I think it would be difficult for us in the division to make a comment on that because it is a bit like comparing apples with oranges. I do not think it would be very easy for us to make such a comment.

**Senator HUMPHRIES:** All right.

**Mr Gehling:** If I could add to that: when I first came to Canberra as a naval architect 30-odd years ago, and I have never worked in defence, I recall there were a substantial number of naval architects within the Department of Defence at that time. In that 30-year period that number has dissipated and the level of expertise in-house within defence cannot be the same as when you have that mass of people. The sector is relying on contractors to whom a lot of these people may have moved, but of course there is no control of the experience that the people build up within those contractors. They are contracted for a specific job, and that is it, and they have to fill in their time as best can be in between defence contracts. What we say in our submission is that there is a need for professional development of the people that are there that are able to provide advice within the department. But as Professor Renilson has outlined, I cannot give an assessment of the overall situation as far as the total level of competence that is available.

**Senator HUMPHRIES:** Thank you.

**Senator FAWCETT:** Just going to that question of naval architects and expertise within Navy, the Rizzo report talks about a hollowing out of competence within Navy. Would you care to comment on the closure of naval technical services and in your view what impact that has had on Navy's ability to maintain its ships having outsourced that to DMO and industry?

**Prof. Renilson:** If it is not such a specific comment that you are looking for, I think the key point that we are wanting to make is that not only do you need to have these staff but also they need to be kept current by continually doing things, a little bit like how the military staff are kept current by continually exercising. If you stop having these people doing the exercises then you are in the position where, even if they were well qualified in the initial state, they will still become non-current and therefore unable to advise in that manner. It does not matter whether they are employed directly by Defence or whether they are employed by contractors, the same thing applies. If the individuals are not given the opportunity to regularly exercise skills, then their skills will gradually reduce. I have not answered your question exactly but I think you can see where we are coming from.

**Mr Griffiths:** If I could add something to that from personal experience: I was a midshipman in HMAS *Melbourne* when we cut the *Voyager* in half. I can recall that we went up to Cockatoo Island dockyard and they proceeded to cut the mangled bow out of the ship. Meanwhile the new bow was being built. The bow that was being built was about the half the size of this room at least; in other words, it was almost like ship building. That was done within about six weeks, floated up to Cockatoo Island and was then welded on and all the other things were done. Without that kind of ship building capability, we are not going to be able to maintain a navy in any sort of battle environment and that, I think, is where the professor is making his point. It is not just building the ships; it is all the other things we need to be able to do with the ship building capabilities.

**Senator FAWCETT:** The professor made the comment that, whether they be architects, technicians who do the welding or engineers, you need to keep them current in the role. Would you also believe there is a role for Defence to have a regulatory body that specifies, audits and keeps people to a given level of competence in terms of their qualifications and practice in the engineering field; for example, what DGTA does for Air Force?

**Prof. Renilson:** That is exactly the point we were trying to get at. That needs to be done. There needs to be a decision as to what level these people have to be at, and how they are then kept at that. That then needs to be maintained.

**Senator FAWCETT:** In your view can we successfully achieve that predominantly through a program of outsourcing engineering tasks?

**Prof. Renilson:** It is a policy decision as to whether people are employed by Defence or by contractors. That is a policy decision which is outside our remit. Whether they are employed by the contractors or by Defence directly, the key point is that they have to have the relevant work and that they continually do it. Even if that may be doing some nugatory work in some cases, where perhaps it is not necessary, they need to do that. If an athlete ran around the track yesterday the bean counter might say, 'You know your way around the track. Don't bother to do it today,' then in four years time he wonders why we do not win any Olympic medals. It is the same sort of thing. These people have to remain current by continually doing whatever it is they do.

For example, if a designer—we made this point in our submission—has not been involved in the design of a ship for 10 or 15 years and then there is then a requirement for him to assess the design or to get involved in making some decision in procurement, he will not be in a very good position to make that decision. Regardless of what procedures are put in place, he just will not be able to do that. We must make sure that they retain and exercise in the capability that they have.

If that person is doing that in private industry then, provided that there is enough work given to private industry on a regular basis requiring them to do that, there is no reason why the person cannot be employed by private industry or by Defence itself. That is a policy issue, which is outside the technical issues that we could comment on.

**CHAIR:** Mr Griffiths, you made the comment that having no submarines changes the whole strategic environment. That is an interesting comment because, in effect, we have a situation where the Collins submarines are not really on duty. That raises the issue—coming back to your first comment—that perhaps there is a gap in our defence forces at the moment, which is perhaps quite critical. If we think it through to the problems we have had with the development of the Collins class submarines and the fact that they are largely non-operational, does that not make the case somewhat for a military off-the-shelf purchase of a submarine which might fill that gap to preserve our defence arrangements?

**Mr Griffiths:** Two points: one is the other point I made, that there is no off-the-shelf alternative. The other one is that I hope that those boats—even though they are not operationally capable right now—would, in the event of need, be made operationally capable in some way. I know this sounds a bit much like the 'can do' spirit, which has been attacked with the *Manoora* and the *Kanimbla*. Nevertheless, I am fairly sure that if push came to shove we would get a fair number of those boats at sea doing what they are supposed to be doing. At present it is a peacetime constraint—I hope it is.

**CHAIR:** I suppose it is something that we all hope, but it does seem to me that there is this gap in our defences. A few other people have made the comment that submarines are vital to our defence capability. I, as a citizen, if you like, feel a little bit concerned that that gap exists. It seems to me that perhaps we should be more actively seeking solutions, either in putting more effort into maintaining capability to keep the Collins class submarines operational or compromising a little bit with an off-the-shelf purchase, which means we at least have some active submarine capability. If the statement that the submarines are vital to our defence strategy is to be taken at face value, then this gap seems to be quite significant. That is a matter of concern to me.

**Mr Griffiths:** It is a matter of concern. But I think you must look at the Collins class submarines in two different roles. One is the intelligence gathering role, where, presumably, even with only one or two operational, they are able to maintain that capability. The other capability is, of course, the interdiction and, if you like, strategic strike, particularly if they are using missiles. That is something which they do not need to demonstrate in peacetime. So the problem is probably not quite as pressing as it sounds, as long as we can actually get them to sea and use them effectively in war, if we ever get into a war.

**CHAIR:** I suppose the question there is: how long would it take to get the Collins class submarines to sea? While I do not expect there to be major wars, sometimes issues flair up. There are issues around the region in

which Australia might have an interest in being involved or want to observe what is happening. I think the issue of the lead time to get the submarines operational is a fairly important public issue.

**Mr Griffiths:** As I understand it, Defence is now doing a major review of just that issue. I do not know what the answer will be from that. I do not know how long it would take Defence to get more submarines to sea. Again, the Submarine Institute may be able to provide more information to the committee after lunch.

**CHAIR:** One of the other things in your submission is the suggestion that the procurement process requires the services to enter into legal agreements and arguments with the DMO through the life of a project, while the financial controls over DMO set up barriers with the rest of Defence. I wonder whether you could elaborate on your concerns there and on the relationship between the services and DMO specifically.

**Mr Griffiths:** Only from what I have heard and from what I would do if I were in DMO. If I were in DMO and someone told me to run a project to provide a major capability, I would go to the service that required it and I would say, 'Define exactly what you want,' and I would then make them stick to that. Every time they wanted to change it, I would make them give me more money. Likewise, I would then have to go to the contractors and try to nail them down with more legal requirements. In the midst of all this, I am trying to do the financing through the Department of Defence, and through them to the department of finance. I would see myself as being in a very vulnerable position. I would be very cautious, indeed, and I would want things in writing.

**CHAIR:** Indeed, yes. I share your concerns. Another comment you made was that postings to procurement projects are potentially seen by ADF personnel as being possibly detrimental to their normal career prospects. What are the ramifications of this on the manner in which ADF personnel engage in DMO and the ability of DMO to attract and retain qualified personnel?

**Mr Griffiths:** As far as I know, as far as the Navy is concerned, I would imagine they are posted there. They are not really attracted—well, they may be attracted by DMO; DMO may say to somebody, 'Please come and join us', and then they have to get their posters to agree to send them—but they are very much under the control of the Navy until they are posted to DMO.

**CHAIR:** There is some suggestion that personnel are reluctant to take those sorts of postings.

**Mr Griffiths:** As I said to Senator Humphries, for a gung ho naval officer wanting command at sea and such, a posting to DMO could look like a sidetrack.

**CHAIR:** Yes, I understand that point of view, but it is an issue, isn't it, in terms of the overall understanding that personnel may have of the whole process?

**Mr Griffiths:** It is up to the Navy I suppose to show people that a period in ship building and project work is actually advantageous to their careers, but, as I understand it, it is not seen to be. I can well see that, if you were heading up to Chief of Navy, it might be very useful to have done a stint in DMO, so long as it is the same DMO as you did your stint in, but things change so fast anyway that I think they might lose something.

**Senator HUMPHRIES:** We are talking about the perception of such outsourcing or posting into DMO. You would not be saying that sometimes those are not of benefit to the people from those services, finding out more about procurement processes and taking it back into their own service. But the perception is that they are offline and out of the mainstream of what they are professionally all about for a period of time.

**Mr Griffiths:** As I understand it, that is right. That is what I have heard.

**CHAIR:** Coming from the institution of Naval Architects, there was some suggestion about challenges in relation to intellectual property. For the record, could you elaborate on that?

**Prof. Renilson:** Perhaps it might not have been explained very well. I think the point we were trying to get across is that, when a vessel is completed, built and goes through its trials, there will be lots of issues about it which differ from the way it was predicted that it would perform. It could even be a different weight, for example. When you do the calculations in the first place you make estimates as to how heavy it is going to be, you make estimates as to the centre of gravity, you make estimates about how fast it is going to go, you makes estimates as to how well it is going to perform in a seaway and so on. You make all these estimates in the design stage based on a whole series of rules of thumb, empiricism, complex computer codes and so on, but you only really know how well it performs when it is out in trials. At that point, of course, there is the possibility that some of that information should then be being used to improve the techniques that we have to predict for the design of the next vessel. So, in an ideal scenario, when you are designing the next vessel—and it does not have to be the same type of vessel—you have brought on board the inaccuracies of your prediction tools from the previous vessel. That is how we progress on all the time. So that would be continuing over the whole history of ship design. Now, if you were all one organisation that did the design, the trials, the design of the next vessel and then the trials on that,

you are able to use that feedback loop to continually improve your prediction techniques and your design techniques that you use at the design stage. If, on the other hand, there is fragmented organisations, then it is necessary to develop a way by which all of that information is obtained, because it should belong to Defence—obviously the outcome of trials should belong to Defence—and used to feed back into the design of the next vessel, regardless of whether that next vessel is being designed by Defence or by a contractor. The issues are not going to be as easy as they sound, in order to be able to do that, if you have got a number of different companies involved. We are not trying to say that that is impossible and therefore you should not have a number of companies involved or anything like that. We are just trying to say that that needs to be considered and how that is handled needs to be considered. Does that answer your question?

**CHAIR:** It does in part. Thank you for that information. One of the other issues that has been raised with us a few times has been the variability of the flow of defence work. The impact obviously causes delay and uncertainty for the industry. It is a very hard issue to find an answer for. Yesterday we spoke to a group of witnesses about whether or not Australia could contract naval work with other countries in the region. It was thought that might be difficult. Do you have any views on that?

**Prof. RENILSON:** The point we want to make is that what Australian defence needs to do is to decide at what level of industry involvement it needs. That may be high or it may be low – depending on the policy issues which are outside our scope. Decide on what it needs and then try at first to spread that out over a period of time as opposed to—and I use the example that was being talked about before—suddenly building 12 submarines or suddenly building a number of Anzac frigates and then there is nothing for a while. The procurement system in Defence needs to try to determine what sort of drumbeat of activity needs to be going on and to keep that as steady as possible, be it at a low level or a high level or whatever. They need to keep that very much in their uppermost thoughts when they are making any decisions. Perhaps it might seem that they ignore that altogether and assume that industry is going to come in and help and then fade away in the distance when Defence stops requiring any work.

**CHAIR:** That really is a planning decision for the federal government, isn't it? They should plan to have a continuous schedule of naval construction work going on to maintain the infrastructure we have and also to ensure we maintain the skilled workforce. Would you agree that the federal government should give consideration to ensuring a continuous stream of naval construction rather than the stop and start pattern which we are told exists at the moment?

**Prof. RENILSON:** You have actually said it far better than I did. I agree with you wholeheartedly. That is exactly the point we are getting at and that applies down the whole chain, right from the welder through to the designer. They all need to have a steady stream of work at the appropriate level.

**CHAIR:** Thank you very much. There do not appear to be any more questions, so we will conclude this section of the hearing. Thank you all for appearing this morning.

**Prof. RENILSON:** Thank you very much and thank you for accommodating my inability to be in Canberra.

**CHAIR:** We are quite happy to have done that. I thank you for your evidence.

**Proceedings suspended from 12:28 to 14:38**

**GROVE, Mr Ken, Director of Strategic Development, Babcock Pty Ltd**

**HOROBIN, Mr Peter, President, Submarine Institute of Australia Inc.**

**LOCKHART, Mr Craig, Chief Executive Officer, Babcock Pty Ltd**

**MACDONALD, Mr Gordon, Executive Director, BMT Design and Technology**

**WATES, Mrs Wendy Denise, Strategic Business Team, QinetiQ Pty Ltd**

**CHAIR:** Senator Humphries may be joining us in a little while. Certainly Senator Ludlam will be back. I welcome the representatives from the Submarine Institute of Australia, QinetiQ, BMT Design and Technology—who are on the teleconference—and Babcock. We begin with the Submarine Institute of Australia making an opening statement, then QinetiQ, and then Babcock. Then the senators will ask you questions.

**Mr Horobin:** I am the president of the submarine Institute. Thank you for the opportunity to address the Senate Standing Committee on Foreign Affairs, Defence and Trade.

**Mr Horobin:** Thank you very much for the opportunity to address the Senate Standing Committee on Foreign, Affairs, Defence and Trade. The objective of the Submarine Institute is to promote informed discussion and research in the fields of submarine operations, engineering, history and commercial sub-sea engineering—in other words, submarine matters. The Submarine Institute takes a long view of Australia's submarine capability and it sees the SEA 1000 Future Submarine Project in that context. The year 2014 marks the centenary of submarines in Australia, and as we prepare to celebrate the past 100 years so it is appropriate to look forward to the next 100 years. To this end the SIA sees the future submarine project as building on an existing capability with the intention that it should develop and thrive for at least the next 100 years.

The SIA supports the government's intention to purchase 12 highly capable long range submarines and the capability described in the Defence white paper 2009. We understand that this will be one of the largest and most complex projects undertaken in Australia and one that demands a cohesive and coordinated whole-of-government approach. For this reason, if no other, Australia's defence equipment procurement system will need to be functioning better than ever before. We also strongly agree with Admiral Moffitt's observation to the defence and industry conference in Adelaide on 30 June that project SEA 1000 not just about 12 submarines. The project is about building an industry sector which is able to sustain an ongoing build program for the rest of our lives and beyond. We also support the government's very sensible intention, given our strategic circumstances, that there may be—almost certainly will be—more than 12 submarines.

The SIA is concerned that the program is very late and that this has very serious implications for a sustained and effective submarine capability in Australia. By 'late' we mean that we expect that the necessary capability will only be achieved through harnessing the energy and commitment of Australia's science, technology, engineering and project management base and drawing upon the skills and expertise of small and medium enterprises. This has not yet started. Unfortunately, notwithstanding the recommendations of the Kinnaird review for small amounts of early upfront investment to quantify and minimise risk in complex projects, this has not yet happened for SEA 1000.

To be fair, since the SIA submission was made to the committee on 15 April, the government has taken steps which will address some of the concerns raised by the submission. Specifically, the criticism of the lack of clarity in the Defence Capability Plan is being addressed, and the most recent update of the public DCP provides better data from which the companies can plan. The Rizzo report has been received, and if the SIA understands the government's intention to implement its recommendations correctly, those measures will bring a significant improvement in the sustainment area. The appointment of Mr John Coles to review the Collins capability is also a very positive step.

The SIA has three main points in relation to the Defence procurement, particularly in relation to SEA 1000. Firstly, there is existing infrastructure and there are significant non-recurring costs to be incurred as the industrial capability is ramped up to deliver and support the future submarines. There is evidence that suggests that when the NRE is high, there is better value for the government to go directly to a single supplier. The second point is that government may decide that it intends to enter and stay in the submarine building and sustainment business through its ownership of ASC. If it does, it needs also to see that this is 100-year commitment.

Alternatively, the ongoing sustainment and construction of Australian submarine capability may be undertaken by non-government commercial entities. In any event, consideration needs to be given to timing—when the best time is to make a transition from government to commercial ownership of the submarine construction facilities; and sovereignty—Australia needs to ensure that it has access to the most suitable technology for its needs and



control over its own technology and capability. It needs to develop the industry capacity to continuously build and maintain an ongoing and evolving fleet of submarines that will change in design and type over the years rather than be imported as in the case of the Oberon submarines or as a one-off build in the case of Collins. We need to recognise that the future submarine will initially be a build of 12 submarines but the first will be replaced within the same industry structure rather than closing the industry down at the completion of the 12th submarine and reopening the submarine when future submarines are to be replaced.

Thirdly, the validity of the military or commercial off-the-shelf procurement program in a project of this complexity and longevity should be questioned. Australia has experience of military off-the-shelf procurement of submarines. The RAN bought Oberon class submarines off the shelf from the Ministry of Defence in the United Kingdom in the mid-1960s and as an acquisition they were a great success. The shelf from which they were purchased, however, started to get small very quickly as the class aged and the parent, the British Royal Navy, first reduced their operational use of the Oberons and then ceased to operate them altogether. As a result, for the last 10 years of their life, sustainment of the Australian Oberons was extremely difficult.

The challenges associated with maintaining submarines with no remaining parent, coupled with submarines at the wrong end of a supply chain of 20,000 kilometres, were key contributors to the decision to build the Collins submarines. It was thought that with a high proportion of local content the supply chain issues would be ameliorated. The sad fact is, and we suspect Mr Coles will report this, there has been insufficient investment for the local supply base to develop and survive. Any procurement program must take a whole of life perspective—we say a 100-year perspective—and should not be reduced to a simple acquisition. Off-the-shelf acquisition may appear to be a sound option; however, the acquired submarine would need to have been developed to meet an identical operational environment as our own, and have suitable Australian support arrangements and maintenance infrastructure that is to last as long as the submarine's life. These circumstances do not exist outside Australia. Thank you.

**CHAIR:** Thank you very much indeed. We now go to QinetiQ and BMT.

**Mrs Wates:** Good afternoon. I represent QinetiQ today. I believe I am intermittently joined by the co-author of our paper Gordon Macdonald of BMT. First of all I would like to thank you for your consideration of our paper, which considers four key discussion areas. Those are, firstly, separation of the design and manufacturing phases of the program to incentivise innovation and collaboration whilst maintaining appropriate competition at the right phases of the program. Secondly, batch production of the submarine fleet, which will enable management of risk, retention and development of skills and support currency through development. Thirdly, acceptance of the SEA 1000 project as a national capability program supported by the implementation of a workforce campaign and an action plan; and, finally, identification, design and implementation of an appropriate commercial model that supports collaborative delivery of this national program. The paper with which you have been presented is a draft version 2.0, and we continue to engage industry and the Commonwealth as we develop that paper and capture opinion. Releases such as the Rizzo report and the Black report will continue to be fed into the paper and we are eagerly awaiting the outputs of the John Coles report next year. We welcome any questions that the committee has in relation to this paper and look forward to being part of Australia's successful and continued delivery of a submarine capability.

**CHAIR:** Thank you very much. We will now hear from Mr Lockhart from Babcock.

**Mr Lockhart:** Good afternoon. I am joined today by my colleague Mr Ken Grove. Babcock also appreciates the opportunity to contribute to the inquiry. We would like to start by saying that we would hope to bring our extensive experience in the naval sector to bear to the inquiry and associated questions. We have had a presence in Australia since 1989 and been involved in the Collins program since that time. Over the past decade we have specifically worked at a strategic level with the UK government to reduce the systemic costs and improve platform capability and availability. The UK government in particular recognises the need for an industrial policy which provides a sustainable base for an industry rather than a project. It is now such that the MOD, Royal Navy and industry are working together in an integrated enterprise approach to deliver common objectives.

The delivery of the 2009 Defence White Paper for Australia and its associated strategic reform program will necessitate a transformational approach. We would contest that much of the UK learning and experience is relevant. We would also agree with Admiral Moffit's observations that this should be considered as building a sustainable but complex industry rather than a program of 20 years in duration. Babcock also agrees that the recent reviews, including Rizzo and Coles, will provide the necessary improvements that are vital to the future build and their associated support programs.

**CHAIR:** Thank you very much.

**Senator STEPHENS:** I address my question to you, Mr Lockhart, and your submission as part of this group. I think your experience with the Collins class supply and your presence in Australia are important to consider in this inquiry. We have had lots of discussion over the last two days about the issue of competition and competitive tendering—with those arguing for and against—and the complexities of trying to do that here in Australia and what the alternatives should be. Perhaps you could reflect on your concerns about the DMO's preference for competition as a means of demonstrating value for money and whether there is a better way of demonstrating best value?

**Mr Lockhart:** We are not averse to competition. I think competition is right if an appropriate procurement policy is used in the right manner. I think if we put this in context of SEA 1000, building submarines and supporting submarines is a very large and complex organisation, and we can only speak from our experience principally borne through our operations in Canada and the UK. The formation of strategic alliances and partnerships is often the best way to achieve that best-for-project result. As we get into large project design it is often the case that these evolve during the project itself, and it is often the relationship and having that common objective that will deliver success, rather than competing for it.

After having gone through fervent competition in the UK for about 10 years, what we saw together, both industry and the customer organisation—the Royal Navy and the MOD—was that competition, at what I would call the prime contractor level, only sought to bring out the worst in the aggressive behaviours, such that the supply chain was being gradually eroded before our eyes. Competition, while it was set out to deliver value for money, was having the adverse effect of lessening the supply chain strength—such that it was driving up production costs—and not taking consideration for the through-life support aspects of the project.

I think our view is one of experience, having been through reverse auctions, online bids and closed sealed bids. I think competition has an appropriate place, but in large complex procurement programs we need to get the behaviours principally right from the very start. That is about bringing the right capabilities together right at the start and holding that team together, because it is about sustaining an industry, not a project that will live and die. I very much echo what my colleague said: this is a journey that we are embarking on, not just a project that we will look to dissipate the resources at some time.

**Senator STEPHENS:** The evidence we have been hearing, particularly today, has been about the complexity of these large-scale investments and how they do have to have a whole-of-life consideration. The difficulty is always about how you manage the financial expectations of the whole-of-life and how you contain the costs. It is always the Treasury's concern, that is for sure. Mr Horobin, I was quite taken by your presentation, because I think you articulated the real issues in creating an industry. You raised about the notion that there has not been the investment that you expected in small and medium enterprises to scale up. Was that an expectation that the industry had had raised with them?

**Mr Horobin:** I am not sure whether individual companies were told to expect any particular outcome, but it was logical to expect that if your supply chain is going to depend on the existence of certain companies then those companies will exist in 20 years time. If they do not receive any orders for 18 of those 20 years they are probably going to do something different, and that is what has happened.

**Senator STEPHENS:** It is quite a specialised industry, so you as a collective are best able to help us to understand how you do sustain small- to medium-size enterprises over a long period of time to maintain the shelf life. How do you do it in a population of 23 million people?

**Mr Horobin:** I think first of all one needs to be quite judicious about selecting the industry that you are looking at. If I use the example of internal combustion engines in a generic sense: we do not manufacture diesel engines in Australia, we refurbish them. A lot of the mining companies and companies such as Caterpillar have quite significant engine rebuild capabilities. We do manufacture petrol engines because the construction of a petrol engine is more lightweight and tends to deteriorate faster, so there is no possibility to rebuild it. I do not know whether you can see that as an example, but as a case of where we need the capability: if it is best able to be provided indigenously then invest in it, but if you can get it on the global market then do not reinvent the wheel.

So there are specific industries in Australia—I look particularly at the sonar area—where there are about three companies which have got particular capability which I would say is unique to Australia, or which have been developed in Australia. They have survived, but I would not say they have been overjoyed by their experience. It is a case of choosing the capability which we believe is unique to Australia and looking after that one. There are an awful lot of other capabilities which you can get anywhere you like.

**Mr Lockhart:** If I may, I will add to that. We have talked about getting into an industry; a submarine or warship program is often between 15 and 20 years, yet we rarely contract for that length of time. This then

provides some kind of disincentive. Normally the prime contractors engage the supply chain on long-term partnerships whereby that growth and that innovation can be stimulated and pooled through the contract. So that is where there is this disconnect: having a program that we can forecast for 20 years and yet we choose to contract for maybe three, or five at best. As Mr Horobin has said, it is not a surprise then that SMEs or parts of the supply chain go off to find more lucrative longer-term sustainable returns for their businesses.

**Mrs Wates:** If I could jump in? I am agreeing with my colleagues here; I think one of the things that we really tried to push with the recommendation about a sustainable workforce plan was really focused on this. We have seen a number of small- to medium-enterprises establish businesses in Australia only to find themselves rapidly having to look for alternative means of revenue and work. There are companies who establish on the basis of things like the DCP and the white paper, and they naturally make an investment in people, resources and capabilities to prepare for those programs that are coming up.

Just to reiterate conversations that I know take place in industry, there are not very many organisations at the moment that are willing to recruit at risk. People are bringing on those core skills as they need to, to try to support key programs—such as submarines in Australia—but we do run the risk of organisations starting to downsize or close down and that already very scarce workforce being continually reduced unless we are able to identify some form of longevity. The point that Mr Lockhart made around the three- to five-year programs is a lesson that we have really learned in the UK. QinetiQ is a global organisation as well, and we find that with those longer-term programs we are able to offer much greater value for money on the basis of proper planning, proper resourcing and proper allocation, where those resources are people, facilities and equipment as well.

**Senator STEPHENS:** So your advice to us is that, in Defence procurement, we should be looking for an overarching, long-term management plan around some of those major acquisitions.

**Mrs Wates:** Prior to my colleagues answering, that would be my advice. I recognise that there are associated risks with that. The kinds of things we would recommend would be break points. Rather than embarking on a program where we do a three- to five-year competition and we risk somebody new coming, if we are looking at truly collaborative engagements where that collaboration is not only within industry but also between industry and defence, then we should perhaps be looking at opportunities for 30-, 50-, 70-year programs, as Mr Horobin says, where there are clearly identified performance indicators within those programs and everybody understands what is expected of them. That can include things you were mentioning such as cost escalation. If we are very clear on our expectations and we have a true collaboration, we will be talking to each other every day, not just finding out about cost problems at the point of renegotiation.

**Senator STEPHENS:** Does that operate in any other country that you can point us to?

**Mrs Wates:** We have the long-term partnering agreement in the UK. QinetiQ operates the Ministry of Defence ranges on behalf of UK MOD. That is a 25-year program. Through that program we have been able to distribute the costs associated with the upkeep of those ranges, which massively helps the UK MOD where they have that annual/biannual funding cycle. We have seen great success in that program to date.

**Mr Lockhart:** We also have 15- to 20-year programs in both the warship support and submarine support enterprise in the UK. That is not a 15-year contract; it is a 15-year framework agreement. It is underpinned by three- or five-year contracts, all with spiral development improvement. They also have inbuilt performance objectives to stimulate the supply chain such as taking on mentoring of SMEs to make sure that it is a sustainable objective. It is defined in benefits rather than just value for money.

**Mr Grove:** I have a point to add to that: the UK agreement is not a 15-year agreement just to do the work; it is a commitment by industry to deliver savings over that period. In the particular situation here, with the strategic reform program, there is an identification of savings. In the UK those savings have actually been embodied into the 15-year agreement that Babcock has. It is our obligation over the next 15 years to find ways of reducing the overhead to deliver that saving back to the government. In that way, the strategic reform is then delegated down to industry.

**Senator STEPHENS:** Would that approach be enough to underpin the industry in Australia, particularly in relation to a submarine program?

**Mr Horobin:** A commitment of 15 or more years would certainly give companies something to plan with. They can then start to become masters of their own destiny.

**Mr Grove:** The issue that Australia has which is probably different is that, in most cases, you are not looking to develop a particular defence solution which is unique; most of the procurements are purchase of existing equipment that comes from overseas. That is a different situation than a complex project such as a submarine, which will inevitably be unique. You cannot generalise and say that one approach is better. The underpinning

issue is that you have to have a local industry base. And if you are going to operate a defence asset for the next 25 years, it will be industry that will be needed to support that asset. If you do not have a strategy for industry to have the right capability and to have a viable business, it is inevitable that the availability of those assets will suffer.

**Senator STEPHENS:** I am new to this committee, so I apologise if this question is foolish. In terms of the concerns that you raise, Mr Horobin, about early upfront investment underpinning growth and sustainability of these organisations, what is the taxation treatment for defence capability? Does the government provide incentives for research and development and investment in this capability, industry specific—

**Mr Horobin:** No. It stands as any other industry.

**Senator STEPHENS:** Would that be an incentive? Could that be part of the incentive package that would help to support what you are suggesting—that is, that expectation about upfront investment?

**Mr Horobin:** My point with respect to the upfront investment actually is more specific to the project itself using funds to gain information.

**Senator STEPHENS:** I see. Okay.

**Mr Horobin:** At the present moment the project is going around in circles talking to itself. It needs to spend money in order to get to know what is going on. That is point one. Yes, we will approach a point very quickly I think now when we need to start to invest in some long-lead capabilities. There have been R&D tax benefits which have generally been not industry specific. I have seen them. Some have worked well and some have not. Personally, I would not be advocating a particular special deal for the defence industry. I think it needs to stand on its own two feet. However, there are cases where there is industry which is of strategic significance and therefore needs special attention but there is a whole lot of other balance issues in there.

**Senator STEPHENS:** Thank you.

**Senator FAWCETT:** We have had a number of witnesses talk over the last couple of days about the nexus between national capability and the capability development group and white papers and how they all mix. We have had some people praise the government for the last white paper, given the fact that there was a very clear statement about the fact that we need submarines and they would be built in Australia, in Adelaide. It did not actually specify the metal that would be used but it was fairly clear. So a lot of industries said, 'Fantastic. We know we can now start gearing up and positioning for this.' We have had close to an equal number of people say, 'That's dreadful. If we need a submarine capability, we should have actually allowed contestability and said, "Is there an off-the-shelf solution that will do half the job or 70 per cent of the job or whatever".' You probably represent the best group that we have seen—and particularly you, Mr Horobin—in terms of giving us some feedback about the reality of off-the-shelf solutions because we have had conflicting advice. Some say there is a German off-the-shelf conventional submarine that may do the majority of what we are after versus some other people who say that the only off-the-shelf solution is an American-build nuclear submarine. Would you like to comment as to what are Australia's broad options if we did not build here?

**Mr Horobin:** I should step back and declare my bias right at the beginning. The SIA was a very vociferous supporter and contributor to the defence white paper so we claim almost ownership of chapter 9. We do not think there is anything wrong with the white paper in that area. In my opening remarks I made the point that we tried the military off-the-shelf option and the shelf gave way. We have tried what I call the stop/go of capital procurement with Collins and we found, as my British colleagues will tell, there is a nasty thing that in the UK is called 'mind the gap'. You think it is on the London tube but in fact it also applies to the shipbuilding industry. If you try to stop and start a shipbuilding industry the pain is terrible. The SIA's position is that the Australian strategic environment has not changed. Our geography drives most of our strategy and geography has not changed for a very long time. That dictates a virtually unique design submarine. We want a long-range, highly capable submarine. We are not a nuclear power. We are therefore going to use conventional propulsion and therefore the definition in the white paper which the SIA very strongly supports and articulates is the only way to go. As for going for an off-the shelf solution, there is no off-the-shelf solution that meets our requirements and I think I know who suggested to you that 70 per cent might do the trick; there is not a 70 per cent solution. It is like being a little bit pregnant. You are either in this or you are not.

**Senator FAWCETT:** I take it that the main requirement you are looking at here is range and loiter time. If, for example, you took a smaller coastal submarine, which is essentially what I understand a European sub to be, does that just mean that we would not be able to deploy as far into the region for a given period? Or would that mean that we would need more refuelling and surfacing? What is the strategic impact of that limited capability?

**Mr Horobin:** The best way that I can tell this story is to look at the allied submarine operation based out of Australia from 1942 to 1945. There were quite a substantial number of United States, British and Dutch submarines based in Brisbane and in Fremantle in that period. The Dutch submarines and the United States submarines, by comparison, were the sort of Collins or future submarine of today. The British submarines were smaller and nearer to the most advanced German submarines of today. The United States and the Dutch submarines were able to get into the South China Sea and up into the Sea of Japan, coming out of Fremantle, and conduct their operations. They were able to get through the Indonesian archipelago, which was the most dangerous area, and get to the other side of the Indonesian archipelago and conduct their operations.

The British submarines were invariably in the Indonesian archipelago and took proportionally more losses. I can try and explain it: if you want to defend a gap, you want to get on the enemy's side of the gap. You do not want to be on your side of it or in it because on your side of it you have lost and, if you are in the gap, you have lost your advantage of surprise. In the past Australia has used the Indonesian archipelago as its barrier, if you will, and you want to conduct your submarine operations on the other side of that barrier. That is it in very simplistic terms.

**Senator FAWCETT:** One of the witnesses talked to us about the direction of land attack weapons launched from submarines and the fact that they felt even the prolific US use of those has had a limited effect. Therefore, with our smaller numbers, are we foolish to be complicating the design and through-life support of the ship to have the capability if a large prolific user of it has not achieved much strategic effect? Would you care to comment on that?

**Mr Horobin:** I know very little about the use of land attack weapons and therefore this is really an opinion, but my opinion is: why would you close off an option that you may want to use at some later stage? You cannot fit these onto a submarine three years down the track after you have changed your mind and decide you want them.

**Mr Grove:** I can add to that. Part of Babcock's business does provide weapon discharge and handling systems. We actually supply Collins and we have supplied a range of submarines. We do have the ability to launch land attack missiles from the horizontal torpedo tubes and that is what we do in a variety of countries where we supply equipment. It is possible to have that capability from a conventional submarine.

**Mr Lockhart:** I agree with Peter. You have to explore the full range of capabilities, having made the decision that you are going to buy new submarines. It would be folly to limit those options right now without exploring the full potential capabilities that you have. I am pretty sure that the US and the UK would say that. The ability to deploy land attack missiles and deploy them with stealth is one of the greatest assets that they do have over the very obvious ship sailing into coastal waters to do so.

**Mr Horobin:** If I may come back to this point, the Australian context of a land attack weapon is not how many missiles you can land in Tripoli or whichever town they were talking about at the time so much as the potential that you might. That is where the influence is, not that you can get six missiles and that is not really very effective. It is the possibility that you just might get one.

**Senator FAWCETT:** We have had a number of submissions talk about the need to level out workflow, particularly for things like shipbuilding but across all areas and particularly some concepts around smaller batches, quicker turnaround as opposed to big block replacement. I noticed that QinetiQ's submission and others talk about smoothing out and having, in your case, the separate design phase et cetera. Would you like to talk through a little more about how your concept of separating the design phase from manufacture differs from some of the other approaches such as, 'Let us have a lead vessel, build it, learn the lessons and then just have a lower rate of production over a longer period with midlife updates et cetera'?

**Mrs Wates:** Could I check to see if Gordon is on the phone at the moment?

**Mr MacDonald:** Yes.

**Mrs Wates:** I will hand that over to Gordon, please.

**Senator FAWCETT:** Gordon, go ahead, please.

**Mr MacDonald:** The reason for continuity in design and the designer itself is that the most expensive element of any program is the actual fashion side of it, if you want. What you need if you are going to establish and maintain and develop a true design capability which not only can support acquisition but can support modifications through life is a level of continuity. The thought of in some way trying to be able to complete that just does not make any sense. What we need to do is have an integration of those elements that go to design, which are much wider than just the designer itself. You have the collaboration with your allied navies and the access to their technology. We have our own BSBO research capability, our own engineering capability with the

Department of Defence and the integration of the operators with their experience from the field. They all have to be able to work together and develop that capability with partners from industry who are independent of the solution. That way you can establish your batch design of submarines, batch 1 and then, as they have experience and understanding of technology they can modify the follow-on batches therefore de-risking the program and extending the capability. This is really the only way if you are looking at building an industry program. The batching of the builder's boat, if you want to keep that element of it and still achieve value for money, means containing that body that has a design configuration baseline, and controls that through life and follows on the incremental improvements. That is really what we are seeking.

**Senator FAWCETT:** Sorry, Gordon, at this end the phone quality is very patchy. We got most of that, I think, but not all. I am not quite clear whether the intent is just to have a design phase and then a manufacturing phase using that design, and then the design company continues to run in parallel so it can do upgrades—but they may be completely separate corporate entities. Is that the proposal that you are putting forward?

**Mr MacDonald:** No, that is actually correct. The program plan in the back of the paper indicates that unity of the design access is shown down the bottom for each access, so we get the involved design when they come off that, the design work for batch 2 and follows on, and the program schedule ... using columns as a baseline would indicate that that has actually ... a program to get to the end of the design access for batch 3 and then you are looking to complete the first.

**Senator FAWCETT:** Would you like to try and make something of that?

**Mrs Wates:** I will just try to capture what I think Gordon was trying to get across. We initially started off with the view that you would want to separate the design and production, so this was an evolving thought process, and that the design would potentially be something that happened upfront. Then we started to look through that as a reality and delivery suggestion and realised that actually what we need to do is ensure that that design maintains some level of consistency. We have proposed a batched model and, whilst we have talked about three batches of four, the number of platforms in each batch is actually irrelevant at this stage. The point that we are really trying to push through is that we have a limited but, forgive me for saying, ageing capability in the submarine arena in terms of what is available in industry and in Defence. The idea is that we can set about putting experienced designers into the team now to work with the design phase—bring people in alongside. Platform 1 would be a low-risk initial delivery option, so, when we talk about what the requirements are with that opportunity for spiral development, we will perhaps not necessarily have everything in there but we will learn from that first platform as it goes through. To answer your question, Senator Fawcett, once production begins, there would be two separate activities running in parallel. Is that fair, Gordon?

**Mr MacDonald:** That is fair but note that we are talking about the platform design. It is almost a given that, if you want MOT elements of a green program, it is going to be the combat which will virtually most likely come from our allies. It would be alien but the real development we are talking about is in the platform only.

**Mr Lockhart:** I am not sure if I understood the two parts of the question, but I hope to address them separately. We do agree that there should be some level loading of the program going forward. This is key, and I think there is a very important lesson from the UK; Mr Horobin has already mentioned *Mind the Gap* in the UK. We had a very significant gap between the design and build of the Vanguard class submarines before we got to the Astute build program, and that taught us many hard and expensive lessons. One was that we had eroded our core design capability, and we must have a core design capability maintained throughout the design, manufacture and support process. If that is for the next 50 years then that is a number that we have to work out with each other.

The other thing was that not only was the resulting Astute program more expensive than the original estimates; it also became more expensive to maintain the existing class of submarines for an extended period of time. It was also a very costly, unaffordable position we found ourselves in. We were saddled with 35 year-old submarines that were becoming more and more difficult; the supply chain had all but evaporated and some of the equipment had been obsolete for 15 years. That is a position that we must avoid as we transition from Collins into whatever the future submarine is. I think that there are many lessons to learn about having a level load and maintaining a drumbeat around which industry can build its foundations.

**Senator FAWCETT:** I have one final question for QinetiQ. There has been a lot of discussion about how many skills and what workforce we need in Defence and in industry and what we can in fact outsource/insource from overseas. QinetiQ is a unique organisation. For those who are not aware, it was the original DSTO, if you like, in England, split in a couple of parts. Are you still majority owned by the UK government or has that now dispersed?

**Mrs Wates:** We are not majority owned anymore. I can provide, on notice, specific details of the separation of ownership on that, if that would be helpful.

**Senator FAWCETT:** No, I am just looking at whether you have the reach back there into MOD, shipbuilding and submarine operations as an industry player or whether Australia still needs to invest heavily in things like the TDCP program so that at a government-to-government level we get a reach back into that expertise.

**Mrs Wates:** I think it is a combination of both of those. There were always going to be elements of exchange which need to be retained at government-to-government level for classification purposes, but we all work together, both in the UK and in Australia, and are very keen to work together as organisations to support the Future Submarines program. There are ongoing conversations between us and the various entities at government levels and industry levels to look at how best we can support the Future Submarines program. So yes, we definitely have that reach back. I would probably extend that to say that it is not just into defence; it is also into the industry both in the UK and in Australia.

You started the question by talking about the need for the skills within Defence, within industry and internationally. Our assertion is that this is a very scarce capability, and there are already two major international programs running on these programs so Australia's natural allies already have their own resources very busy on their programs. The point I would make as QinetiQ on this is that the submarine capability is about national security capability for Australia, so, when planning how you would like that capability to be delivered, you need to look at which aspects of that capability need to maintain an AUSTEO level of information within them. But in terms of reach back we definitely have that both through QinetiQ and through—I would say, through my colleagues to my left—other organisations in the UK, and not just the UK; we all have links into the US as well.

**Senator FAWCETT:** Sure. Certainly in the early days of QinetiQ I am aware that there were some releasability concerns from the US, and I believe in part that is why DSTL had to alleviate some of those concerns.

**Mrs Wates:** Yes, that is right.

**Senator FAWCETT:** I have one last question for Mr Horobin: one of the constant themes we hear is that we struggle to find crew to man our surface ships, let alone our submarine fleets sometimes, and that is with six boats. In the association's opinion, how are we going to go for finding crew for 12 boats?

**Mr Horobin:** If we invest in the capability, we will find the boats will start to do interesting things and sailors will want to go to sea in them. One of the problems we have today is happening in Western Australia in a big way right now—that is, we have highly trained technical sailors who can make a lot of money driving a yellow tractor around a big hole in the ground up in the Kimberley or up in the Pilbara. But those guys would not leave submarines if they had something interesting to do. Investment in the capability so that some of the availability issues are addressed will overcome that—and give some of the officers clearer careers. A simple analysis at lunchtime today showed that we have not produced a submarine admiral in 10 years. Now, I do not believe that submarine officers are that bad. They might have been in my day, but not now. So there is a problem, and when I say 'investment in the capability', part of it is dollars and part of it is the people.

**Senator LUDLAM:** I might carry on with that line of thought, I suppose. What do you think are the key lessons that we are going to need to learn from the situation with the Collins class submarines if we are indeed about to embark on an even more ambitious program of submarine construction here in Australia?

**Mr Horobin:** The point we wish to make is about taking the 100-year view—the very long view—which means we are creating an industry. We have heard several speakers say that that means establishing a drumbeat. The popular view of the future submarine is that it is going to cost an awful lot of money—and I imagine it is probably going to cost even more than that. But if one gets a proper drumbeat, then the cash flow impact on the Defence budget should not be as painful as we are telling ourselves and we should not have the peaks and disasters that we have. Focusing the right amount of investment on the capability sounds like a glib answer but, quite frankly, that is the answer.

**Senator LUDLAM:** No, I was asking you to oversimplify, I suppose. I realise it is a very complex area. Military submarines barely existed a century ago. Given even the degree to which the security environment has changed, even since the 2009 white paper was published, how on earth do you think it is possible for an Australian government in 2011 to set a construction timetable and security priorities for the 22nd century, which is effectively what you would be asking us to do?

**Mr Horobin:** There is a key assumption in what I am saying, which is that the water will still not be transparent in 2114 as it is today, and while the sea is not transparent submarines will still have a role to play. When somebody invents a device that can see through water for a range of several miles—and I mean many

miles—then the availability and capacity of submarines is going to become questionable. Until we overcome that law of physics, submarines have a major role to play in Australia.

**Senator LUDLAM:** I do not want to misinterpret the remarks that you made in your opening statement but you made it sound as though—and perhaps it is what you are reemphasising here—we cannot keep standing up a workforce, skilling ourselves up, doing these intense pulses of construction and then letting it languish and lapse; people drift away to do different things. But that effectively sets us up for, in perpetuity, the ability to produce these vessels and then the necessity to just keep stamping them out and keep producing them. Is that what you are proposing?

**Mr Horobin:** The analogy I draw is my life insurance policy: if I do not pay the premium I will not have the cover.

**Senator LUDLAM:** Okay. Can we take a step back then. I have asked a couple of witnesses this question—and I am happy for anybody to address this. What are the underlying assumptions as to why Australia should have its own domestic submarine building capabilities? Would you advocate that, for example, for a much smaller economy such as New Zealand, which also has a very keen interest in maritime security?

**Mr Horobin:** I would like to open the batting, if I may. I think New Zealand's industrial capacity is quite different from Australia's. In the early stage of the Collins program, New Zealand was quite closely involved. There was a proposition that there might have been New Zealand crews in Australian submarines—and governments may choose to do that at some time. Submarines have proved to be an important part of Australia's defence strategy. I go back to the period 1942 to 1945, where, fundamentally, allied submarines made a major contribution to the defence of Australia. Whether in fact the Japanese were going to invade Australia or not now becomes a question.

**Senator LUDLAM:** They were on their way.

**Mr Horobin:** At the time the powers that be thought they would and the Japanese had their logistic supply lines basically cut by allied submarines. That stopped the potential for invasion. There were certainly land actions at the end of those supply lines, but the thing that actually stopped the progress south was the fact that they eventually had no merchant fleet and they lost 70 per cent of their navy. That was conducted by submarines. We are in an unusual strategic environment in the world; we are an island and I would include New Zealand inside that island zone. The threat, fortunately, comes basically from one direction; it does not come from the south. So we can direct our submarines down the threat bearing and the quite natural strategic barriers that we can use in that defence process.

**Senator LUDLAM:** We have not heard many arguments for the abolition of submarine capabilities. In fact I do not think we have heard that point of view put at all to this committee. The question that we are wrestling with is whether or not we need to design and build them ourselves because of the enormous upfront costs compared with the ongoing costs of maintaining them, keeping them afloat and so on. This morning ASPI, reluctantly I think, came down on the side of, 'No, it is not something that we necessarily should do for the same reasons that we don't build our own fighter jets,' and that is one of the questions that this committee is grappling with. What is the argument for building submarines here? We do not build our own fighter bombers and we do not build our own military satellites; we borrow that capability from others. Why submarines?

**Mr MacDonald:** Can I answer this.

**Senator LUDLAM:** Please speak as slowly and as clearly as you can because we are having a bit of difficulty hearing you.

**Mr MacDonald:** Okay. The reason is that, if the submarine requirement for Australia is unique—and there has been a unique Collins class, and we are looking at this class which will be unique—if we go down a COTS solution, by 2043 we will be sitting around again with the next project with a unique requirement, still looking to what we can buy offshore. The question is: 'Why can't Australia concentrate on designing and building its own unique requirements?' There is no-one else out there who needs submarines that do what our capability people have determined they should do, what we should be acquiring them for.

**Mr Grove:** I am commenting from the point that the white paper has said that there is a need for these submarines, resulting from extensive research and analysis of the threat. The conclusion is that submarines are a means of addressing that threat. Given that that is true—and I am not in a position to question that—you are then faced with the question of whether you can actually get a submarine to perform that role in any other way than building it yourself. If it is a unique requirement, which it would appear to be, it will not be easy. To pick up on the point Mrs Wates made, other countries have their own programs and their resources are likely to be fully committed. If you are going to expect somebody else to build a unique submarine for you, it would then actually



have to fit in around the capability in that country, which would be difficult. If you are in a situation where you want to buy a submarine and you want to buy it from overseas, you are probably then going to have to compromise the capability to match what is available on the export market.

The majority of submarines that are produced are designed to suit a particular situation. The US developed their own and the UK developed their own. So did the French and the Spanish. The Germans do, but they are the only ones who specifically produce an export solution that is marketed to a variety of countries. That is the distinction here: if you are capable of operating with what is a standard product, then the best solution would be to buy it overseas. If you need something which is unique and specific to a particular situation, it is not something you can go out and just buy on the open market.

**Senator LUDLAM:** I think the uniqueness of what we need here has often been assumed and very rarely spelt out. That is one issue. Perhaps the uniqueness is the assumptions underlying the Defence white paper were that at some time in the next few decades we are going to be at war with China, one of our most important trading partners and, I would have thought, allies at this stage. This is perhaps borne out by the example Mr Horobin gave us of the threat coming from the north. The white paper itself is in a bit of trouble. I will quote very briefly from an article on the ABC a short while ago, by James Brown, from the Lowy Institute. Noting the number of people involved in putting the 2009 white paper together are gone and that we are moving to a five-year cycle publication of these documents, he closes the article by saying:

It's entirely possible that Force 2030 lies dead somewhere in Russell Headquarters and the public are yet to discover the decaying corpse.

Are you confident that we are still on track to deliver what was written in the white paper or are we off on a tangent?

**Mr Horobin:** The point I am making is that we are late.

**Senator LUDLAM:** We are certainly late.

**Mr Horobin:** That does not mean that the ground cannot be recovered if we take action now. The fact that some commentators see the white paper as languishing in some sectors does not, in my view, reduce the requirement for a capable submarine. A capable submarine is driven by Australia's geography, not by the white paper. The white paper is a reflection of the geography, not the other way around. If one were to rewrite the white paper tomorrow it may look different but we would argue very strongly the submarine component would not change.

**Senator LUDLAM:** Are you quite proud to take credit for the chapter you wrote? Are you taking credit for the revision that is occurring for the 2014 edition?

**Mr Horobin:** I am not aware of a revision at the moment. I would welcome the opportunity to participate in it.

**Senator LUDLAM:** Would you just spell out for us—some of us here have a background in defence policy and some do not—what an export German submarine would not be able to do that a home-grown submarine built for Australian conditions could do?

**Mr Horobin:** Most of the weapons we wish to install would not be installed. Most of the sonar systems that we wish to install would not be installed. The communication system we would hope to install would probably not be installed; it would be difficult to install. The range of the submarine would not meet the criteria that we believe is necessary to conduct Australian submarine operations.

**Mr Lockhart:** Can I perhaps approach that question from a different angle? We have focused on the difference between MOTS and an in-house solution. If I were to ask that question back, it would be: why do we think that buying MOTS is any less challenging than building and designing our own in-house submarine? To tie the strategic defence and security of a nation such as Australia to any MOTS solution, then you are tied to the continual development of that core product for the next 20 years. You would have to work very hard to influence that final development to match your changing security needs.

**Senator LUDLAM:** But we have six submarines at the moment that we cannot put to sea. That is why there is a degree of scepticism about pursuing a vastly more expensive program of rebuilding 12 larger submarines than that or, arguably, a much smaller amount of money much more rapidly at less risk to purchase them off the shelf? That is the counterargument.

**Mr Lockhart:** Again, I will come back and say that Collins is probably proving the point. It was based on a MOTS design. But what is a real MOTS, because there is always some level of customisation through the design of these submarines? So we end up managing the complex support interface through life rather than just buying

what seems a very easy and reliable product at the start of the process. The view I would offer is that it is just as complex and challenging to support a MOTS solution through life.

**Mr Grove:** Perhaps I could just go back to one of your original questions. I think you asked Mr Horobin what lessons can we learn from Collins. I was involved from the outset with Collins. We as an industry replied to a request for tender and offered a solution. That solution was the supply of six submarines. There was absolutely no strategy or no continuum to take that through to the total ownership of the submarines and the support. So a lot of the issues that you are seeing with Collins are not because the submarine that was actually designed and built was actually not fit for purpose but that there was no 50-year perspective of how we are going to support these submarines, how we are going to operate them and how we are going to sustain the capability. I think the main lessons you can take out of Collins is that, as Admiral Moffitt says, it is not about the acquisition of submarines. It is actually a development of the capability that can actually maintain that submarine operation through its entire life, which is indefinite.

**Mrs Wates:** Just picking up on those points: if we buy off-the-shelf and we are talking about taking something, say for example, the German platform, it is a case of taking it as is and making no changes to it. We have to be able to deliver it and then we have to start looking at things like contracting for availability. The point that I want to really bring out is that Collins is a fantastic example of buying something that we have had to rapidly build a skill set in country to be able to respond to some of the requirements around the number of engines and things like periscopes. The DSTO have been fantastic in some of the scientific developments they have put in. The recent Rizzo report—and we have the Coles report coming in too—makes a very strong case for the whole-of-life considerations of the platform. I think that is the thing that I am hearing here and it is certainly our view as well. If you want to go and buy something and you want to be able to operate that for the next 20, 30, 50 or 70 years, you need some sort of support infrastructure. A commercial arrangement needs to be in place somewhere. That could be with those other suppliers, but then that is going to be very complicated and national politics is probably going to come into play there. Alternatively, it could be looking at what we as a country can do over here.

**Senator LUDLAM:** I realise the committee probably wants to move on, because I have held us here for a bit, but my final question is why would these lines of logic not apply to aircraft?

**Mr Horobin:** We use aircraft in a different way from submarines. I do not want to go any further than that, but the comparison does not work, unfortunately.

**Mr Lockhart:** There is a simple equation involving choice as well with aircraft, that is not with submarines.

**Senator LUDLAM:** They are less lumpy?

**Mr Lockhart:** There is less of them to choose from, so you are constrained by going through the MOTS solution and you have to be very careful that you have made the right decision because you are in that industry for the next 20 or 50 years. Whereas with aircraft, previous history can attest that in recognising that you have made an acquisition choice, it can be replaced, albeit expensively.

**Mr Horobin:** A comparison was made recently about why we do not go down the C-17 route. Go and buy C-17s—it is easy. To the best of my knowledge, Australia has made no change to the C-17 to meet its requirement. In other words, the United States has built the C-17 to meet a particular requirement that parallels the Australian requirement, so we have just bought a C-17. It is a good example of a successful MOTS. We do not have the same requirement as another country for submarines.

**Senator LUDLAM:** All right. I could talk about this all afternoon, but I will let it go.

**CHAIR:** Senator Humphries?

**Senator HUMPHRIES:** I am following this debate about the need for an indigenous submarine, and I can see the argument that is being made here. I am not yet convinced about the need for an indigenous sustainable submarine design. The process you have outlined, Mrs Wates, in your paper essentially talks throwing out into the Australian marketplace a call for involvement in designing an Australian submarine. I assume that if such a tender were offered or another process, you would presumably end up with overseas bidders. I assume that the overwhelming bulk of Australian design expertise on submarines is bound up to Collins, and that is essentially tied to the Swedish and German intellectual property. So I am not sure whether anyone in Australia has the capacity to offer an Australian designed submarine. How likely is it that such a process would produce any significant Australian input to that design?

**Mrs Wates:** So you are basically asking me if we go out to competition for design, are we going to be able to provide that design capability in Australia, with Australians. Going right back to the very start of the hearing this afternoon, I think that talking about having that commitment and knowing that program is going forward will be

something that fully incentivises industry to develop capabilities in-country. If they know that there is a likelihood that there is an ongoing design capability requirement in Australia, those companies will invest in bringing people forward.

**Senator HUMPHRIES:** Are you saying that a commitment to design in Australia does not mean a commitment to design from Australians themselves? This building is an Australian building, but it was designed by an American. Are you saying that we should design this particular submarine project in such a way that the design comes from an Australia or from an Australian company?

**Mrs Wates:** I think we need to design it so that it comes from the person who is best placed and qualified to design it. I want to bring in another tenet of our paper, which was about the creation of a national capability. In our paper not only have we proposed the requirement to have the ongoing design capability but we have talked about the shortfall in the current capabilities in Australia and the need to really start developing a national capability today. I know that the guys to my left are itching to answer this as well, but there are national and international design capabilities, and there is a company who I think would argue that they are well placed and well positioned to pick up the design of the future submarines today.

**Senator HUMPHRIES:** An Australian company?

**Mrs Wates:** An Australian company. I think it would be fair to say that Deep Blue Tech believe that they are able to do that. I also think that there are other companies out there. I know that my colleague on the phone would very much push forward that BMT are very well positioned and I suspect that Babcock would also have those capabilities, and the ability to build a team using Australians but also draw from those people who those organisations have elsewhere in the world. So in answer to the question, 'Could we stand up a design capability?', the answer is yes, if there is clearly articulated program that is committed to by the Commonwealth. Should it be Australians or should it be internationals? I suspect it is probably a combination of the two in terms of how that comes together. If you want that to be an enduring design capability, we need to start today in incentivising people, and getting people developed and skilled in that discipline, to be able to take over from the people who have been doing it for the last 30 years.

**Senator HUMPHRIES:** The comment has been made by other witnesses that we tend to get into the most trouble with design, with acquiring defence kit, when we start to Australianise it very heavily and demand that it has specific Australian features about it. And the more components we insist are original and only found in Australia, the more the cost is going to be added to. Can you give any kind of estimate of what the cost would be of ensuring that the design of the submarine was unique, supposing it was at least partly Australian and partly from overseas? But it would be unique to Australia's conditions, and we had the copyright—I assume that is the essence of what you are saying. We need to have the intellectual property in this design in Australian hands, so that we can evolve our third, fourth and fifth generation of submarines in due course from that original design. What would the cost of that be?

**Mrs Wates:** I do not know. I will defer to Gordon, if he can try to answer the question. Otherwise we can take that on notice, if that is okay. I am afraid we have got problems with the reception today.

**Senator HUMPHRIES:** That would be a good idea if we could do that.

**Mr Lockhart:** There is a slightly different view. I think the challenge for Australian design is twofold—resources and capability. I think what has been proposed is a federated approach to building that initial design capability. But it is also the question of that design basis, and with the Collins IP currently being restricted to Swedish-German ownership, there is a challenge for Australia to have enough design basis and pedigree to move away from that. It does drive you then to consider alternative designs that are out there from overseas proven submarine builders. So I think the challenge is twofold for us to consider on how we make the ultimate decision between an in-house design and the resultant MOTS. I think the suggestion that we could segment the design from the rest of the process—

**Senator HUMPHRIES:** Sorry, but you seem to make the contrast between a MOTS design or a design we develop in-country or through an Australian process. There is a third alternative, is there not? And that is—

**Mr Lockhart:** There is a third alternative, where it could be an in-country design using principally MOTS systems.

**Senator HUMPHRIES:** Sorry, just say that again.

**Mr Lockhart:** There is a third option, whereby we can have an in-country design, but it is using principally off-the-shelf systems and equipment. So it is neither a full MOTS solution, but neither is it a full re-engineered in-country design. Again, as I said, the challenge is both in resources and capability, the number of design people we can bring to bear if it is to be done in Australia. And our judgment is that that would need at least some

government-to-government assistance with other submarine builders and nations that have programs, but also we need to consider to design basis, the engineering standards, the codes, which are linked through the current Collins IP.

**Senator HUMPHRIES:** I have to say that I am not convinced about that. I accept that there is a strong case for an indigenous submarine. We do not know what the cost is going to be, but we can assume, on the basis of other equivalent projects, that the cost will be very significant because we are demanding a unique submarine—our own design submarine that we have intellectual property over. I am just not sure that that significant additional cost, and I am assuming it will be significant, is justified in circumstances where—I am trying to foresee circumstances where the lack of ownership over that design would be a major problem. Let us say that we are looking 50 years into the future. We have built our Australianised design submarine and now we go to the next evolution. Why would we not go out into the marketplace in 50 years time and see what was the best thing in the marketplace then? We might have spent billions of dollars giving ourselves the Australian intellectual property over our—

**Mr Lockhart:** Senator, I think we are agreeing with you.

**Mr Grove:** If you purchase a submarine and you do not own the IP, the problem is evolving that submarine through its operating life. For instance, if we were to go back to the MOTS solution, you buy an existing submarine, you do not buy the design knowledge that went behind it, you do not buy all of the codes of practice, processes and experience that enabled that to be produced. If you want to make a modification to that submarine you are obliged to go back to the provider for them to do that. The problem with that is you might be introducing a capability which is unique to Australia that you do not want them to then build into their future designs and then sell on to other countries. The reason for wanting to control the IP is because there will be operational aspects of this submarine's performance that will be unique to the way the Royal Australian Navy operate and they will not want to share that with others. The problem with the MOTS solution is that it is like buying a car. You are buying something that has been developed and exists and is there to be supplied. You do not actually have ownership over every aspect of that so you can then amend it and adapt it.

**Senator HUMPHRIES:** Everything comes with a price. The question is what that extra capacity costs and whether we can afford that cost. That is the question.

**Mr Grove:** I do not think that is a judgment that we can make.

**Senator HUMPHRIES:** I have one more question but I will put it on notice.

**CHAIR:** We have covered a lot of issues. The question of intellectual property is obviously a very important one in terms of the years out from the inception of this project. If Australia wants to buy the design, as might well happen as time goes on that is obviously quite a significant issue—who owns the intellectual property—and we would presumably have to pay licensing fees and so on if we varied a design from another country.

One of the issues that has been prominent before the committee is the need to maintain an ongoing industry to maintain the skills base and the core of people who are available to work on these projects. There is a view that the stop-start approach which Australia has had to the whole issue of defence procurement is not a good one. I suppose in this case, with the possibility of 12 submarines being built, it could be a case that there could be an ongoing facility and that that particular issue of the availability of skilled workforce would be eliminated because there would be continuous work. How often do submarines need to come back for refurbishment and repair and upgrading, in your experience?

**Mr Lockhart:** The operating cycle varies on the complexity of systems. It is typically between what I would say is seven to 10 years for deep maintenance but a submarine is continually in maintenance. We have short, sharp maintenance periods that last a matter of days, which is principally for minor defects, restore and send out. They do vary. Certainly in the UK and probably now in Canada we are seeing that the longer, deeper maintenance periods which are typically known as FCDs or refits, are becoming shorter. Industry is being incentivised to look at new techniques, continuous monitoring of systems and keeping the submarines out of the water less and less such that we can maximise the operational time. The maintenance evolution is driven by the submarine mid-life major revalidation of the hull and subsafe equipment. It is almost a five-year cycle in terms of major updates where there might be a six-month maintenance period for revalidation update. It does tend to vary, based on the nature and the role of the submarine itself.

**Mr Grove:** I would just add to that and say that obviously submarines operate in a very hostile environment and in some cases when they are not used it causes greater deterioration than when they are used regularly. That can then lead to additional refurbishment and maintenance. Maintaining the capability has to be carefully planned. What we are seeing in the UK is that there are benefits now from this integrated approach where we have a single

enterprise between the navy, industry and the government working together with a joint target of trying to reduce these costs. Because it is a question, really, of understanding what the real need is and only doing the work that is absolutely necessary.

**Mr Lockhart:** In the UK we have arrangements across what we call that intellectual thinking, with companies such as QinetiQ, BMT and Babcock. We now have much more information about the operation of the submarine requirements than we did before. I think our role was limited to purely the maintenance of the submarine, but that integrated approach piece has given us a deep understanding of what the submarine has to do when it is at sea. That has helped us make that predictive element of the forward maintenance, so there is a much more condition based maintenance, reliability and new technology insertion coming to the fore as we have got more data and more information produced by the past 30 years of operational history. And that is driving our joint efforts to try and keep these submarines at sea much more often.

**CHAIR:** What is the expected life of a submarine? Is there any way of assessing that or is it just a matter of the conditions that it works in and the regularity of maintenance and so on?

**Mr Grove:** That is one of the design requirements. Typically I think a submarine would be designed for 25 years of operating life. The actual operating life itself is subject to how it is used and in that time, of course, there will be systems and equipments which become obsolete. Any electronic system these days is probably going to be replaced at least once during the life of that platform. But as far as the hull is concerned, it is pretty much designed to undergo a sequence of excursions to depths—a specific number. It is designed to do that and typically is a calculation of what would be required over a 25-year period.

**Mr Lockhart:** Typically a submarine is designed for 25 years. It is only the delays between the decisions and the business cases for new submarines that extends that life. Often our submarines are working beyond 30 years, as we look to operate them for longer to fill those gaps it has taken us to regenerate the new build capability.

**CHAIR:** One of the things you mentioned was the comparison then with Canada. Canada and Australia are fairly comparative countries. What submarine capacity does Canada have and would you like to make any remarks about their submarine operations?

**Mr Horobin:** Canada is a very good example of how a MOTS program can go wrong. Canada, if you like, has got three Victoria class submarines which are MOTS, if you will, purchased from the United Kingdom. And the shelf from which the Victoria class was purchased has long gone. And so Canada is out there on its own, trying to hold it together. I should say no more, because these gentlemen are much closer to actually doing the job now, but from a government point of view the Canadian experience is not one Australia should seek to repeat.

**CHAIR:** So that is important information. Do you wish to make any comment further on that subject or is it something that is perhaps—

**Mr Grove:** Just to add to what Mr Horobin said, Canada has four Victoria class submarines which were originally developed and built for the Royal Navy and decommissioned in 1991. They were the Upholder class submarines that the Royal Navy commissioned in the late eighties. And they were immediately taken out of service when there was a change in the threat from the East, so they were deemed to be no longer necessary. They were mothballed for nine years and then reactivated and sold to Canada around the year 2000.

Canada, by that time, had also had a gap between the decommission of its Oberon class, very similar to Australia's, and they decommissioned those in 1990. So Canada pretty much lost all its submarine support capability. Although it took delivery of these submarines just after 2000, it actually was not in a position to maintain them. Babcock's interest is that following a competition, we won a contract to manage the maintenance for those submarines in Canada. We are three years into that contract now and it is planned that all four submarines will be back in service and fully operational by the end of 2013.

**Mr Lockhart:** Part of the objective for that contract is not only to provide the maintenance and get these submarines back to sea but also to assist the Canadian Navy in their upskilling of learning the submarine support processes all over again. As Mr Horobin says, the supply chain had been all but exhausted and the support processes with it, so a large part of that output is to get that support organisation fit to be able to support its own submarines through time. We are largely on track and we are comfortable that we will have three submarines at sea pretty soon. Again, it has been about providing access to the UK systems and processes, the knowledge and supply chain, and then tailoring that back as the Canadians have been able to upskill and pick that up, in which they are making good progress.

**Mr Grove:** The model that the Canadians have for supporting their submarines is quite different to Collins, and that is because it is being created to just support the submarines. What you have here in Australia is an organisation which was created to build the submarines and then evolved into a support contractor while retaining

the capability to build submarines in the future. What has been established in Canada is merely the capability to support the submarines, which means you need a lot less infrastructure and fewer resources.

**Senator HUMPHRIES:** Mr Horobin, sorry I missed you before. I want to ask a question about something in your submission where you make reference to the DMO's tendering process. You say:

In cases where there is a very high non recurring cost, competitive tendering is more likely to reduce the value for money.

Can you give me an example of that phenomenon?

**Mr Horobin:** There is a study by the RAND Corporation for the United States—I think I referred to it in that letter. RAND did a study in about 2008 where they looked at a number of United States programs and concluded, as indeed the gentlemen from Babcock have just said, that where you get a situation where there is a very high NRE, the competitive tendering process actually starts to include the NRE process and government ends up paying twice for the amount of work it gets. I will provide you with the RAND paper rather than waffle on.

**Senator HUMPHRIES:** If you would be kind enough, that would be great. Are they Australian examples?

**Mr Horobin:** They are United States examples.

**CHAIR:** There being no further questions, we thank the witnesses for appearing. It has been a very useful session. My thanks to Hansard and the staff.

**Committee adjourned at 16:08**