REPORT OF PROCEEDINGS BEFORE

STANDING COMMITTEE ON STATE DEVELOPMENT

INQUIRY INTO SCIENCE AND ITS COMMERCIALISATION

At Redfern on Friday, 10 November 2003

The Committee met at 10.00 a.m.

PRESENT

The Hon. Tony Burke (Chair)

The Hon. Tony Catanzariti
The Hon. I. Cohen
The Hon. Melinda Pavey

Transcript provided by CAT Reporting Services Pty Limited

MARK GEOFFREY SCEATS, Chief Executive Officer, Australian Photonics Cooperative Research Centre, 102/38 Refinery Drive, Pyrmont, affirmed and examined:

CHAIR: In what official capacity are you appearing before the Committee, as a private individual or as a representative of an organisation?

Professor SCEATS: Representative of the Australian Photonics Cooperative Research Centre.

CHAIR: If you should consider at any stage during your evidence that certain evidence or documents you may wish to present should be heard or seen in private by the Committee, the Committee will consider your request. However, the Committee or the Legislative Council itself may subsequently publish the evidence if they decide it is in the public interest to do so. Do you wish to make a brief opening statement prior to questioning?

Professor SCEATS: I think our Cooperative Research Centre does represent some of the execution of what people talk about in terms of capturing innovation in our public sector research organisations and moving that through into products and wealth generation, and so I am going to be talking to you a little bit in my first part of the talk in terms of some aspects of our CRC in that regard. I appreciate that they do lead into a whole lot of questions about the future of photonics as an industry in Australia, and many other aspects of the ongoing support that we would like to see and encourage from the New South Wales Government.

Just briefly, our history starts in 1989 before the Cooperative Research Centres program came when I was approached, as a professor at the University of Sydney, by people from the Overseas Telecommunications Commission of Australia, OTC at the time. They then had a large research activity in New South Wales which subsequently terminated when the merger with OTC and Telecom occurred. They were interested in the impact of what are called optical fibre amplifiers on their underseas communications business. In 1988 they had seen work coming out of the University of Southampton that they thought would change their business for underseas communications, and how right they were. The technology that they wanted us to look at turned out to be the technology that has enabled what we call ultra-broadband communications, that is real broadband, to occur and really enabled the rapid growth of the industry.

In 1988 I was approached by OTC to establish a centre to make optical fibre, why, because they could not source this optical fibre from even their commercial suppliers. It was so commercially sensitive, so they needed a group that would be able to do that. They recognised that if they established a group which did this at the University of Sydney which could make that fibre, there were many other applications of that fibre in the broader telecommunications industry. 1988 marked the date where Australia really started to get its act together in commercialising photonics. It was a multi-million dollar commitment by OTC. Simultaneously, in Melbourne they attracted back Rob Tucker from Bell Labs to establish a research centre. 1988 was a milestone. For me that is very important because I will talk to you a little about the photonics industry and the Taiwan parallel in micro-electronics. Taiwan established a micro-electronics industry in 20 years. If 1988 is the time that we really started to work as a community to achieve that outcome for Australia, we have really got until 2010 to make it happen. The thinking and the strategic plan of our Cooperative Research Centre is basically predicated on 2010 as being the time when we want a self-sustaining mature industry.

Now I run back to the beginning of our Cooperative Research Centre. We have just got our act together establishing the centre at the University of Sydney, funded by OTC, and then the Cooperative Research Centre comes along, essentially an initiative of the Hawke Government, if you remember the Clever Country election, and the formation of the CRCs is probably one of the legacies of that Government that is being embraced by the current Government and moved through with support at a federal level.

Its objective was initially in the thinking of the time, to bring CSIRO back on to campus, but then the importance of industry was raised and then it essentially evolved to a program designed to capture innovation at universities and places like CSIRO, and public sector organisations, and move that through

into outcomes for the social benefit, economic benefit, of the State and you know and have heard about the CRC program from others in the course of your inquiries. For us what was important was that we were essentially married together with other groups in Australia to form a larger consortium that had critical mass and we operate in Sydney, Melbourne and Canberra, and we will probably start some work in South Australia in due course. From the New South Wales Government perspective I would like to make some statements about the economic benefit to New South Wales that has occurred from the Cooperative Research Centre's activities.

To date we have invested, in research in New South Wales, $45 million. What has been the economic benefit of that to date? I caution to record that it takes 10 years for an idea to follow concept to mainstream products. To date we have raised over $300 million of investment into spin-off companies and 80 per cent of that has been in New South Wales. Our spin-off companies have paid corporate tax, to the best of my knowledge, amounting to in excess of $50 million from profits.

220 people are currently employed in New South Wales, directly resulting from the activities that we have and that is a number today that is a post-market correction. We are in the telecommunications industry. I believe that our CRC has demonstrated that one can capture innovation and move it through into application and we have a track record of doing so. I think that the next six years leading to 2010 is absolutely critical and there is a significant role for State Government in this. We are at a period where our companies are poised, I believe, for success. The technology platforms that our CRC now has to operate in becoming increasingly more capital cost because we are really in the high tech game and there are a number of other projects and programs that our CRC really needs to access in order to get to that milestone at 2010.

I would like to take this opportunity to thank the New South Wales Government for their support of our CRC. A little bit of money was spent in 1993-94, $250,000, to create our photonics incubator laboratories. That basically had the success of bringing scientists and engineers together and ultimately was a catalyst for our relocation of our research activities from the University of Sydney campus to the technology park here and I cannot emphasise how important that culture shift of taking a university group from a campus into an environment like the technology park has been. It is the thing that has caused 80 per cent of the spin-off companies to come from one research group. One research group has given rise to eight spin-off companies. I think that is a remarkable thing, and why, it is because of the environment, the creation of that cluster that we have here.

Secondly, I would like to thank the New South Wales Government for $3 million of funding over the next four years to our Bandwidth Foundry. It is a major national research facility under the Commonwealth Government and $3 million of funding there leveraged $9.5 million from the Commonwealth and $6 million from the industry and universities. We are well on the way, but more needs to be done.

I should probably close my opening remarks there.

The Hon. MELINDA PAVEY: Did you say the Bandwidth Foundry?

Professor SCEATS: Yes.

CHAIR: In the structure of the CRC, who are the participants?

Professor SCEATS: We have 27 participants, five universities, including in New South Wales the University of Sydney and the University of New South Wales, DSTO and New South Wales TAFE. In fact, I should bring attention to the fact that New South Wales TAFE is the first Cooperative Research Centre of which they have been a core participant.

I would just like to take the opportunity as well to say that that has had a profound effect. We have uncovered expertise in TAFE in terms of practical engineering about how to do things, which has helped our robotics automated assembly in a way that we could not have accessed from universities. It is the practical experience of the teaching staff which was important.

The Hon. IAN COHEN: Of a TAFE college?

Professor SCEATS: Of a TAFE college.

CHAIR: Can you explain how that interaction with TAFE happens?

Professor SCEATS: We have a partnership agreement with TAFE. We have developed, in association with them, modules and courses that are now carried forward. We have assisted them in getting into the curriculum in New South Wales for the schools a program in which they provide teaching to high school level people.

I forget the jargon for this, but essentially kids in high schools can go and do a course in photonics in TAFE for their HSC. This is great because optics and physics has always been a building block for our education system. Photonics is really modern day optics, if you want to put it that way, and yet we were finding that physics was being taught in about the same way as it was being taught in 1750, with no linkage to what was really happening out there, so we are kind of helping that process.

CHAIR: How is it important to your work to have students coming through who are literate in photonics?

Professor SCEATS: Absolutely critical, so critical that we have formed our own photonics institute which has a mandate to educate the community broadly. To the best of my ability to recall, we have now visited something like about 30,000 school kids in our project with Questacon to kind of get schools interested in photonics. It has raised a lot of issues and we wish that kind of program to come through, so starting at the high schools is where we have got this stuff.

Universities are critically important and we are developing modules there for teaching photonics that can be shared by all of the universities. This idea of having lecturers create their own lecturing materials every year, is something we wish to avoid.

CHAIR: I can see how your work assists the education system. How does having that literacy in your field of science out there help you do your work?

Professor SCEATS: It leads to better innovation. The ability to innovate in photonics, you have to know what has been done in the past, what everyone else is doing now, and the better your in-depth knowledge is, the better will be the innovation that results.

The Hon. MELINDA PAVEY: Are other States doing it as well, Victoria and Queensland?

Professor SCEATS: Not in photonics. Victoria has some initiatives going. What characterises Victoria is a very strong support of the Victorian Government for a network called the Victorian Photonics Network, which is very active at all levels, and they also have funded the roll-out of the broadband infrastructure test beds in Victoria that they somehow failed to do in any other State.

That has a very important aspect that ultimately in all of this, the biggest benefit of our technology is the future communications, that there is this information that does exist even in a country like Australia. We are so far behind Korea and Japan and quite a few other emerging economies in terms of access to broadband, that it is a national tragedy to some extent.

The Hon. IAN COHEN: Do we have to actually repeat the technology from here? Cannot one share that? When you say we are so far behind the Asian Tiger economies with their very high levels of IT, are we actually having to reinvent their wheel?

Professor SCEATS: No. We actually usually create their wheel for them, helping them in terms of their technology. What we have to understand is that technology is only one part of three aspects that have to work. The other is the legislative regime for communications, and the other is business models for carriers so they can be profitable with broadband services.

I feel we have really great technology but the paradigms for how a carrier can successfully make money for its shareholders and the business and regulatory regimes for telecommunications, unfortunately our CRC has no control over.

The Hon. TONY CATANZARITI: What sort of response are you getting from potential students to take this on?

Professor SCEATS: It is very strong. At the inquisitive level people want to understand how things work and therefore at the inquisitive level that is very strong. From surveys we do of the students after we have these presentations, they would like to see that done again and in other areas of technology. In a way there is a sense that things can be accomplished if you focus on something modest and bring it off.

Photonics is just one of 20 technologies that are probably important to the community as a whole. We cannot do it all, but by focussing on one thing and executing that well, we have made it and there is a need to get what we have learnt out to other equivalent Cooperative Research Centres and other centres.

The Hon. IAN COHEN: In terms of photonics, perhaps just for my benefit describe exactly what it is, and also you mentioned that there was a production happening here. You are actually producing the equipment or producing the hard material, so to speak, on site here?

Professor SCEATS: Yes.

The Hon. IAN COHEN: Specifically are we looking at just the facilitation of mass communications, I suppose, through IT channels? Is this what we are basically about?

Professor SCEATS: I will try and answer that. Yes, we have got a company here, Redfern Broadband Networks, which will be publicly releasing a statement about major sales of its product made in Australia to Europe. It employs about 90 people over in the Biomedical Building. It actually outsources the manufacturing to companies in Sydney to make their products. Unfortunately, I cannot reveal the magnitude of the sales but it will be a very successful company as it executes its plan. They are actually at systems level. So what that company is doing is making boxes that go into company carriers which sell them to Optus and other carriers.

Now, what is photonics? Photonics is the use of photons to transmit, store and process information. It has got a rubber particle called the electron which does this and the electron carries information through wires and stores information in memory storage chips and processes information as in computer chips. We are 30 years behind in the development of photonics as a competitor to electronics.

The interesting thing for us is that Australia lost its micro-electronics industry in the 1950s and 60s because of the decision of four people: Two professors, one in Sydney and one in Melbourne said there was no future in micro-electronics and we would be better off applying our physics community to - I think it was the study of the cosmos, but give up on the electronics industry for that hard core. The CSIRO said that it was better to invest in feeding grain than micro-electronics. Then there was lobbying by a company then called AWA that was making valves, saying that micro-electronics would disrupt that company and they lobbied against it. That company no longer exists. Indeed there were four people who created the problems in Australia which we have been struggling with for the last forty years. I don't want that to happen to photonics. We are at that same primeval stage where the things we do in the short-term will determine whether we have a photonics industry in Australia.

The Hon. MELINDA PAVEY: I just wanted to go back to the bandwidth. Can you tell me was that as a result of the State Government proposal to roll out the high ultra bandwidth demonstrator network links to educational and research institutes and entities in our country areas?

Professor SCEATS: We have not been very successful in that part of our business. We worked with the State Government for funding for a project from the business advanced network

program and we wished to do that kind of broadband roll-out program initially as test beds for our technology.

The Hon. MELINDA PAVEY: And in Victoria?

Professor SCEATS: And Victoria as well. The Victorians lost out as well on that same thing. They managed to proceed with it.

What we have been doing with the New South Wales Government, some of our people are involved in a consulting company that has been providing consultancy services to the New South Wales Government with respect to the aggregation of some its of optical fibre amplifiers in various corporations in New South Wales to create a broadband network. I believe the tenders came out last year for that. So with the technology evaluation, I think that there are opportunities that we would like to exploit.

What we are seeing when we look at other countries is the emergence of community networking where councils in our paradigm are realising that 150 years ago they put in electrical power lines, they put in the water, they put in gas pipes, and for councils a return on investment of seven to eight years is something which they can regard as appropriate, compared to Telstra, which I believe has a return on investment of 18 months. You can see the connection there that community networking can result in capital being provided for broadband infrastructure. Now, that is happening around the world and I think that it would be a good thing to see that happen in the State where communities do that. Then companies like Telstra, Optus, other new carriers are being asked: Do you want to run this infrastructure? It is a competitive process. But the community needs the infrastructure. That is getting into a political debate I am not really equipped to say too much about, but from a technology perspective, something like that could be really good for the community as a whole.

The Hon. MELINDA PAVEY: Just in relation to your location here at technology park, do you see it as fundamental to your success?

Professor SCEATS: Absolutely. At the University of Sydney I used to give a 20 minute presentation to industry about why we were different and all the struggle because of that environment or whatever. Yet when we came here, I have never had to give that same talk because by moving out of the campus we were committing to working with industry. It was just accepted by them, and that was important.

All of these initiatives happened because people think of innovations for getting our commitment to research; they think that it is possible to move their ideas into the commercial world and they realise that working with individuals, large corporations, is a way for them to access innovation.

The Hon. MELINDA PAVEY: Do you have any views on how Government can better facilitate the development of IP?

Professor SCEATS: Let's look at a place like a technology park, the first thing is facilitation to move innovative groups from campuses onto technology parks. What is the first thing that has to be done, taking rent out of the equation? To research groups sitting on a campus you have to supplement that too. To put rentals to a research group is creating an impediment that actually stops any kind of meaningful conversation before it can even start, and yet the return to the State Government from job creation, and all of those things that emerge if innovation from those groups is effective, more than would pay the cost of doing it. There is a major role for the New South Wales Government I believe to develop that and understand the mechanisms by which it could act as guarantor, with buildings for example. Look at the technology park, a lot of it is still vacant space. Why? Because the fundamental model of rolling out a technology park is not like a business park or Darling Harbour or something like that. It operates on a fundamentally different paradigm where there is reward. Innovation has yet to be figured out.

The Hon. MELINDA PAVEY: Why did photonics come here? Was it the only option available to you?

Professor SCEATS: No, no. We could have stayed on campus. I think it is one of these personal things. The guy who started this technology park, Tom Folger, I met him and I was actually inspired by his message, so I wrote it into our business plan in 1990 that we would relocate to the then called Advanced Technology Park, in a way because I could see that that was critical. Oddly enough, the Advanced Technology Park became the Australian Technology Park by a typist making a mistake.

The Hon. MELINDA PAVEY: The CRC is a strategic client of ATPi. Does this mean that the CRC is not involved in ATPi's business programs?

Professor SCEATS: In essence the photonics cluster is at a point where it is sufficiently strong and is more or less organising its own activities in. We have moved away from the necessity of having support per se. We kind of graduated from that in about 1999. So when ATP Innovations, which is very much involved in this group, came into play, we were already there, we had our own internal stakeholder activities. I would say that the ATPi is absolutely important as an accelerator for getting some of the other groups out of universities, and my problem is we occupy about 40 percent of the space in this building and we should be graduating to a new building to leave ATPi in a position to have the space to do all the things it wants. So I feel like we are an impediment to moving forward for ATPi.

The Hon. MELINDA PAVEY: So none of the other associate start-up companies are here?

Professor SCEATS: No, they are. Just in the past month we have seen development of a new commercial opportunity from one of the people who has been deeply involved in an ATPi program linking up with one of our researchers to come up with a business principle starting with this company. Now, it might not happen through any formal process, but in fact people talk to each other at social functions, things happen.

The Hon. MELINDA PAVEY: Having coffee?

Professor SCEATS: Yes. So it has been successful.

CHAIR: Is there a point at which companies automatically start - when you come here are you here for a set period of time or what is the --

Professor SCEATS: Companies should graduate and I think that we have already had one company graduate from - two companies graduate from the technology park. One of our first spin-offs went to North Ryde. The second one was a spin-off that actually went to Connecticut in the United States, which wasn't a great benefit for the State, but business people make business decisions, and I think that some of our other companies are poised to graduate from the technology park. Ultimately, the rental for a company which is moving up to modest size at the technology park would be too high. They should go to where it is better for them. It is really important that they do graduate.

The Hon. IAN COHEN: In terms of graduation, is there any way to maintain an industry control or responsibility in the business arena --

Professor SCEATS: It is very complex.

The Hon. IAN COHEN: -- rather than, as you say, moving offshore?

Professor SCEATS: It is a hard one. I should say that our CRC is a majority shareholder in the company that raises $240 billion of venture capital that has been ploughed into this company and directly or indirectly the Co-operative Research Centre is sitting well with regard to equity in its spin-offs, very well indeed, and defying, I would say, most of the laws of venture capital, which would have said we would have lost by now. We haven't. We have plainly done very very well.

The decision about where companies should locate is really interesting. I make two points. One is that companies often want to be next to their major customers, and that is the case with the company going to the United States. Secondly, there is something I think is really important. At the moment the photonics industry worldwide is obsessed by a view that all manufacturing will end up in China or places with equivalent low cost manufacturing. To me that just raises a whole lot of questions. Companies that go to China may do well for their shareholders, but it is not really what they are funded for by the Commonwealth Government and others to do. There is a firm answer to that, but the way we are trying to do it is through robotic automated assembly. We have a small company here, Kadence, which was on the ABC recently for its discovery of penbox, which you may have heard about, which is kind of quirky.

The Hon. MELINDA PAVEY: They are computers that actually talk, robots?

Professor SCEATS: Yes. That is innovation in our companies. For me the paradigm is we must be researching innovation, or moving innovation through the process which has as its paradigm zero labour cost for manufacture and automated robotics is the way to do it. We are pioneering that.

My fundamental view is that we need to be able to retain the components of manufacturing. It is high tech in Australia, because if we have that here, then you will get the integration of that into value added products occurring naturally, because the source of the critically enabled components is good.

I think that the flight of manufacturing to low cost manufacturing countries like China is fraught with challenges for countries like Australia. I should also say like Taiwan, Korea, Singapore and others, because when you look at the enormous resources going in to education of engineers in China, you realise that they are just a few steps away from capturing the innovations in the next cycle for themselves.

The low cost manufacturing paradigm is something that is suiting them very well now, but if it actually happens in photonics, then by and large the next high tech wave will be coming from China itself.

CHAIR: What is your judgment of the BioFirst program?

Professor SCEATS: I think there are two points, to really play in biotech and create value. The issue is do we have venture capital in Australia with the pockets or access to capital that is required to bring that off? This is about market access and typically I think the paradigm is that you have to have a fund of well over $1 billion of capital if you are going to be able to manage the process through it and create wealth, given the structure of the pharmaceutical industry. I do not doubt that we have innovation in Australia.

I look at the gap issue and so I just have a fundamental worry there, which is about the downstream fund of innovation that comes from that whole sector.

I must say that I do not have a lot of experience in that sector at all, but it is just there as something that clicks around. I see the quanta of investment that is required in other manufacturing technologies like photonics, and it is not large and it is kind of feasible to do within the resources of the Australian financial community. I am not quite sure whether it is there for biotech. I fervently hope it is. I really hope it is.

Why do I hope that? I am part of a Cooperative Research Centre that is increasingly investing its funding in developing its technologies for use in biotechnology, various aspects of it, and there are some interesting things coming out of it, so I want that whole sector to succeed in all of its manifestations, from scientific instrumentation to the core medical technology, which is biotechnology.

The Hon. IAN COHEN: In discussing that whole process of losing your IP to places like China et cetera, you mentioned looking at ways of producing without a wage component. Obviously that is going to give Australia back an edge. In this sort of brave new world of world trade agreements and various situations, is there any other way that what would formerly have been protecting an industry, perhaps in the past, is there any other way that you can see that this type of technology, which is something that worries me also, I am wondering if this is a reality - it is moving at such a rapid pace, for

how long do these breakthroughs have commercial application?

Professor SCEATS: I will answer the last bit first. Any fundamental idea takes 10 years to get to the marketplace. What is different about the marketplace is often a particular product, which is a manifestation of that technology, may have a two or three year lifetime, but the things that is it replacing has often the same fundamental technology. It sounds as if it is a terrible thing that so much has happened. Boiled down it is actually not. For people skilled in the area, tomorrow's products are evolutions usually of what we do today.

I will give you one example where out of our Cooperative Research Centre we have an opportunity for a technology which could be on every PC screen in the world in four years' time and it could be all manufactured here. It is really interesting. It probably will not be, why, because this has to be integrated into other screening technology platforms. Where is that made today, Korea, Taiwan, China and it is that integration which often drives it, so I cannot really see Australia setting up foundries for making screens. It is just too late to do that.

Basically there are immense opportunities. For us in those areas, Australia can be the place where we set up the pilot plans and therefore create the value, and it is just a financing operation of putting in factories. That is what we are currently trying to do with this one particular initiative that we have before us.

I thought if I was going to be sitting outside waiting to be interviewed, I would review these legal documents relating to this transaction which I have here, so it is a real life type thing happening here. I do not know if that answers your question.

The Hon. IAN COHEN: In part. Just looking at the current world trade situation, what else can we do, or what else can you do, working with Government, to get maximum effectiveness out of the original investment and also the amount of science and innovation that has gone into the whole effort?

Professor SCEATS: For a start I do not believe in level playing fields. They do not exist. Whenever I hear the Americans talking about let us enter a fair trade agreement, I say "watch out". I am very cautious about that.

I believe in competition, in the clever country, and things like that, but I understand where the power is and really we, as a country, have to adapt, so I have some philosophical issues.

The Hon. IAN COHEN: Given the current set of circumstances, how do you deal with it?

Professor SCEATS: I think it is really about market access myself. I think really that where things get made is something that we have to play the game at, but we have to continually accept that we are in a global industry in photonics. Our companies sell 95 per cent of their product overseas. The internal market in Australia, apart from selling it from one cluster to another cluster is negligible.

The other thing is look at the contract electronic manufacturers. There are two companies, I believe, both in Sydney, that are beating the cost structures within China. It is a wonderful story that because of the supply chain management and the risks and all of that, Australia is in fact a low cost manufacturing environment when you look at the totality of it.

If we are starting to win in contract electronics manufacture, for me we should be able to win in contract photonics manufacture and should be able to do that well. I am actually positive about the future. What worries me is the herd mentality of others, when everyone says: It must all be in China, accepting it is all in China, therefore we as a company should do it.

The Hon. MELINDA PAVEY: Just going back to your opinion on probably the way State Government is distributing its funding for science and technology, the BioFirst program is a $68 million four year program. $20 million of that is going to the Garvan Institute for Cancer Research.

I want to get a feel from you on whether you think the funding priority is a little bit hotch potch,

or are you confident that it is hitting the marketplace, or helping those companies that need that injection, or whether that $68 million should be provided for rent-free accommodation for all the people wanting to come here. You are on the ground and understand what works and what does not. Is the State Government money going where it needs to go?

Professor SCEATS: I cannot comment on the individual allocations because I really do not know, but I will make the comment that picking some winners and creating a critical mass is absolutely essential. The paradigm of having a pot of money and spreading it around to all of the players will not work.

The Hon. MELINDA PAVEY: How do you pick the winners?

Professor SCEATS: Through a process and it would seem that the selection of the Garvan Institute is part of the process that has come to that decision. The Government has to be very careful in those uses of public money and has to be accountable for it, so we have seen the processes that should be gone through but the Government, I think, should be very clear that it should, through its processes, select winners and be prepared to countenance the challenges of those who have lost in such a process and be strong and to some extent united about it.

It is difficult, but in terms of Government policy I just see that we are emerging from a landscape of not picking where that was the paradigm for many years, into one in which picking winners has become more politically acceptable. I have some information that I could leave behind.

(The witness withdrew)

MARK PHILIP BRADLEY, Chief Executive Officer, Australian Technology Park Innovations, Eveleigh Street, Redfern, affirmed and examined:

CHAIR: Would you like to make a brief opening statement before we ask questions?

Dr BRADLEY: I guess my comments would be that I am delighted to have the opportunity, first of all, to appear in front of this inquiry. I think it is an extremely important initiative and I must say I wait with great eagerness to read the outcomes of your deliberations. I have certainly read some of the transcripts that have already been coming through. I think it is extremely interesting.

My comments generally would be that I think New South Wales is in a very strong position to capitalise on commercialisation of technology for its growth in evolution going forth, bearing in mind that New South Wales has many other key areas of strong economic endeavour as well and I think there are times when people maybe put too much emphasis on the knowledge industries. They are going to emerge; they are hard work basically. So I think what you are doing here is extremely important.

The things that I would like to touch on today really relate basically to what I put forward in my original submission and relate to what I believe is the importance of the BioFirst program, and I think there are some things that could be done to strengthen that. The particular interest that I have got is capturing the research and development innovations in the regions and the issues surrounding that with intellectual property, and then anything else that you would like to talk to me about.

CHAIR: First of all, just in terms of ATPi, why did Sydney Harbour Foreshore Authority manage ATP, what is the relationship there?

Dr BRADLEY: The park underwent a restructure in I think about 2000, where the Sydney Harbour Foreshore Authority, through their operating company, ATP Precinct Management, were appointed as effectively the landlords for this whole entire precinct and, as I have previously explained, during those negotiations, because the park was originally managed by effectively the precursor company to ATP Innovations, it was decided that a new company would be formed, ATP Innovations, it would be a university owned company and as part of negotiations this building, the National Innovation Centre, was assigned to that company for the purposes of it running its business under a peppercorn lease for 99 years for a dollar. That is how that evolved.

Effectively what we do is we sit as really the major tenant in this park and we provide very much a focus on commercialisation of innovation for not only Sydney but increasingly the region. So that is really our core function.

The Hon. MELINDA PAVEY: So it was basically a State Government initiative that led to the Sydney Harbour Foreshore Authority taking this on?

Dr BRADLEY: I don't know. It was before my time, so I don't exactly know the -

The Hon. MELINDA PAVEY: It is a strange sort of authority to be involved in a precinct like this.

Dr BRADLEY: You would have to actually ask them about the history behind why that authority came in at the juncture it did. I guess the park had reached a very critical time. It had some pretty substantial debt, as I understand it, concerned with the development of the Biomedical Building and they really needed somebody to basically help them through this period. How it happened I really don't know, but basically that is how the Sydney Harbour Foreshore Authority got involved. I am sure you can find that story later.

It led to an interesting situation where we have almost like two entities in the park and one of the issues that we do have is around our branding. People often refer to us as ATP. If there is occasional negative publicity about rents or other things that occur in the park, we get lumbered with

it. We have spent a lot of time trying to build our brand and position ourselves in a particular market, and when you hear people interstate saying, "Oh, I saw recently that you have been on the front page of The Australian" or whatever, it is difficult for us, but it is something we have to live with. So that is our relationship.

CHAIR: Your areas of focus, have they changed over time?

Dr BRADLEY: Yes, they have. Prior to my joining ATP Innovations, which was basically two and a half years ago, there was very much a focus on the IT and electronics, more on the IT sector, but there was some on electronics. I made a decision very early on that we were going to move into the life sciences sector but continue to strengthen the ICT and particularly the electronics sector because of the unique potential advantage we would have with creating convergent and synergistic opportunities from those three sectors being in close proximity to one another.

The very first day I was here I said to Dr Mark Sceats, "What are you doing in the life sciences area", and he said, "Well, we haven't really done a lot. We haven't done anything." We have attempted to discuss what those areas of overlap would be, and because their focus had primarily been in the Telco area, it is a big shift for physicists to have to move into an area which is outside their core business, but over the last two years we have had an increasing number of discussions about where their technologies as they evolved would fit into the whole area of life sciences in particular, and there is a whole area that has now sprung up called biophotonics. So we are very keen to continue to explore where those interfaces would be and it is really a matter of identifying what their core technologies are at a particular time and how they could fit into the needs of particular markets or niches that a biologist, for example, is working in. So it is kind of difficult to rapidly develop that.

One of the things we have been talking about is actually having a forum next year where we bring together physicists and life scientists and commercial people to see whether we can accelerate this whole area of biophotonics as a new way to go forward. It is really about getting the physicists to try and understand the needs of biologists and vice versa. That is what we are trying to do.

The Hon. MELINDA PAVEY: Can you explain again how the biotech precinct here was set up in terms of the two co-locations?

Dr BRADLEY: The biotech precinct has two locations and we have been developing it effectively in two phases. Phase 1 was to redevelop about 750-800 square metres, something like that, of the third floor of the Biomedical Building at the bottom of the park. That was completed on time and on budget in March of this year and we have I think it is five laboratory and office suites down there. It was opened by Minister Egan, officially launched in February.

Stage 2 was always to redevelop this ground floor area where we are now, and the plan was always to have companies in here that were working more in the area of biomedical devices, instrumentation, cross-over into electronics type of thing. So what we have done over the last six months, and we are working to a plan, as we originally agreed with the State Government, we have developed two suites for biomanufacturing, and these have not been trivial undertakings. One of those companies will be producing products, and the other will be producing products to make trials, and so that is all under way.

The other areas, we also have other clients here working in the biomedical area who do not need infrastructure like that at the moment, and there are other spaces designated on this ground floor that are occupied by other clients at the moment, and those spaces will be redeveloped for biotech clients as the need arises. Because we have to keep our cash flow positive, we do not want to create vacant spaces until such time as they are actually leased. We have always said that we would do it to a market need and then we can design the specifications for specific clients specifically around those sort of needs.

This room we are sitting in now, the seminar room, was designated the BioFirst seminar room because we do so much professional development, teaching and public seminars and other forums and workshops in here. It is all part of that context.

The Hon. MELINDA PAVEY: Can you describe some of the business development programs and some of the actual activities that are taking place?

Dr BRADLEY: We have two core, if you like, business development streams. The first one is called bizStart, and this is for very early stage businesses, sometimes they may not even be incorporated. The idea is that somebody wanting to start a business can come in here for a period of up to six months where we will actually provide some fairly substantial hands-on assistance to help them test their idea, and the outcome from that would normally be a realistic business plan that would be implemented.

If during that period of three to six months they find that their idea cannot be validated in terms of a market or a product, then in fact we will also regard that as a success because you are not wasting people's time and money. We have seen too many in the past what I call noble efforts where people really have spent too long chasing an idea which was never going to be validated in the market. That program is starting to get some real traction. We have got a number of examples at the moment where we are working with very early stage companies. Some of them we have taken right through to the point where we have totally restructured what they were going to do, we have assisted in bringing in new management to the company and clearly the evolution of a clear business strategy going forth. So it is starting to become a very valuable program. We normally charge around $350 a month for a work station. Basically, they get access to the community, the meeting rooms and us for that period of time and we are basically available for as long as they want.

Our next program is called bizConnect, and this is the program that most of our clients would come into. There is a whole range of things that we do. We have one-on-one business assistance. We are available five days a week, pretty much 12 hours a day to assist the companies but there is also a more formal structured review every three months. At three months and six months we will review these clients' business cases. There are some times when the clients do not need to use us very much and there are other times when their businesses will be facing some pretty big challenges and we find that they call on us to a substantial degree.

One of the most important things that we have evolved over the last 12 months to underpin a lot of this is something called the bizNetClub, and our tag line is called Learning Networks. This was established to assist not only our clients, but also to bring the outside entrepreneurial and business community into this facility.

We have over 160 members of the club. They include our business clients. They automatically become a member. We run a whole series of professional development workshops, breakfast seminars, networking events, a minimum of 36 a year, but in reality we end up running something like 50 to 60 events a year, all built around business development. We end up doing things with AusIndustry, Invest Australia, State and Regional Development, AusBiotech. There is a whole range of stuff we end up doing in an ad hoc way.

Most of these programs are very, very structured. They are around formal panels, structured into themes and we have panel discussions and presentations from some of the best people. We are surveying our members at the moment to see what their reaction has been to the first year's program and the initial comments coming back are that we have pretty good marks on what we have done. That was again about building the community and bringing the outside in. Not enough of our clients attend every one of these events with time constraints, but will attend things that are right for them and there have been a lot of good connections made out of all of those processes.

The final thing we are heavily involved with is the New South Wales Enterprise Workshop. I am not sure if you are aware of this, but it has been going for 21 years. We are on the board of it. It is staffed by one full-time person, but basically a board of volunteers and a group of mentors.

Michael Quinn from Innovation Capital is the chairperson and they run two streams a year, 13 weeks, pretty much Fridays and Saturdays, where you form teams and the outcome from this is a business plan that has been robustly tested, and this goes through a whole stage of evaluations in front of panels,

mentors, judges and so forth. Many of the people who go on this come out the other end with pretty strong initial business plans and some of them have gone on to do some really significant things. We spend a lot of time out of hours involved in those sorts of activities as well and we try to ensure that all our business clients come on board.

The Hon. MELINDA PAVEY: What are your strategic clients? You have business and strategic?

Dr BRADLEY: We have what we call strategic tenants and a good example would be the Photonics CRC, where we do not have a formal deep intimate relationship, but they are part of the community. There is a lot of dialogue that happens between the scientists and the staff members and our own clients and, in fact, us as well. Many of them come to bizNetClub.

The criteria for a strategic tenant is that they can be doing basic R&D but the thing that they must be doing at the end of the day is seeking to commercialise innovations emerging from their work, so that is a good example. We have about five or six strategic tenants at the moment.

The Hon. MELINDA PAVEY: Could you also give us a run down on your funding commitments from the State Government, how much you receive, and how you actually generate revenue yourself?

Dr BRADLEY: I will start with the revenue model if I may. As the chief executive of this organisation I am charged with ensuring that we are financially stable and viable. Whilst we are incorporated as a for profit proprietary company, in fact we operate on the policy that we are basically a public good not for profit.

Our aim is to at worst break even every year, or come in with a small modest surplus, and we have done that over the last three years. In fact, right to the point, we had to pay tax, which was not particularly pleasant.

Our revenue is derived from our clients and our strategic tenants who pay a fee to be here and to partake in the programs, or to partake in the environment. We have some modest revenue also from our bizNetClub activities, which pretty much breaks even, because we have charged people very low fees to become a member of that club.

The only money that we have received from the State Government was with regard to the BioFirst program. That was a process of competitive tender where we sought to build the biotech precinct here. The tender application that we put in said that if they put up $2.5 million we would put $1 million of cash and $2.75 million worth of in kind contributions over the next five years into building the precinct, so as a result of that we have been able to employ new staff to build that whole program. It is a very vigorous biotech program.

That is the only money we received from outside at all and it is very interesting that we have a lot of overseas visitors. We get a lot of delegations that come here to see what we are doing and they are all continually amazed that we are actually basically self-sustaining.

One of the key reasons for that is that we were given this building for 99 years for $1 so we have assets exceeding $20 million as a result of that, plus when the ANU joined as a fourth shareholder in 2001 they bought a shareholding for $5.5 million, so some of that money has been used against the BioFirst program. Some has been used for an investment program which I will tell you about later on and thirdly, the balance basically helps support any trading loss through interest.

The Hon. MELINDA PAVEY: What is your occupancy level?

Dr BRADLEY: Between 80 and 90 per cent. I just did the figures today for our board meeting next week. It is 84.8 per cent this month. Two months ago it was closer to 100 per cent. It goes up and down quite dramatically.

The Hon. MELINDA PAVEY: If I can put an argument put to us by Professor Sceats, prior to your testimony, where he indicated that the best thing Government could do would be to provide a rent-free premises to encourage greater innovation and all of the accrued benefits from that. What is your feeling about that; I know you have a business to run, but if Government was to fund all that needs to be funded here.

Dr BRADLEY: I do not necessarily agree with that view. For example, the biomedical building, we lease that off our landlords and it is a problem for us because we lease it at a very high rent, $420 a square metre. That was effectively for a green fields floor. Part of the moneys, a major part of the moneys we receive from the BioFirst client pays the rent for the next five years, which does hurt, but it is the only way we could make the model work, so it is money going back to the State Government in that sense.

That has allowed us to offer our life science clients down there entry rates of around $220 per square metre for fully fitted out laboratories, some shared equipment and office suites with furniture in them. That is pretty remarkable. You would not find that anywhere. We can do that for five years. Beyond that I am not sure what we are going to do.

I believe that it is very important that start-up companies know the value of the dollar and they are going to have to operate in the real world, so I do not believe offering them free space is in any way setting the right mood and tone. What we will do for companies is that we will offer them arrangements where they may take some rent-free period where we will offset and accrue the charges to be paid back at a later date, maybe after a capital rotation or something like that.

We will look for a whole lot of very imaginative ways to help people but I do not believe that giving people free space is the way to go I am not aware of that happening to any great degree anywhere in the world.

The Hon. IAN COHEN: Although you did get your entire space on a peppercorn rental. Is that not a contradiction?

Dr BRADLEY: You can call that a contradiction but it allows us to operate a business that is helping the community. You can turn that both ways. I am not sure. We still pay to our landlords just under $8,000 a month in outgoings. This type of model would not work anywhere else - if we had to pay market rates for this building we would not be able to sustain this operation because you have to employ people to do the work and to help the companies, so it just would not work. In a way the Government is subsidising already this space.

The Hon. MELINDA PAVEY: What is the relationship between the NICTA consortium and ATPi and how does the co-location help either party?

Dr BRADLEY: It is an emerging relationship because it is really still quite early days. We were very excited that they were co-located here. We have had a number of meetings with them about how we can work together in assisting them with their commercialisation processes, and a number of people from NICTA are involved in the bizNetClub but because Mel Slater, the CEO, has been only in place for about eight months there was a bit of a latency period before his employment. Things are starting to build traction now.

A lot of their focus also is about getting their own organisation established. A lot of it is around research obviously, so we will not see the fruits of that coming to the commercialisation sphere for a while. I would say that potentially there is a great deal of opportunity for us to have a very good relationship.

The Hon. TONY CATANZARITI: Does ATPi consider that a university is the best place to provide commercialisation assistance?

Dr BRADLEY: Universities have a role in the process. Every university operates differently. The current role of universities, as the inquiry members will be aware, is primarily to protect the intellectual property that emerges from universities and to make sure that there is the best possible

financial outcome from that intellectual property.

One of the issues that I have with the commercialisation process - I should say I am not talking about any particular university or any of our shareholders, in fact this is an issue that I am now aware is a global one, is where universities try to actually commercialise, or help start up, or if you want to use the word incubate start-ups within the university environment. I do not believe that is either an effective use of the commercialisation or tech transfer office's time.

It is extremely expensive to do and I think there are quite substantial issues around differences in culture which emerge often within universities where you have commercial enterprises sitting amongst academic activities, so that is why I think a precinct like this offers an enormous opportunity for these start-ups to still be linked into the university environment, because we are relatively close to at least two of them, but at the same time to be in an environment which has a completely different culture.

Universities throughout Australia are learning quite quickly what the best models are, I think, for commercialisation. I have just come back from the United States last week, where I was speaking with many people involved in university commercialisation, and I can tell you that the issues around this are identical in the United States. We think of the United States having possibly solved the problem of commercialisation and been enormously successful.

That may be the case for possibly the top 10 or 12 universities in the US but there are a lot of others and the bulk of them, 90-odd per cent, some of them do not have technology transfer offices in some of the smaller states.

I think what has happened in Australia is there has been a lot of criticism of universities over the years and they have responded positively to that and have tried to get their act together in a pretty strong way. I am not sure if that has answered your question. I have really provided a commentary really.

The Hon. IAN COHEN: We were in the States. We have heard evidence praising international examples of clusters, especially those in Austin, Texas and Massachusetts in the USA. Does New South Wales have anything similar or does Australia have anything similar to those experiences?

Dr BRADLEY: I have spoken and written extensively on clusters and the view I have promulgated is I do not believe we have clusters yet in Australia. It is a word that is often misused. Possibly the closest we have to an emerging cluster in Australia is, I would call it the Brisbane bioscience zone. We have now got the Institute of Molecular Biology on the campus of the University of Queensland.

I also understand that there is another major initiative for the Queensland University of Technology to build a very - they are in the process of building a very large new biosciences precinct. $42 million in funds have been generated through philanthropy from the US as well as State Government money that has been put in. You have a strong Government policy for developing and encouraging new life sciences business, a very positive environment overall, and they are aggressively building alliances with New Zealand and overseas linkages into Asia.

All of these things, I think, are pointing to the fact that Brisbane in particular is going to become a very, very strong, possibly a cluster for the life sciences.

The Hon. IAN COHEN: Plus the hubs?

Dr BRADLEY: I think you can have hubs within a cluster. It is like subsets. You can have hubs. It depends what you define a cluster as. It is usually a geographic zone, usually defined by some geographic boundary. Whether you say the City of Brisbane is a cluster and within that you have the hubs of the University of Queensland and the Queensland University of Technology and the Brisbane Technology Park. They can be hubs within a cluster and they are linked.

In Sydney we have probably the biggest hub of activity in terms of technology is probably the park here, but you have other hubs doing really interesting things like the Garvan precinct. You have

some activity in North Ryde. I am not sure what is coalescing at the moment around the Mid North.

The Hon. IAN COHEN: Are you saying one does not know what the other is doing or you are not really communicating?

Dr BRADLEY: No, I am saying there are zones of activity, or hubs. There can be many hubs or bigger hubs. There is a need for greater connectivity. Sydney is an unusual example, I think, because you have a very dispersed city with zones of excellence all around. To be honest with you, most of the people in the life sciences sector, for example, all know each other extremely well. We probably see each other two or three times a week at various functions or events and there is an enormous amount of networking that goes on.

This idea that you have large discrete physical precincts I do not think always is the way to go. It is fantastic if you can build them, but they are very costly, but putting money into reinforcing centres of excellence through these mini hubs, it is important provided you can make sure those people are connected and talking. In a hub you have people who both compete and depend on each other and for a true hub to exist you must also have the full value chain from service providers, investors, businesses who are actually producers and purchasers of goods, that is a true cluster, and that is why I am saying I do not think we have a proper cluster.

The Hon. IAN COHEN: Can you see any way that the New South Wales Government could support this type of convergence and work on a clustering concept?

Dr BRADLEY: Many of the things it is doing already are achieving those goals, but the one thing that is lacking - can I just stop there and take a step back? If you look at what is going on in Victoria and look at what is going on in Queensland, there is a big difference between creating these critical centres of mass or excellence, compared with New South Wales. The Government has poured major funds into these zones for infrastructure.

The Hon. IAN COHEN: Are you talking about the Victorian and Queensland Governments?

Dr BRADLEY: Yes. They have poured a lot of money into infrastructure but at the same time they have backed it up with very strong policies and with early stage funding, so I think we have two major seed funds at the moment operating in Queensland that have a lot of Government money behind them.

The Hon. MELINDA PAVEY: They are picking winners?

Dr BRADLEY: Yes, they are trying to bias the gain, so that you are getting the best bang for your buck at the end of the day because we cannot buy science. It is so jolly expensive that we cannot afford to support projects with too little money because they will be doomed to failure, and at the same time, if you are going to pick winners, as you called it, then you have got to give them the best chance and you have got to put money behind them.

It is very interesting because what I have just observed in the four day meeting in the US, it was focussed solely around State governments, seed funding and universities. It was absolutely amazing. Most State governments in the US, where their legislation or constitution allows, have created seed funds, often in conjunction with universities and with the private sector, and these can range from as small as $2 million up to $200 million. They are doing this because they see that this is one of the engines for growth. Most places in the US today are trying to reinvent themselves still from a manufacturing industry into a knowledge industry, and if you are not in the main centres, then you will find it is pretty tough stuff. So I came away with the view that if the State Government here really wants to do something impressive it has got to create the seed fund. It is an idea that I have promulgated numerous times over the years and people have always found difficulty with this because of accountability issues. People are doing it all around the world and there must be a way to make this happen.

I was supposed to have a meeting this morning with a group from the New Zealand

Government who have just established a seed fund in New Zealand with the prime aim of investing in Australian companies who are working with New Zealand companies. This is a seed fund coming from across the Tasman into this place, and yet we can't reciprocate the other way. So I think there are some big issues here. I hate the fact that it comes down to money, but I am afraid it does at the end of the day, and it is something that really needs to be addressed or we are going to be left behind.

The Hon. IAN COHEN: Is there a way of assessing the ideal size of a cluster?

Dr BRADLEY: No, because I don't think - well, the opinions on clusters and ideal size vary and again it depends on the nature of the industry and so forth. So I think you have got to take every case by its own merits. I would be concerned if the State Governments here were going to create a policy on clusters per se and just build clusters. It is more about providing the environment that will allow these things to happen almost naturally, because effectively that is what they do. If people cannot afford to run a business, if people cannot get investment to run a business, then they will move elsewhere. If you have got money, people will be attracted to here, businesses will grow and clusters will emerge almost naturally, and that is really what has happened in many places.

If you look back to some of the non-technology clusters, like the clothing cluster in Milan, it happened because of certain drivers that were in place and industries found that it was better for them to be in one location where they could actually feed off each other as well as compete. I do not think there was ever any policy in Milan to create a cluster. I think you have got to look at that much more carefully.

CHAIR: Can you potentially view Sydney as a cluster?

Dr BRADLEY: Yes, in my own mind. I have used Sydney metropolitan area as a cluster. I wrote a report for the Department of State and Regional Development back in 1999, which you may not have seen or may have seen, in which I drew a map.

The Hon. IAN COHEN: Were you involved in this project at that stage?

Dr BRADLEY: No, I did it as an independent consultant, but it was all about looking at the state of the biotech industry here and I drew a map which showed clustering of activity throughout the metropolitan area. It is worthwhile seeing. We do have major concentrations of activity in the northern belt right round through the city here, and out west, I think almost hidden, we have a vast number of companies - not a vast number - a significant number of companies working in the area of bio-electronics, biomaterials, biomedical device type activities. So it is almost here. It is just how do you bring those people together. It is now starting to happen through peak industry bodies. The State Government has done a marvellous job in trying to pull it together over the last eighteen months to two years. I really cannot say enough to what they have done. They have really lifted the profile.

The Hon. IAN COHEN: Which departments?

Dr BRADLEY: The Department of State and Regional Development in particular.

The Hon. IAN COHEN: You did mention earlier an attempt to capture innovation in the regions. Can you describe for us how you see that happening and what sort of innovation are you targetting there?

Dr BRADLEY: This really emerged out of the process of putting together the tender for the BioFirst program, the precinct. I was interested to understand at the time what was going on in regional New South Wales. One of the things I proposed in our application was that we would develop a pilot program to try and almost map some of the biotech activity going on in the regions and if there was sufficient demand to look at ways that we could deliver some biobusiness building activity into regional centres.

What has come out of that has been a pilot program that we have termed the Regional Biobusiness Outreach Program, which has the acronym RBOP, and we have now conducted

effectively two and we are about to do another one tomorrow at Armidale. We have gone to Wagga, for example, we have talked with people in the universities, the city council, found out what their dreams and aspirations are, what they are trying to do and understood what technologies were going on and what their requirements were in terms of business building, and we found an enormous amount of really exciting projects, and also at the same time identified that they have incredible frustrations about trying to get investors across the horizon.

The third finding was that small regional universities really do not have the capacity, and I mean in terms of resources, to run significant technology transfer offices, because they are quite expensive, and so they have been sort of muddling through a little bit in terms of their efficiency with technology transfer. So we have completed a project in Wagga. I was not seeking this, but what has happened is that ATP Innovations has signed a three way MOU with Wagga Wagga City Council and Charles Sturt University to work on developing bioresearch in the region. We have also done a similar activity in the Lismore area, Southern Cross University. We did that in conjunction with the Innovation Council of New South Wales.

The Hon. MELINDA PAVEY: I am sorry for interrupting. Southern Cross University have not got a strong science base, have they?

Dr BRADLEY: Actually, we found that they have got quite a strong science base around natural chemistry products. What they have been doing is identifying from natural fauna primarily bio-active components that have therapeutic applications. They have got a very very strong agricultural plant genetics base. In fact, one of their scientists is the third most quoted in that area in the world. They have also got a large complimentary medicine and clinical trial centre there. So basically they have got the capacity to do clinical trials and therapeutics, and I have to say we were incredibly impressed by what was going on there. What they did not have was a strong record of being able to take that and spin it out or licensing, et cetera. So that is the situation there.

As I say, tomorrow we are going to Armidale. The way we do these is we do one visit where we map it, we meet the people and try and understand what is going on, and then, depending on the needs, we will go in with guest speakers and run a workshop on commercialisation. That is a pilot program. Out of that there have been all sorts of things which have happened. One of the things that it highlighted to me was that the regions have been neglected in terms of what they are really doing. We need to raise the profile of the regions. There is some fantastic stuff going on, mainly in the agricultural area but the natural products chemistry is incredibly important up in the Lismore area, and I will be most interested to see what is in Armidale, but we need more of this. My hope would be that this pilot program could be rolled over into something self-sustaining. I mean I cannot keep doing it forever. It is really about us making a contribution where we can.

CHAIR: Do you deal directly with BioFirst?

Dr BRADLEY: Yes, I do.

CHAIR: As a point of contact how does that operate?

Dr BRADLEY: Very well. I talk to Kerry Doyle on a regular basis. I usually can dial her direct. If not, I speak with the Shanthi Heard, who is the other person I have good interaction with, and I find all of her staff professional and very competent in what they do.

CHAIR: Does ATPi have anything on how the BioFirst funding is being distributed?

Dr BRADLEY: I will just preface this by saying there is a perception out there, I think, that people do not really know what the BioFirst funding is. Of the $63 million that was allocated, it is my understanding that $20 odd million had already been allocated at the time of the announcement, so that left $40 odd million. There has been some money coming into the bioprecinct here, obviously money goes into the biobusiness stuff that State and Regional do, but in terms of actual cash out there for various programs, there is not a lot.

One of the most important things that has happened is the top-up program that the Department of State and Regional Development have offered for the successful Federal biotech innovation fund applicants, so if they get their $250,000, then the Department of State and Regional Development come in with another $120,000 I think it is. That has been an incredibly important leverage and it just shows how important it is to have money available to put into these sorts of things at an early stage.

We have just launched our own seed fund, in which we will invest $100,000 to $150,000 in early stage companies, but we will only do it where we can get leverage. For example, we would like to use applicants who use the money to top up a BIF grant, to be used as matching funds for a BIF grant application, and then on top of that the State Government came in. You could take the $150,000 we put in, and suddenly it all adds up to $600,000. That is the way we want to do it.

In terms of the business side, it has been quite obvious there has been some impact but the amounts are very very small.

The Hon. MELINDA PAVEY: How does it compare in terms of Queensland?

Dr BRADLEY: I hate to compare the two States. I really do. I am not trying to do that, please don't get me wrong, but I have come now to the final conclusion that we have got to change the way we do this because this business is too expensive.

In terms of money going into the medical side of things, I am not really sure where that has gone. I know they have had the awards program and there was money recently released for something that confused a lot of people, and this was called a bioconvergence, biomedical convergence project, and it was really to do with access to the internet and it really didn't seem a very appropriate use of money in many people's opinion. It wasn't very clear to people what was trying to be achieved by that.

CHAIR: So the funding that has come to you from BioFirst, has that all been fully expended as it has come through?

Dr BRADLEY: Pretty much. There might be some lag with building projects and things of that nature, but no, it is pretty much. What we have done with that, we have got a full-time biobusiness director and an assistant, and then the rest of the money has been expended with rent relief and the physical contribution to the companies in terms of fitting out the building and various suites.

CHAIR: And the rent relief has been the biggest?

Dr BRADLEY: Rent relief and the Biomedical Building, yes. We couldn't charge start-up's full costs.

The Hon. MELINDA PAVEY: In your submission you have pointed out the difficulty some businesses have in dealing with the Department of Agriculture in terms of access to intellectual property. What measures need to be taken to improve that access with Government departments and in particular the Department of Agriculture?

Dr BRADLEY: It is almost like they need a shopfront, because it is a little bit like dealing with CSIRO, or has been up until now. You know this organisation has lots of interesting things going on in intellectual property, but you are never quite sure how to actually get into it, and to some degree it is like that in health as well. So I am not sure what the answer is because it clearly goes back to internal procedures and how they deal with a lot of these issues. I know with health it is complex because of the way that intellectual property is managed with hospitals and area health services and so forth, but if there was some way that you could have a shopfront or one point of contact where investors could go or people could go to look for possibly synergistic intellectual property in putting a business together, there are many cases where a business may want some additional intellectual property in terms of producing a product or a process. That would be the

easiest way to do it, but at the moment it is not obvious how to do that.

The Hon. MELINDA PAVEY: Going back to what we were talking about earlier in terms of the BioFirst funding, how would you feel if you knew that the $20 million dollars that was given to Auslink as part of the BioFirst program had not been spent?

Dr BRADLEY: I would be quite grumpy.

The Hon. MELINDA PAVEY: I am grumpy. If you had that $20 million, would you be able to pick some real winners?

Dr BRADLEY: I think the question to ask is what is the money to be used for, because if it is for infrastructure, that is one thing, but if it is about trying to develop emerging technologies and really trying to capitalise on IP, we cannot wait around for two years for money to be spent. We really need to move fast in this because the world is passing us by. That is all I need to say on that.

The Hon. MELINDA PAVEY: Minister Sartor's appointment to oversee intiatives and policies, how could that appointment make it easier to access Government IP?

Dr BRADLEY: That is a hard one. What I think we are going to need to really drive this whole industry forward is a Minister who is almost full-time on this, so whether you call it biomedical research and innovation or whatever, because a number of people in the community who are not in the biomedical sphere have said: we really wish it had a bit broader scope, rather than biomedical, so I think you cannot do this as a part-time activity and the Minister can be a champion, an absolute champion.

One thing we do not have in New South Wales is a lot of champions. This has been something that has been raised a number of times in the past. We do not have a Gus Nossel of Sydney, or a Peter Dougherty of Sydney that get up and champion. Lucy Turnbull has done some through her role as patron, but the best thing you can do is have a champion who is a Minister and I think the current Minister has obviously the passion and interest but you cannot do water utilities at the same time as you do science. I hope that is not demeaning. I do not mean that to be negative. I am trying to be positive.

The Hon. MELINDA PAVEY: You are making the point it would be good to have a Minister for Science, just science?

Dr BRADLEY: Yes.

The Hon. MELINDA PAVEY: You suggested we should be having greater cooperation with the ACT.

Dr BRADLEY: Yes.

The Hon. MELINDA PAVEY: Can you expand on that?

Dr BRADLEY: Things have moved rapidly since I wrote that. We are probably going to enter into an agreement with the ACT. When will this be made public?

CHAIR: About two days.

Dr BRADLEY: We are in an advanced stage of negotiations with the ACT Government at the moment to enter into an agreement where we would basically establish an office in the ACT. The reason for this is there is a tremendous amount of excellent science and technology research coming from the ACT, both within the Government sector as well as the universities. It is poorly tapped. There is a culture that is not entirely conducive to commercialisation there and the ACT Government is absolutely bent on trying to change this whole issue.

What they are going to do is they are creating something called a Canberra partnership and NICTA is part of this. I should point out that NICTA is the biggest investment in science and technology

the ACT Government has ever made. It shows their commitment.

We have been invited to become a partner in this as well and our role would be to assist with the rapid and advanced commercialisation of technologies, not only the life sciences but other services as well within the ACT, and particularly building on our current role of working with the ANU because we spend four man days a month already there working on ANU projects as part of our shareholder arrangement.

They want to ultimately create a small precinct. It is just outside the university but it is also on the edge of the city, which is like a bridge between the two organisations. NICTA will be there and these commercialisation activities are involved.

They are prepared to pay 50 per cent of the salary of a person if we pay 50 per cent to have somebody on the ground, there so it is a very strong commitment that we are negotiating.

I have promulgated with them many times in these discussions that what we need to do is create a Canberra Sydney corridor where we help them expose their activities to the market and they get somewhat frustrated in trying to work with the State Government here. They often get a brush off. They feel there needs to be a greater level of dialogue, probably at the ministerial level to make that work, but we are going to be an advocate for them. We will be highlighting and showcasing some of the technology here in our building as we move forward.

CHAIR: You alluded to something this morning before we started the formal meeting. In terms of area of focus, areas of science where there ought to be a focus, I know there is a very large number of issues to take into account and over the last few years the State Government has had to focus across the title of biotechnology, although you notice you have used the term biomedical because there has been an emphasis there in terms of the funding, if the State Government is to determine these are the areas, without picking winners with individual companies, but in terms of areas of science where we believe that this State has particular expertise, there are commercial opportunities there and these are the areas where it is appropriate to have an emphasis of funding, from your knowledge of the industry and the sector, what would those areas of focus be?

Dr BRADLEY: Clearly biomedical devices or bioelectronic type convergence technologies is where the major strength is. There is a very strong medical device network which has now emerged as a formal entity. It is a subset of AusBiotech.

We all know about the track record of medical devices in New South Wales, and certainly many of the companies that we are starting to get here now are in that area. One of the attractions about this is that often the path to market, if the product is right, is quicker. It is less costly than a therapeutic, and regulatory approvals are often easier to obtain.

I am not saying that it is an easy route but it is a lot easier than trying to take it through a therapeutic market, which no-one could do by themselves. I do not know if anyone could do it in Australia by themselves.

I think that that whole area, whatever its true definition, because again it is all about convergence, is really where our competitive edge can be.

If we were surrounded by large pharmaceutical multinationals and if we were sitting in the middle of Europe, then we may well have a major therapeutic focus but I think the reality is most people working on therapeutics in this country are going to end up doing alliance, joint ventures, through multinationals.

The other area we lead in is this whole area of proteomics and we now have three major proteomics entities here, proteomic systems probably being the most high profile.

CHAIR: Can you define that for the record?

Dr BRADLEY: Proteomics is effectively the study of proteins, protein function. Everybody

said that when we sequence the genome we will know everything we need to know about how our body works. In fact sequencing the genome is nothing more than creating a road map without road signs, and all of the important waysides and stops that are on the way.

Proteomics effectively puts the road signs in place and starts to tell you about how your body really functions and how cells function, so when somebody develops a certain disease state, sure a gene might have malfunctioned, but the gene that has malfunctioned has ultimately produced, or encoded for a protein, it is the malfunction of the protein which is causing the problem.

If you study proteins and their structure and how they have changed then you have a very important lead into disease control and hence drug discovery. Keith Williams' group, originally at the Macquarie University, has been a true leader in this work. They created the name proteomics. It is an Australian name, a Sydney name. It is now a burgeoning industry throughout the world.

We have a lot of strength there and I think that is something to be capitalised on. We have some diagnostic activity here, but I still think mainly it is medical devices.

(The witness withdrew)

ROBERT KEER LEWIS, Executive Director, South Australian Research and Development Institute (SARDI), affirmed and examined (by teleconference):

CHAIR: Do you wish to make a brief opening statement prior to the questioning?

Mr LEWIS: No. I have got a number of questions that have been sent to me but I am in your hands, and I think if we just address the areas that you want to know of interest.

CHAIR: First of all, just a formal statement I have to make, which is: If you should consider at any stage during your evidence that certain evidence or documents you may wish to present should be heard or seen in private by the Committee, the Committee will consider your request. However, the Committee or the Legislative Council itself may subsequently publish the evidence if they decide it is in the public interest to do so.

Mr LEWIS: I understand that and I do not think there is anything that would be covered by that that I am going to talk about today.

CHAIR: Could you just explain how the Research and Development Institute operates in South Australia?

Mr LEWIS: Certainly. SARDI was created on 8 October 1992. It was created from the research units of the South Australian Department of Fisheries and the South Australian Department of Agriculture. It was at a time when the Government of the day rationalised a large number of smaller organisations and created a small number of larger departments. There is nothing unusual about that. That happens on a periodic basis in Government circles. The unusual part was that, and it was a first for Australia, they took the research units and development units out of, as I said, fisheries and agriculture and created SARDI, and initially it was a stand-alone administrative unit, but in about 1996 it was brought back under the control of the then Department of Primary Industry and Resources and operates as a business unit within that department.

CHAIR: So it is now back within the Department of Primary Industries?

Mr LEWIS: It is back within the Department of Primary Industries, but as a clearly identifiable business unit within that department and it has its own, not board of Government, but it has an advisory board to give advice on priorities, et cetera.

I will say a couple of other things about this to put it in perspective. The reasons that SARDI was created, and there were four reasons enunciated at the time by the Government: One was to create a better focussed and direct State research capacity, obviously in the area of the disciplines that we are interested in; two was to assure research outcomes are more relevant and available to industry; three, ensure research and management operate within commercial and industry standards; and, four, to increase South Australia's national R and D profile and influence.

A quick snapshot of our performance over the now 11, moving into 12, years of SARDI's existence is that in the first full year of operation, 1993-94, SARDI comprised of 235 scientists, technicians and support staff. We turned over, in gross terms in an operating sense, $23 million, and something of the order of 60 to 62 percent of that was derived from the South Australian Government's recurrent funding. Last year we turned over just under $47 million, in the last financial year just completed, we turned over $47 million with 450 staff and of the order of 31 to 32 percent Government funding. The Government funding over that period of time has, I guess, effectively declined, but not overall significantly, because there have not been top-ups for inflation, CPI, et cetera, and occasionally we have to draw what is I guess euphemistically called an efficiency dividend or a cut of some proportion.

Our growth in business has come about by being more competitive in the national and international competitive grant funding arena, and that includes everything from the R and D corporations to relationships with universities, et cetera, getting access to ARC and other funding as a

competent research centre, as well as what we are calling our commercial portfolio where we are getting better returns for our intellectual property and the whole story behind that.

CHAIR: Are you a formal partner in CRCs?

Mr LEWIS: We are a formal partner in a large number of CRCs. The arrangements by which we are a partner can be as a joint venture through to the CRCs are incorporated entities. When I say we are a formal partner, the actual legal entity that is recognised or is a partnership in the CRC is a body corporate. The Minister - today it is called Agriculture Food and Fisheries and we normally describe it as the Minister for Agriculture Food and Fisheries, that being the body corporate, not the individual, operating through the South Australian research and development.

CHAIR: Public sector research into areas like health, your institute has nothing to do with that, is that right?

Mr LEWIS: We have very little to do with direct research but we have considerable interaction in South Australia with the whole of the South Australian research community, including the health community. The one area that we are doing some work in research is in the use of large animals, that is mainly sheep, as large animal models for human application and we do some - I won't go into the details, but we do some embryology, in-vitro and transgenic work which has applications both in the agricultural industry as well as for transfer into human applications.

Our main focus is in agriculture. It is actually in enviro-sciences or biological sciences and life sciences other than biomedical. We operate within what we call five strategic research areas, those 450 staff, and we have five chief scientists heading up five research areas. The research areas are entitled crops, horticulture, livestock, aquatic sciences and sustainable systems and technologies. When SARDI was created we significantly thought about how we would structure ourself, and you will see that we are structured basically on commodities, and this is for administration, what we call pay and rations, et cetera, management, on commodities rather than disciplines such as pathology, entymology, diagnostics, et cetera.

The reason we did that was a conscious decision because we want our clients, who range from everything from farmers to agri business to biotechnology to biotech companies, to be able to most comfortably engage with us and we thought that most of our clients would be able to better come through the door and engage with us through that structure. It does not mean that behind it we do not have a very highly matrixed organisation because we have NIR, which is new infrared technologies, just taking one; we have those technologies being used and developed in aquatics, crops, horticulture and in the livestock area, and basically we have a network of matrix in those technologies, similarly diagnostics, increasingly biotechnology, genomics, and in fact a number of our most successful DNA based commercialisation products, which we may get onto later if we have time, as an example of how we commercialise, we have developed in the broad acre crop area diagnostics in cereals we are now putting into the poultry industry, the aquatic science industry, agriculture, et cetera.

CHAIR: When you have got so many areas of focus, does that create a problem for clustering and your critical mass in each area?

Mr LEWIS: Critical mass, maybe, but it comes back to the question of clustering, and one of our strengths is that we are a very highly collaborative state and, over the last decade in particular, a major thrust in our success has been in working at an institutional level, in a highly collaborative state, for example, if I could just take two clusters, one is the Waite of course, which is here, and on the Waite we have the University of Adelaide, we have SARDI, we have CSIRO, Plant Science, Land and Water, and the Maths department or institution, we have the Australian Wine Research Institute, we have the headquarters of three CRCs, we have the Australian Centre for Plant Functional Genomics and Australian Genomics Research Facility, Agricultural Division, and we have a range of other institutions, including a spin-off company called Australian Grain Technologies Pty Limited, which is a commercialisation company for our wheat breeding, jointly funded by or jointly invested in by the University of Adelaide and the State Government through SARDI and GRDC. What we do is

we don't compete with each other we co-locate and collaborate.

Our idea is that we invest jointly in all the entities. Some may have national, some may have only a State focus, but we invest in all these entities with the idea of investing in - the way we coin it is from discovery to delivery.

The Australian Center for Plant Functional Genomes is a legal entity and is a sovereign entity in its own right and has a mandate basically at the discovery end to look at gene technology and genes which are strictly used in antibiotics testing in the cereal industry.

We have the CRC for Plant Breeding, which we are investing in, with other players around Australia of course, that is about taking those gene technologies and developing them for application, and we have Australian Grain Technologies, which is a wheat breeding company, which is an incorporated entity, which some have invested in, and that is about taking those, typing them and putting them into the new varieties. That is the approach we take.

We are taking a similar approach at Roseworthy and Turretfield, which are north of Adelaide, Roseworthy being another university campus and Turretfield being another of our nine research centres we run around the State, a farm which is used for research. It has additional equipment such as laboratories and offices, and the best way to describe it is it is like sitting in a very large, comprehensive, traditional, what you would expect state of the art laboratory.

We have machines that go ping, and expensive machines on it, et cetera. That is a traditional laboratory that people use. Our research centres we see as broadacre laboratory ventures, where instead of using test tubes we use animals and wheat as the vessel which we do our research in.

CHAIR: How do you conduct your risk assessment when you are determining levels of investment and where it should be?

Mr LEWIS: From SARDI's perspective we have a board sitting over the top of us called the South Australian Primary Industries Research and Development Board, and one of its major functions, along with many other functions, is to go through an annual priority setting process and it is a quite a sophisticated priority setting process, and annually the board or SAPIRD Board, as we call it, makes a report to the Minister of Agriculture Food and Fisheries on our current performance, our current portfolio and our future directions.

This year they have identified a number of new initiatives which they consider the Government and other investors should warrant and they put those forward. They include a whole new initiative of marine science called Marine Innovation SA, which brings together Flinders University, ourselves, South Australian Museum and a number of other players, including some discussions we are having with the CSIRO under their flagship program Oceans of Wealth, to significantly further collaborate and if necessary hopefully invest in marine science.

A similar area in animal biotechnology, which is where we are talking about Roseworthy and Turretfield, which is where we do almost all of our intensive animal biotechnology, basic and fundamental research, everything from genomics through to we cloned the first sheep in Australia.

We are even using transgenic animals, genetic modified animals and particularly areas of in vitro and other areas such as in vitro embryo fertilisation and embryonic transfer and we have a commercially attractive thing called juvenile in vitro embryo transfer, mature embryo transfer, and we are building a similar relationship in a collaboration with University of Adelaide at Roseworthy in animal biotechnology.

CHAIR: Some submissions that we have received have noted difficulties that some businesses face in terms of dealing with the Department of Agriculture only in terms of accessing their IP. Is that a problem in South Australia at all with businesses trying to access IP from the public sector?

Mr LEWIS: The answer is it is, yes. Hopefully it is not as bad as it was. Maybe we should move into IP and I will tell you some of the history of IP.

Something like 60 per cent of the investment, and probably greater, in agriculture - let us call it that and I am including fisheries and everything as well - related research is in some form of public institution, whether it be a university or a department such as New South Wales Agriculture, or SARDI, which is part of a State department, or CSIRO et cetera.

Locked up in these institutions is an immense innovation potential. South Australia is particularly lucky because there has been significant investment over the last decade or so. We are very good. When we benchmark around the world we are very good in the discoveries component of the science face of it.

It is acknowledged that traditionally we have been less than perfect, certainly in the areas of improvement in the technology transfer and innovation, which is about actually getting something down on the ground and maybe having an impact.

I can give you the history from SARDI. I will go back one step. Part of the reason for this, and I will talk now from public sector organisations in particular, there is a difference between risk aversion and risk management. What we have been arguing and putting forward for many years is we should be having risk management, rather than risk aversion, and increasingly that is being recognised and being adopted, but we still have a long way to go.

SARDI in 1995 tried to really commercialise something for the very first time. It was a thing called a disinfestation oil, which is a low molecular weight hydrocarbon oil, which we developed with our entomologists to disinfest citrus and other fruits so that it could be shipped particularly to the United States in a fresh state.

There are a whole lot of phytosanitary and disinfestation procedures, and we did this work along with the oil and other phytosanitary procedures. It basically got us the confidence for the US Department of Agriculture and others to provide the licences or the approvals, whatever is required, to ship hundreds of thousands of cases of fresh oranges, for example, to California, because we could guarantee that the disinfestation had an efficacy that would work.

We thought this product would have potential in other parts of the world, so we started talking to some of the largest petrochemical companies and petroleum companies in the world to develop this stuff. We did eventually get an agreement with them but it was very tortuous because we did not have in place (a) the Government policies; (b) the skills inside the organisation; (c) the track record in commercialising.

We actually then decided we needed, as well as have good sciences et cetera, to basically re-skill ourselves. I guess the jargon these days is lifelong learning. Most of us left university with things - we have got very good skills in basic biology but not in the technology transfer or in the IP management in the commercial arena.

We did a number of things. We thought about building up in-house a commercialisation unit, like most of the universities have, and some of the Government departments but we did not think they were working effectively. We actually outsourced our intellectual property and commercialisation management through public tender, et cetera, and we have retained a contract with a company to deliver that to us. Again there is a whole set of standards et cetera.

We also recognised that we had to actually raise the awareness and skills of our staff so that they became more client friendly and understood what the client wanted, et cetera, and we have done a large investment over the last five, six or seven years, including the development of our own in-house commercialisation course, a short course on commercialisation which we deliver twice a year to 25 of our mid to senior researchers, and we also deliver once a year a one day advanced commercialisation course based on case studies within our organisation.

CHAIR: In terms of changing the culture for those people, with the researchers do they receive any incentive for something being commercialised?

Mr LEWIS: I will get to that. We tried to do that. I will finish off on the course if I may. As a matter of interest, we have actually licensed this course, a commercial enterprise in itself, which has been delivered at a number of places around the world, so it shows how something you develop internally can become a revenue stream for you.

The question of incentive, inventor reward, really comes back to another issue and I will come back specifically to inventor rewards and other incentives. If it is a Government institution we have argued for many years we need to have a contemporary and useful Government intellectual property and commercialisation policy.

Our Government is currently developing that but, quite frankly, one of our hinderances is we have not got that effective policy at the moment. Every time we wish to commercialise something, it is almost back to square one to negotiate some of the principles about what it is about and there are many, many issues that need to be addressed, including what is the nature of any commercial arrangement we have, what are the relative risks against an unincorporated joint venture versus a corporate entity, et cetera, who own the intellectual property, et cetera, and we argue that we would like to have a greater freedom to reward inventors for material which is transferred into the market through commercial arrangements.

I should say that our definition of commercialisation is basically technology transfer. We have options to achieve that technology transfer, which range from giving it away to a formal commercial agreement where we have royalties, et cetera, so having a formal commercial agreement which generates revenue may not be the best way that we can see to deliver it, but if we do it that way then we wish to be able to share some of that amongst those who actually invented it. That can be an individual researcher. It can be a team. It can be a unit. At this point of time we do not have anything in our Government policy which allows us to do that but we are endeavouring to negotiate that.

We try to do rewards through de facto ways by letting people go to conferences, redirecting some of the revenue streams we get into increased capacity in the various laboratories, et cetera, with increased material, et cetera, but we hope in the not too distant future we would like to have a contemporary intellectual property management and commercialisation policy which would have attached to it and inventor reward policy.

There is one other comment I would like to make in closing. We think we are successful in being able co-locate, collaborate, change the culture and the skilling of our people so they recognise there is benefit gained through both the traditional publication as well as through technology transfer and commercialisation, which is really a learning journey that people have to go on.

One thing that makes it happen is people. We have not done it perfectly and we are not there yet, but it clearly involves, if you are going to have co-location, clustering and collaboration and all these things, you have to have good, solid leadership from the top and you have to have people who are committed to it and who are willing to clearly enunciate and demonstrate to the staff of the various institutions.

We are all made up of people, which means human nature, egos, et cetera. You have to have leadership. You have to have mutual benefit and respect and you have complementary skills that you can bring together to deliver an integrated outcome.

(The witness withdrew)

DEBORAH ALICE KUCHLER, CEO, BioMed North Limited, Level 4, Vindin House, Royal North Shore Hospital, St Leonards, and

CAROL ANNE POLLOCK, Director, BioMed North Limited, Level 4, Vindin House, Royal North Shore Hospital, St Leonards, affirmed and examined:

CHAIR: If either of you should consider at any stage during your evidence that certain evidence or documents you may wish to present should be heard or seen in private by the Committee, the Committee will consider your request. However, the Committee or the Legislative Council itself may subsequently publish the evidence if they decide at a later stage it is in the public interest to do so. Would you like to make a brief opening statement?

Dr KUCHLER: I would like to congratulate the Committee on its work. I think it is work that is needed in New South Wales to progress the industry in which we work, which is health commercialisation.

CHAIR: If I could ask you first of all just for some background to BioMed North. How long has BioMed been operating and during the time it has been operating what significant changes have there been in the environment within which BioMed North operates?

Dr KUCHLER: BioMed North has been operating as a public company for one year. Prior to its incorporation as a public company it operated for a year under a trading name called BioMed North. Essentially it has been operating for two years, and in that two years there has been significant cultural change in health commercialisation at the Royal North Shore site, which is the prime site where we have been working for two years. Basically, some changes have been a recognition by scientists and hospital staff that there is valuable intellectual property within the hospital and that there is interest in having outside third party people work with the hospital to commercialise the intellectual property.

CHAIR: And in your structure do you have member organisations?

Dr KUCHLER: It is a member based, not for profit public company.

CHAIR: Who are those member organisations and how are they incorporated?

Dr KUCHLER: Since BioMed North started we have discovered that there is a quantity of intellectual property that is escaping from the hospital system through to companies and through to universities. Those companies and universities have been using the hospital system as a resource to achieve their business goals. In observing that, we have said, well, this isn't fair because the intellectual property belongs to the hospital and therefore the hospital as a business entity should be rewarded on a commercial basis from that intellectual property. That did not happen in the past.
We believe our business is in looking after the business interests of public hospitals, in that we will look after the value that is in their intellectual property and get financial rewards for them as a business because they do not understand that area of business.

Having said that, we believe our members should be public hospitals or area health services. So we have deliberately kept other people out of the membership structure. Why have we done that? Because we need to get the buy-in from the hospitals and if they own BioMed North, then we will get automatic buy-in. So we have taken a very strategic approach in the way we have selected members.

CHAIR: And so that is public hospitals generally?

Dr KUCHLER: Yes. Our goal is to have a member based organisation of public hospitals in New South Wales. We are two years old. So far we have achieved getting the northern area hospital site as a member, which involves seven hospitals, and we are currently in the process of getting the Western Area Health Service signed up.

The Hon. MELINDA PAVEY: So they will come in under the umbrella of BioMed North?

Dr KUCHLER: Yes. You will no doubt agree that in member based organisations, the power within the organisation lies with the members. They get to determine what happens with the organisation, where it goes, what it does, whatever. So the moment we get enough critical mass through membership, then they will own that organisation and they will determine the way in which it commercialises its IP. We only need time to achieve that objective.

Professor POLLOCK: If I can say a couple of things that have been significant for BioMed North. We had a difficulty with IP arrangements with the universities, and in particular people like myself for instance, who are primarily employed by the university, the university regarded them as their own intellectual property, and working on the health site they also regarded myself as their own intellectual property, and so because there was no security over the intellectual property, it made it very difficult for external people who might have been interested in taking an interest in that IP or looking at the commercial opportunities. They had no confidence in the IP that surrounded that because it could have been challenged by another group.

We sorted it out so that the University of Sydney and the health sector actually made an agreement such that they secured the IP under a contract basis and that has been incredibly useful to be able to now give external people the confidence that it is actually secure. It has also meant that there is an opportunity for the researchers to have a strategic view of their future, as to how they might look at IP, and because of that the area health service wanted to attract a BIF grant. That has been successful and there is a develpment grant that the hospital has achieved, and so the cultural aspect of the change has been quite significant, and therefore there has been interest by the Western Area Health Service in trying to look at what they have and what we have, and with this security over the IP arrangements there is an opportunity now to look at some strategic partnerships with the IP potential, without any, if you like, competition, because people come to us and say, "Can we use the hospital sector now to develop a machine or a testing facility", and it may be that the Royal North Shore Hospital isn't the best place to do it, it may be that St Vincent's Hospital or another hospital might be better placed to do it, in certain circumstances the rural sector would be much better placed to take advantage of research opportunities, and I think that we have got to really develop some success in the area that we have actually been working in. We have taken various products that have been sitting on the shelves for many years and developed those to a very successful degree.

We have also been looking at the risks involved, because there has been no risk management aspect of IP, and Deborah and her staff have been looking at whether or not we are actually contravening other people's patents, which I guess is a big risk. I think there has been a lot of success by virtue of BioMed North in an area that nobody has recognised and people have actually used and I think it is an opportunity that the Government needs to take in this area of health commercialisation.

Dr KUCHLER: It is an uncontrolled environment. You have got a hospital environment that is producing intellectual property, and at Royal North Shore, before we came along, you had universities and companies coming in and essentially raping the hospital of that intellectual property for free and the hospital getting nothing back. You also had doctors and clinicians within a hospital copying other people's patents, so the hospital is highly exposed in terms of being sued. We have come across three instances at Royal North Shore where that has happened and we have had other people who have gone off and commercialised IP privately themselves without telling anybody about it, the university, the hospital or anyone. So we have cleaned that mess up.

The Hon. MELINDA PAVEY: Have you sought advice from anywhere overseas, taken examples from other countries in setting up your own structure? Is this happening anywhere else?

Dr KUCHLER: It was not happening elsewhere in Australia prior to setting up BioMed North.

Professor POLLOCK: We looked at some of the models in the United States and the UK to look at what actually works, but it has been difficult to actually find any relating to the health sector. I think there has just been an overseas fact finding mission. The Victorian Government has

done some research based in hospitals.

Dr KUCHLER: Essentially BioMed North was conceived to be a cluster which assisted the industry and the hospital to work together for each other's benefit. In trying to put that business objective into place we found that the structural requirements within the hospital were not there. In other words, the discipline and the control was not there in that environment. We had to clean that up first, and this is where we got more involved in the IP. For example, when we went to sell IP to industry, we found out that the IP that was owned by the University of Sydney was in fact owned by the hospital. So we had all that mess to clean up and that is what we have been doing for two years.

Two years has just come up, and I have just been invited by a delegation of Austrade and the British Consulate General to go to Europe, and when I looked at the health commercialisation in Germany, France and the UK, there were three different models. The one in France is one where the Government spun off a company and took 15 people out of Government departments, put them into the company and they have only been doing that for 12 months. In the UK they have been doing it for three years only, and what happened, the Baker commission was to investigate IP commercialisation in hospitals. That report was released - I can give you a copy of that - and he noted that the hospitals were leaking intellectual property to universities in the same way that we have found. I actually learnt nothing really, this is exactly the problem that we have had. From what I can tell it wasn't ministerial initially. The Department of Health decided that they were going to bring down a policy which said all hospitals must prove on an annual basis to the Department of Health that they are managing and commercialising their IP. In response to that they found it was expensive to do per hospital, because they have little hospitals, big hospitals, and it also included trusts, and trusts in the UK include GPs.

They are also divided into areas like in Sydney. They decided that each area would join together their resources and form a partnership which they called a hub. They took out a trading name, they would form a hub and each hospital would put in a percentage of their revenue to fund that commercialisation office. That came to about a quarter of a million. The Department of Health said they would put in a quarter of a million. Commercialisation of health is objective number three under the European Union, so they could apply to the European Union for funding, and in the regions they got more money than in London. They also got money from their local chambers of commerce and they tend to earn about $15,000 pounds a year. Overall, they had about a million dollars, with which they hire about nine people and they look after the commercialisation of around about nine hospitals. Because they are a partnership they are internal, they are not a separate legal entity to the hospital, so they are within the hospital, and usually the largest hospital in the hub takes that partnership under their wing and they operate out of their facilities. The staff are staff of the hospitals hospital, they use all the hospital facilities and they have a partnership board, which is usually made up of the CEOs of all the hospitals.

CHAIR: What New South Wales Government funding do you receive?

Dr KUCHLER: In the first year of operation we received $200,000 from the Minister for Health through the Department of Health. We have had that renewed, two lots of $250,000 in this current financial year and the next financial year.

CHAIR: How else does BioMed North generate revenue and how do you expect to do so in the years to come?

Dr KUCHLER: Our membership fees are $10,000 so each hospital would pay $10,000. We are also currently getting an agreement signed with Northern Sydney Coop, where they have given us one person, which is valued at $110,000.

We also operate out of their offices in kind, which we believe is worth about a quarter of a million dollars and we are looking at $100,000 in cash on top of that, and they supply the operational budget we need to employ patent attorneys, lawyers, et cetera.

Professor POLLOCK: It is a not for profit organisation, and the model is that we would have a

similar operation in each of the hospitals so that the hospital would continue to own any revenue that they generated, and hopefully it will work the same as North Shore has, where there has been an incentive for people to commercialise because that revenue which has been generated, a proportion of it has been guaranteed to come back to support of research programs.

As well as generating money for the institution, it is also an incentive for people to look at that as an additional source of revenue for their research programs.

The idea would be there would be a similar person who would look after that particular hospital's interests in each area, but there would be an executive structure, headed by Deborah, which would look at the cohesiveness of the group and the sharing of information, the marketing of the group itself.

CHAIR: Has it been difficult in terms of the culture in the hospital to get that happening? Once you have the agreement and the hospital becomes a member organisation, I imagine there is still very much on the ground in terms of actually accessing what research there is which has commercial potential.

Dr KUCHLER: The Business Liaison Office (BLO), for example, is 15 years old.

Professor POLLOCK: That is the Business Liaison Office at the University of Sydney.

Dr KUCHLER: The first seven years of its operation, it was a basket case, not much happening. Seven years ago the Commonwealth Government changed the legislation and brought about policies which said that universities must commercialise their IP, so the BLO is now highly successful.

That is the same problem we have. We are an external organisation that is essentially going into the hospital and saying: It is a good thing if you commercialise your IP, and the hospital is saying nobody is making us. Our job is to run hospitals, so if you want to come with Government money and commercialise our IP we will take that service thank you very much. But if you close down tomorrow that is fine, we will go about running a hospital and putting people on beds.

Our biggest bottle neck is the lack of Government policy which says that public hospitals should commercialise their IP.

CHAIR: The money that flows through from the commercialisation goes back to the area health service, is that right?

Professor POLLOCK: The way that the agreement works, and it is different in different organisations, but the health service and the university have agreed that the model will be a third to the organisation, a third to the department from which the IP is derived, and a third to the individual, so there is an opportunity for the individual to actually make personal income, but a third of it goes back to the department. In practice a lot of the time the individual puts the money back into the research in any case, but there is a personal incentive to do so.

It would be much better if it was policy driven because, as you say, it really should be focussing on the health of the community. In Australia in particular we have an enormous opportunity, because we have researchers co-located on health sites which does not happen, for instance, in the United States where they have their university researchers and then the hospitals, so they actually cannot look at generating wealth based on bench to bedside, if you like.

We do not have a reasonable policy for instance, even with regards clinical trials, and internationally everybody recognises they might as well do their phase three clinical testing here because it is cheap, because we do not look to make any money out of it. We are naive and happy to be involved, instead of charging doctors' rates, nurses' rates and the infrastructure required to run something out of various rooms and equipment and differentiation of telephone calls.

It is not all set up in a business manner. It is all very much ad hoc and it is to the detriment of the New South Wales economy. Once we get this right then there are the networks that we develop outside New South Wales.

We just lose opportunities. Those opportunities, I think they need to be bedded down initially in New South Wales and extend the successful model beyond that, and I think the naivety that has been generated over the years has not really progressed at all.

Dr KUCHLER: What we have managed to convince the Northern Sydney area about because, as you can imagine, we are suggesting major structural changes to the CEOs, who think: My job is to run a hospital, I have an emergency department flowing over and you are here talking to me about things that are way off. It is major cultural change stuff and we are external to the organisation, which make it is even more difficult. We have managed to convince them that any royalties that come back will go into a budget at the hospital which will be used for commercialisation of IP. It will not go into our pockets, it will go into theirs, but we get to use it, hire other people, so that has been a major breakthrough, that goes to the bottom line of buying new beds or a new ambulance.

Professor POLLOCK: The fact that we are an external organisation has strength in that external people are happy to deal with us because it does not go to Government if you like, so people are quite keen to use us as the broker, if you like, because they have confidence in the fact there is an independent chairman, et cetera, removed from the health service.

Also the point about the health and what health business is, I took up with Robin Kruk, because the IPART report came out, although the terms of reference were quite broad, when you are looking after the health of the community, which is an extremely valid thing to do, it is just that there are additional things you can actually derive from health. We should be looking at the efficiencies, the way things should be done, which is all very valid research, and the process can be actually commercialised, if you like.

It is not just drugs and equipment, it is structures that can be also commercialised and solved, and those sorts of things that come out of health were not particularly captured in IPART, but she assured me that through mechanisms such as this that there would be consideration of the broader issues relating to health that would be incorporated into future consideration.

Dr KUCHLER: That is what we call intellectual capital, and there have been 24 intellectual capital projects at the Royal North Shore Hospital, which we believe would improve the delivery of health services if they were commercialised.

Professor POLLOCK: Not captured.

Dr KUCHLER: Not captured, and we do not have the resources to do that.

Professor POLLOCK: The issue about how we identify them, we have a couple of staff who individually go around and talk to researchers, which is very time consuming but is actually necessary because there has not been a culture in education to allow people to recognise intellectual property. People think: fabulous, I have a great idea, let us publish, let us tell so and so and see whether or not they know about this, which of course destroys any IP.

There has been some fabulous IP. This fellow, for instance, looked at developing a PET scanner and a CT scanner and putting them together and then developing a functional and image based system, thought it was great and now General Electric have commercialised it and you can imagine the international market for something like that. It is enormous. He had a good idea and asked them if they could make the gismo and lost it.

Now he is working on another project and we have given seed funding to him this morning. It will hopefully be just as big, but he has now recognised that he needs to protect his IP before he discusses it with the person to help him make the gismo. That sort of cultural change takes time and it has taken a couple of years but now people will talk to us before they publish or before they destroy what they had not recognised as being very important.

Dr KUCHLER: If we go back to our business model, I do not believe you will ever make a

business out of commercialising IP under maybe 15 years and certainly not with the quantity that comes out of the Royal North Shore site. The economics just are not there in terms of the resources you have to put in and what you get back.

What most other commercialisation offices, such as the Business Liaison Office of the University of Sydney have done is diversify their business offerings and they also handle all commercial contracts. If you rent out a doctor to the UN, they handle those contracts. They also handle research grant contracts and they get a percentage of what they handle.

BioMed North, I believe in order to be a stand on your own feet type model, has to diversify its business and has to go into those other areas. To go into those other areas we have to go back to the hospital CEO and convince him that we can handle the commercial contracts. At the moment no-one handles them. The individuals scientists are not controlled. The environment is not a controlled environment. That involves another massive cultural change both within the hospital and also buying from the scientists, so basically our risk is how much time have we got, given the Government grant that we have been given, to do sufficient cultural change to build an independent business model that we need to survive, and that is the risk we are working on.

The Hon. MELINDA PAVEY: I am wondering about your opinion of BioFirst and its funding, $63 million over four years, and whether you think it is being spent effectively. I believe that $20 million, for example, has been given to the Garvan Institute over two years and nothing yet of that $20 million has been spent. Would better focus on that spending have achieved better results for you? I know you have only been going for two years and have a long way to go to get up to speed with the Government spending the money it has dedicated to buy technology work.

Dr KUCHLER: The first problem we have got is the spend is very expensive because we have no policy. We are out there trying to get people to commercialise their IP in a desert of policy. That makes what we are doing very expensive.

I have worked in two States now, both Victoria and Queensland, in both environments prior to there being no policy and post-policy. The moment policy comes in, the efficiency with which you can work that type of money increases by a thousand per cent.

The Hon. MELINDA PAVEY: They do have that policy in Queensland?

Dr KUCHLER: Extensive policies. You are now no longer dealing with CEOs. In our instance we are ringing up a CEO and saying: Can I come and talk to you yet again about commercialising your IP and yet again you will show very little interest, as opposed to in a policy environment he rings me up and says: I have to commercialise this IP. The Government is telling me I have to talk on it. Will you come and talk to me about this. That is the difference.

Professor POLLOCK: Like the tax incentives for R&D, if you have to do it you do it.

The Hon. TONY CATANZARITI: The policies between one State and the other, are they much different?

Dr KUCHLER: The effect is the same. They have different policies. At an umbrella level they are very similar. At a micro level they are a little bit different, but not much. The effect is the same. It is Governments saying we want to use technology as a driver of our economic development and them saying if you have got technology, you have to be involved in economic development and commercialise that and we are going to be looking at you.

The Hon. TONY CATANZARITI: How long since they started with the policy?

Dr KUCHLER: Queensland is about 10 years ago.

The Hon. TONY CATANZARITI: And Victoria?

Dr KUCHLER: Victoria 10 years ago. New South Wales is about 10 years behind.

Professor POLLOCK: It is a whole of Government approach, as opposed to just a single policy about science and commercialisation, so it goes through school children, education, the way businesses are run, et cetera. There has to be an R&D component for everything and people are aware of it. It is incorporated into university courses, et cetera, so it is a whole of State and that integrates with the higher education policies about commercialisation.

We are starting too late here by virtue of getting people already involved in science and in our case particularly at the health level, it is not foremost in their thinking.

Dr KUCHLER: I have all those policies if you want to look at them. They are public documents. There is nothing there. I chaired a committee which looked at making their education system more science and technology focussed and the initiatives that came out of that are world class initiatives. Saturday morning technology classes for students in State schools, voluntary.

CHAIR: Where is this?

Dr KUCHLER: In Queensland, for students who do not want to play sport or try and compete with sport, there will be free technology come and learn about technology in the class room, 9 o'clock until 12 o'clock Saturday morning.

Professor POLLOCK: For issues like science in Parliament, there is education that has to happen at all levels about what outcomes can be. I think that sometimes the media is not accessed appropriately or they are not given information that they can capitalise on and sometimes it is scary, which puts people off things like stem cell research and things that have more ethical edges to them. I think the educational aspect of it is really important.

The Hon. TONY CATANZARITI: Do you find the actual health boards, if there is such, in Queensland or Victoria do?

Dr KUCHLER: They are not doing anything in health. Health is the biggest pain. No other State is doing anything in health. They are doing innovation and technology commercialisation in education, biotechnology, nothing in health. It is the biggest pain.

The Hon. MELINDA PAVEY: In New South Wales?

Dr KUCHLER: No, in Queensland or Victoria or any other State in Australia.

Professor POLLOCK: It is an enormous opportunity.

CHAIR: The commercialisation policy that you were referring that Queensland and Victoria had was not with respect to their hospitals, hospitals it is just general?

Dr KUCHLER: It is just general. The biggest problem, because the hospitals are run by the Department of Health, which is very uncooperative, that is something they have got to conquer. They have their eyes on it.

Professor POLLOCK: We are being very much supported by the Department of Health in our initiatives, so we are very encouraged by the initial overtures that have been made to us and us to them.

CHAIR: In your submission you referred to establishing a hub in the outer suburbs of Sydney. We have heard in a number of submissions of places where hubs are being created, or ideas for new hubs. At what point does the creation of extra hubs stop being a feature of clustering and start to actually cause the atomisation because hubs get set up in so many different places, or is that not yet a concern?

Dr KUCHLER: When you have a physical entity recognised as a hub, you start to bring about a cultural change where the people in that start to think collaboratively. In the absence of that formerly

recognised hub, people do not think collaboratively. They think very much in silos. No-one is forcing them to think collaboratively.

For example, in Queensland Peter Beattie said "there will be no Government grants going to anyone unless I get four or more institutions collaborating, so forget it". That is how he got collaboration to work.

When you say let us have this large physical area and let us go and create a brand name like the Australian Technology Park, and when we go for tendering things, let us go under that brand name as a collaborative force, at the Commonwealth level if you have a collaborative project you will get funding way over head. It is very difficult to get a single entity project funded by the Commonwealth Government. So once you say this area will be a hub, first of all it takes on its brand name, it takes on a profile, the people within it start to relate to it, they want to make that work, they think of projects that will make it work, they can go for Government grants which are collaborative, and it is also a show case, so when people come you can show them something. When we have a delegation come into New South Wales, we don't really have anything to show them.

Professor POLLOCK: Or we don't know where it is.

Dr KUCHLER: In terms of the size or something that is modern in terms of how you run science and technology generated type areas. When I was in Berlin we went to Berlin Bauch, which is a very large, $600 million technology park that they built outside Berlin and it involves a hospital, a university, a huge thing, and you think "wow". So you can bring them here, but this is still only tiny, on a world scale this technology park is fairly tiny.

The Hon. MELINDA PAVEY: At BioMed North and commercialisation, do you have any projects within your area that you have seen that could use seed funding, say from the BioFirst program, but they don't know how to get the money or the money isn't there for them to get?

Professor POLLOCK: I do think the capital is always difficult at early stages. There is a couple of different groups that Deborah has been trying to get funding for, and often after that critical first grant they naturally then attract funding. Yes, there are several projects that would be got off the ground if there was critical funding available.

The Hon. MELINDA PAVEY: Have you tried through BioFirst?

Dr KUCHLER: No, I haven't, but I have gone off overseas. I didn't think BioFirst was big enough actually to tell you the truth, and it is also not run on a competitive basis. They don't have an ad in the paper which says "BioFirst is looking for submissions" or "We have got this grant. When you put a submission in, it is assessed competitively". It is very back-doorish the way you get access to it. There is no official granting, there is no ad in the paper that says "BioFirst is giving out grants to companies. They close on 31 May. Put your project in". So how do you get money out of them?

The Hon. MELINDA PAVEY: Have you spoken to BioFirst, even the Cabinet Office, to get an indication of how funding could be available to those projects?

Dr KUCHLER: Yes, I have. I think you put a submission in and it goes through some process. It is not all transparent. The process isn't transparent. There is not a clean process there, that if you are an external person, you know how to get money out of BioFirst, and plan when you are going to get it, this is the date, this is the amount, this is what they are looking for, and you prepare it and you go in it. It is not like that. So as far as I am concerned it needs to be cleaned up.

CHAIR: Part of our job is to review the way in which BioFirst is managed. The first question is: In terms of potential commercialisation that you see, is the focus on biotechnology appropriate in the context of Australia? And the second question is: How would you envisage a Government program, whichever area of science it is focussed on, could best help facilitate it?

Dr KUCHLER: Okay, first, if we are talking about science commercialisation in New

South Wales, I think you need more of a - the biotechnology is general. In the UK they have what is called public research exploitation funds where they advertise, they put a pool of money in there and no matter which area of science you are in you can apply to exploit the research, and it has a closing date, every four months it has a closing date to put in. I think that is the best way to go. It is very clear where they have allocated the money, when it closes, so you can be planning. You might have a project now; you might think I need money in June next year, so you can start to plan. You know it closes in July next year; you know how they want the submissions put in, how much work has to go into it. It is all professional I guess is the word.

Professor POLLOCK: I think there is a lack of ability or a lack of the way that people put together applications in a business model, so they don't actually look at milestones and it is very much research focussed as opposed to business model focussed, and you are never going to get much in funds unless you have a model that business is going to be happy with. If you can say we will get our first seed funding from Government, our second one from X and Y, it makes everybody much more comfortable that you are going to achieve your milestones, whereas if people come along saying, "We have got a fabulous gizmo and if you give us some money we will be able to develop it to a stage where we can get commercialisation", that doesn't give anybody any confidence that we are going to get anywhere. So the actual structure has to be in a business model structure that incorporates Government into the business unit, and it happens in isolation, it doesn't happen in a co-ordinated fashion.

The Hon. TONY CATANZARITI: The model that you envisage which you put in your submission, in that situation do you just leave it at that or is there a --

Dr KUCHLER: In what?

The Hon. TONY CATANZARITI: The Office of the Chief Scientist?

Dr KUCHLER: No, it is all above board. The decision is made by an independent board of qualified people, very much like we have on the Commonwealth level here, the R and D start programs at the Commonwealth level. So you put a submission in, there is an independent board that looks at every submission and decides which one is the best one to fund. In an area like that, like a public research exploitation fund, I presume you would partition some of it for very early stage research, some research that was a joint venture between companies and the public institution, some that was later research. You would silo them so everybody had an opportunity, and it could be in any field. If you are genuinely interested in commercialising science, it would have to be in any field, as opposed to biotechnology.

It is very difficult for people. We had the wave of IT where everybody was on the bandwagon and you could get money anywhere and then we had the wave of biotech. I would hate to be somebody in engineering. They all tend to turn their discipline around, so instead of being a mechanical engineer, they are now a software engineer or IT or a biomedical engineer.

Professor POLLOCK: I think if you think too narrowly you will miss out on opportunities. For instance, the agriculture research would be applicable to human research and vice versa, and so we have licensed a product recently that initially was licensed for humans and now it is licensed in the veterinary area. Similarly, that would work for plants. Once you have done some genetic modification, you can pretty much adapt the technology, and it is not just an invention that you would be patenting, it would be the technology. To develop some of our bits and pieces we often use the biomechanical engineers to try and develop the piece of equipment that we need. So if we didn't actually develop or allow those people to develop some ownership in that intellectual property, it would reduce the industry and it would only be the biologists that would be given an opportunity. I think a good idea is a good idea. You might look at biotechnology as being the next wave of opportunity that is coming through. We will always be behind if that is all we focus on and we do not focus on nanotechnology, et cetera. There are going to be opportunities that spring out of nowhere and we have to encourage that.

CHAIR: In your submission you refer to, and other submissions have referred to, the

potential for creating an Office of Chief Scientist. How do you imagine a chief scientist would operate? What do you imagine in practical terms it would bring to the issue of commercialisation?

Dr KUCHLER: In many projects commercialisation requires collaboration between several Ministers. For example, if you were to build a very large science commercialisation hub somewhere, that requires collaboration between the Minister for Planning, the Minister for Science, the Minister for Health, depending on the theme that you took, and you then say: Well, who keeps that a project like that on track? Who ensures that everybody is getting an equal say in the development of it? That is where an Office of the Chief Scientist has a role.

Also at the Commonwealth level there are many initiatives that are happening in science commercialisation, and unless you make a commitment towards being part of that action and getting some of that money, you are going to miss out on a lot of very good opportunities. So an Office of the Chief Scientist is a commitment by the Government to say to that office, "Okay, you keep your hands on the ball to make sure we get our fair share of that deal", and also input into their new policy developments. So I guess it is an additional resource for the Minister who is responsible for science or innovation or IP ownership, whatever that Minister is.

CHAIR: From the perspective of BioMed North, when would you imagine you would be going to, say, the Minister's office or sections of the department, when would you go to the Office of the Chief Scientist, would you imagine they would be integrated in the department?

Dr KUCHLER: If say, for example, we had a direct health initiative that had no other department involved, we would go straight to the Minister for Health. For example, if we came up with an initiative that involves health and engineering or health and say another State. For example, if we wanted some initiative being brought together between Victoria, New South Wales and Queensland, we would go to the Office of the Chief Scientist.

Professor POLLOCK: In fact, there was an opportunity for that to have happened just recently with a bioterrorism piece of research that would have been ideal to expand to Victoria, Queensland and New South Wales, which came out of New South Wales. It is very hard to know where to take that so that it gets supported on a three State basis. The Ministers look after different bits.

For instance, the issue about broadband access for scientists, the State Rail appears to have excellent broadband access and often the hospitals are right next door to the railway stations, but do you think health can access broadband from the nearby railway station. It is almost impossible. So you lay down parallel lines at a cost of millions of dollars and somebody says, "Did you know State Rail have already accessed this". If there was a person who we could say, "Can you deal with two or three different Ministers and get them on the same wave length", it would make our job much easier.

It is excellent that Minister Sartor is bringing out science as an issue, but he is also worried about water and various other distractions. He is obviously taking a serious interest in science, as is Minister Iemma, but it is hard for them when they do not have that as their key focus.

Dr KUCHLER: At the moment each independent Government department has their own intellectual property policy. The office of chief scientist would be somebody that we could say we are one Government in New South Wales, we really should have one intellectual property policy in Government for the public and private areas. So the Office of the Chief Scientist would co-ordinate that. You might say to yourself why couldn't DSD do that, or DSRD I think it is called here, but they are one party of a group of parties, so they are not an independent observer. The Office of the Chief Scientist is essentially an office that brings together a lot of competitive parties to work on one project which works to the benefit of all parties that will make them more efficient.

Professor POLLOCK: It took us long enough to work out the University of Sydney and the Northern Area Health Service IP. It gives external confidence. With all this, who do I go to, even in Victoria there is a much more defined focus of where activity is and people from IBM have said we know who to go and talk to in Victoria but we are not quite sure who to talk to in New South Wales.

We had the person who heads up technology in the European Parliament come and talk to us about who does research into mad cow disease here, or how do you talk about the purity of mammalian proteins and contamination, but we just happened to know. It was not anything other than good luck. It was not good management.

Dr KUCHLER: The Office of Chief Scientist, if you take the Imperial College in London, they earn $200 million a year by exporting their intellectual capital, so the Office of the Chief Scientist may say: I believe New South Wales is missing out on a significant revenue base here by not exporting the intellectual capital that is held in public institutions.

They might look at a policy paper of how we could encourage an increase in exporting our knowledge and in doing that, they would identify structural problems. They would then come up with: one of the reasons we cannot export our knowledge is because there is a government policy which says that every public servant is only allowed one overseas trip a year, or there is a total ban on it, so we had better have a look at the travel issue within Government. Then they find all the other bottlenecks as to why you cannot export knowledge easily.

The constituents are saying if you export our knowledge we will not be competitive any more, particularly in the agricultural sector. So the officer of the chief scientist says let us look at how we can export it but still maintain the knowledge that is valuable and not lose that competitive edge.

In coming up with one initiative they find all the bottle necks that are stopping it. The contribution is mainly structural policy and bringing everyone together and getting them to work together.

Professor POLLOCK: I was down in Wagga looking at Wagga City Council and they have taken an interest in trying to offer support to Charles Sturt University. I think that is an excellent model but unfortunately it is too small and unless they partner with other people who have expertise, with the best will in the world they are never going to be successful because they do not have the internal properties to be able to do that.

CHAIR: In your submission you refer to the innovation council and an interest in taking a bigger role in policy formulation. I am interested in how you see the innovation council interacting should there be an Office of Chief Scientist, and what limitations you see on the innovation council as it currently operates.

Dr KUCHLER: I have not had any involvement with the innovation council but I have never seen any policy publications that come out of it, so I guess I am used to innovation councils that actually go away and work on policy recommendations for Government. They form a working group. They go away and come back with a paper which goes through to the Government saying we hereby recommend that you bring the policy which is to commercialise health IP, and here is the document. This is why you should be doing it. This is what we recommend. This is who else is doing it in the world. This is what we are losing out by not doing it.

I do not get the impression that the innovation council works like that. Usually the innovation councils that I have been on are producing around about 10 to 12 policy papers a year on issues that improve commercialisation of science.

In Queensland some of the innovation councils are run by the Office of the Chief Scientist and some are not. They have several innovation councils, so it would depend. They are going through a major structural change at the moment. The Department of Primary Industries has an Office of Chief Scientist that has been so successful that the Premier is now instituting a whole of state Office of the Chief Scientist, so one of the innovation councils runs out of the Office of Chief Scientist which is in the Department of Primary Industries and I suspect the new one they are setting up will run out of the new Office of the Chief Scientist.

Professor POLLOCK: One of the problems is that we have so many different groups in Government that do things that I do not think anybody is entirely sure what the difference is between the

BioFirst innovation councils as in when do you go to them versus when you go to Bio First strategy, what operates out of health versus what operates out of DSRD and what does the Premier's office do, what the interactions are, and when you say how would we look at the Office of the Chief Scientist and the innovation council, I would have thought that what the Chief Scientist would need to do when they started was to look at what opportunities there were for commercial activity in New South Wales and perhaps look at restructuring them.

I do not know that the innovation council as it currently stands would necessarily still be standing in the presence of a chief scientist. It may well be and that might form the Office of the Chief Scientist's council, but it may be that it would be an agglomeration of different people.

I have had a bit to do with the innovation council and it is very feel good and do good, but I do not think there are a lot of outputs that are referred to the Minister for consideration. They currently report to DSRD rather than to health and from our perspective that does not actually have a great deal of benefit to the health area, which is probably what we are more likely to be able to comment on.

Dr KUCHLER: In all fairness too, I do not think the structure is in place for them to be doing that kind of work in New South Wales, because what happens in the other States, the DSRD equivalent in those States have very large policy arms within them. Often a third of DSRD are policy development people and those people will bring their policy development problems to the innovation council and get the innovation council to work with them on writing up the paper, whereas I believe in New South Wales there are no policy people in DSRD, or very few.

Professor POLLOCK: Is that right? We have not been able find any.

The Hon. MELINDA PAVEY: I think you are about right.

Dr KUCHLER: So there is no-one driving the innovation council.

The Hon. MELINDA PAVEY: I think the people on the innovation council themselves, from evidence we have received, are not particularly happy with their role either, being ill-defined.

Professor POLLOCK: Somebody approached me about it. I asked them for the terms of reference and the terms of reference did not really seem to be current with what I was aware they were doing.

Dr KUCHLER: When Mr Beattie came up with Smart State they came to the innovation council and said: Okay, you tell us, innovation council, what is a Smart State. That was a 12 month job, to define what is a Smart State, and once the department got that document back from the innovation council, they then work on it, refining it and they keep working and bring it back to the innovation council in 12 months time and say: This is where we are at and say do you still think this is what a Smart State is.

They bring work in. The Premier wants a policy that will stimulate Smart State thinking in primary school children. Write a paper on how we are going to do that. The innovation council goes away and 18 months later comes back with a paper. There is a lot of community consultation done in that process. They will form a working group of six or seven people who will go and do community consultations. Services they work you very hard.

The Hon. MELINDA PAVEY: You were on the Queensland Innovation Council yourself?

Dr KUCHLER: Yes.

The Hon. MELINDA PAVEY: Which is why you had such good ideas in your submission about the science meet Parliament and the science awards. Do you want to elaborate on that?

Dr KUCHLER: With a Smart State, the concept of a Smart State is one that has to be sold through Parliament. You have a Premier who says my 50 year vision is to turn Queensland in a Smart State, give it another destination as opposed to sun and surf. In order to sell that through, he has to be able

to sell it through to his Ministers and the Ministers are worried about rates and garbage and all this and generally have no understanding of science and technology.

In order for him to sell that through the Parliament we have to educate the Ministers and there are several ways in which we are educating the Ministers. One of them is Science meets Parliament, so when Parliament is sitting you get all the Ministers together. When they have their breaks, scientists who have had asked to go to Parliament, and they are all vetted so just nobody goes, are taken into the break and three of them sit with each Minister and usually we try to get three scientists from the same electorate as the Minister, and the Minister puts questions up prior to the day and those are spoken about.

There has been a revolutionary process, so consequently it is easier for the Premier now to sell the Smart State through his Parliament.

CHAIR: And the attitude of scientists to Government?

Dr KUCHLER: Exactly. That is the other thing, scientists now understand the difficulties within which Minister must work, because they had no understanding of the ministerial process. It is a two way thing and there is a lot of bonding. Consequently some of the Ministers go to the international conferences and it is a nice feeling of bonding and some of the major submissions that are made to Canberra for funding, some of the Ministers will go down and be on the interview panel, so there is a lot of support there and a lot of understanding.

The Hon. MELINDA PAVEY: We have a long way to go in our State.

Dr KUCHLER: It does not happen over night. It is a long, slow process and there is a lot of things operating all at once, not just one. You have the innovation council, the science department, smart awards, export awards, and I think every day the Premier is somewhere in the media talking about science and technology, either on the radio or news or newspaper, somewhere at least once a day

Professor POLLOCK: It is difficult for the State Government because there have been a lot of federal initiatives that have relied on leveraging money additionally out of the state, so that has meant that individuals go and lobby and ask can you support our project that we put up and ask for 50 per cent of money. It puts Ministers and people in the various departments in a great deal of difficulty because why should they support this group over this group when it often depends on who is knocking on the door.

There is no process whereby these sorts of submissions can be coordinated so that there is bilateral benefit to science and to health. The current system just does not work and all it does is it means that Ministers get frustrated and people who miss out get frustrated but the odd one gets $12 million, but does not necessarily produce outcomes and it does not leverage external funding.

The Hon. MELINDA PAVEY: I think there has been some very valuable input from you today about how we could better use the funds and that will certainly get through.

Dr KUCHLER: BioFirst was a tremendous initiative in the sense it was the first step. You have to take your first step and improve and get better and better. It was a fantastic initiative. It was the first step. You can improve it and it will get a little bit better. You have to start somewhere. Anything is better than nothing.

(The witnesses withdrew)

ROWAN JOHN GILMORE, Chief Executive Officer, Australian Institute for Commercialisation (AIC), affirmed and examined (by teleconference):

CHAIR: If you should consider at any stage during your evidence that certain evidence or documents you may wish to present should be heard or seen in private by the Committee, the Committee will consider your request. However, the Committee or the Legislative Council itself may subsequently publish the evidence if they decide it is in the public interest to do so.

We have got quite a few questions I want to go through but did you want to make a quick opening statement or will we go straight to it?

Dr GILMORE: No, I am happy to go straight through it because I had the opportunity to make some statements when the Committee was in Brisbane.

CHAIR: Some of the questions that I will ask will go over the same ground so we can get them onto the formal record, if that's okay. First of all, could you explain to the Committee how the AIC operates and what is New South Wales' role in the AIC?

Dr GILMORE: The AIC was launched in May 2002. We are underwritten by the Queensland Government, who at present is its sole shareholder. We are a private company, national, not for profit organisation, limited by shares.

Part of the underwriting of the Queensland Government required us over a period of time to leverage their funding with that from other States and the Commonwealth. So as part of the arrangements to secure funding we have worked with all the States and the Northern Territory and some portion of our funding comes from those other States and the Northern Territory, although the bulk of it is from Queensland.

CHAIR: Dr Gilmore, at the moment are all the States still considered participating States?

Dr GILMORE: Yes, they are.

CHAIR: Could you directly explain what the AIC sees as the main barriers to commercialisation in public sector research?

Dr GILMORE: We see three systemic barriers to commercialisation. The first relates to the gap between industry and science, basically the lack of or the fragmentation of the commercialisation process which entails bringing research and business people together. The second barrier relates to the skill set of the people involved in commercialisation, in that there is a wide array of skills which are required, from management of intellectual property through to knowledge of distribution channels and sales, and the third barrier relates to the metrics and the measurements and analysis of the commercialisation process itself. We believe that the process is not well understood, but we firmly believe if you cannot measure the process, then you cannot manage it. So the three relate to the co-ordination of the process, the skills within the process and the analysis of the process.

CHAIR: And how does the establishment of the AIC address these barriers?

Dr GILMORE: Our strategy is at two levels. One is at a policy recommendation level, in that through our research and through working with the States we are in a position to understand and to see what works and what does not, and therefore to leverage on a national basis what individual States are doing, and therefore to make recommendations as to what we see in the way of Government policies that help commercialisation versus those that hinder it. At an operational level we have three key program themes and those program themes relate to addressing each of those barriers in turn that I discussed earlier.

CHAIR: If I can go on to commercialisation brokerage, if that is okay?

Dr GILMORE: Before we do, I wonder if I might just put our value proposition on the record because I think that is important to understand. The AIC we believe is the only national organisation that is able to look at each individual State's programs and share them in the national interest. So our value proposition is that being a national body we can take the individual efforts of States and leverage up best practice on a national basis, and so avoid re-inventing the wheel, as happens at a number of institutions, and even at the State level. We see ourselves as a catalyst that can address market failure, and by being involved and through our support of the States, we believe that we are in a position to help overcome some of those barriers that are there.

CHAIR: What international commercialisation brokerage models are there that would be applicable to Australia, or what models out there do you think are models which are best avoided?

Dr GILMORE: Just so we are clear, we are talking about the commercialisation brokerage that I discussed last time, is that correct?

CHAIR: That is right.

Dr GILMORE: Okay. I guess we are addressing, or we hope to address in the brokerage the provision of skills and services to smaller research institutions that do not have the capacity to do commercialisation effectively or efficiently themselves, and to work with industry to identify public IP that could help promote the growth of industry.

Now, there are a couple of examples from other countries. In the US there is a small business innovation research program and a small business technology transfer program. They are known as SBIR and SBTTR. The funding for those programs was US$1.3 billion last year. Those programs are really more than we are proposing in the brokerage, but they are similar to it in that they look at the ten public sector research agencies that participate in those programs.

In Canada there is a National Research Council - Industrial Research Assistance Program (NRC-IRAP), and its annual budget is $150 million Canadian with 100 partner organisations. That program has created 12,000 new jobs and $4.2 billion Canadian of sales in the past five years.

They are slightly different than the brokerage we are proposing. We believe that in Australia the larger institutions are quite competent at commercialisation, or some of the larger institutions are quite competent at commercialisation, but if you plot the research budget of Australia's institutions versus the number of institutions, you find that you have a very long tail. I think there are just over 90 public institutions whose annual budget is less than $20 million. So although there may be excellent science, the commercialisation of some of that science could be limited by access to skills, by budget and possibly by connectivity to industry or to certain industries that are best placed, best positioned to take that to market.

CHAIR: In your submission you referred to the lack of incentive to researchers to manage and commercialise the IP that they create. What sort of incentives do you believe would be appropriate?

Dr GILMORE: At a university it is particularly difficult. University professors in particular these days are measured on number of students on seats, because that is their main source of revenue. They are measured obviously by papers published. I do not believe patents obtained is necessarily a measure. I do not believe that the number of jobs they may have created through start-up companies is a measure. It is very difficult to get professors, for instance, interested in transferring their science into industry when they are measured on papers and students. Clearly the KPIs (Key Performance Indicators) that a person has motivates their work behavior.

At a Government level it is very difficult to reward a Government researcher with any sort of financial incentive based on his research, or the success of his research, for probity reasons. It is difficult to spend public money within Government on research and then to enable that person to profit or to be seen to profit from that.

CHAIR: If you do not do that, do not you encounter the problem that you are wanting someone to act in an entrepreneurial way without giving them any rewards that would flow to an entrepreneur?

Dr GILMORE: Exactly. Incentivisation is a critical issue. If you look at the US where entrepreneurial activity is far more common, it is far more commonplace to find research staff actively working in companies while they are professors at universities, simply because they can participate in the rewards.

CHAIR: How do you believe we ought to do that? You have identified some of the problems, but how do you believe we ought do it?

Dr GILMORE: I think a lot of it is at the policy level. For instance, universities are increasingly introducing policies for management of intellectual property. For instance the one third, one third, one third split between the school, the university, and the researcher is becoming increasingly common, but policies like that need to be fairly clearly set out so that there is an incentive for the researcher to own rights, to apportion, or own partial rights to the intellectual property that he creates as a result of his employment.

I think Government is much more problematic and my opinion is that it will entail a bit of a cultural change for people to see the benefits that commercialisation of Government intellectual property can bring before, I suppose, the general public is accustomed to seeing Government employees incentivised for successful commercialisation of their research.

CHAIR: Dr Gilmore we have just gone through some of those public research situations, but there is also the issue of commercialisation of work that goes on in CRCs and regional universities. What do you see as the current barriers to commercialisation for these organisations?

Dr GILMORE: CRCs will typically have a commercialisation director. That person, or team, maybe one or two people, may be very highly skilled but generally they will also be a contracts person and often they tend to be a commercial person rather than a commercialisation person, so a large chunk of their time will be spent signing contracts and arranging consulting and perhaps even business development.

On top of that, that person cannot possibly have all the skills necessary to commercialise, so if you look at the University of Queensland, for instance, Uniquest, which has about 50 staff, I believe, in their organisation, they specialise in terms of having the central skills that are needed in terms of finance and law and IP and so on, as well as having what they call business development managers, who are really "farmers", who are engaged with the faculty to identify IP.

In the smaller institutions it is very hard for a single person sitting in a commercialisation office number one to understand, or to see the intellectual property that exists within that organisation, and secondly, to have the linkages and all the skills they need to effectively negotiate deals for start-ups or for licensing.

In some sense the brokerage attempts to overcome that by sourcing those services from the successful commercialisation arms that already exist in the larger institutions.

CHAIR: Why does the brokerage program focus on early stage projects?

Dr GILMORE: We believe that is where there is a market failure. Typically the research in the very early stage will have both technical risk and commercial risk, and before a venture capitalist will venture in a project, he wants as much risk removed as possible.

If an early stage piece of research has no idea of market size or of customer requirements, then it is unlikely that the VC will invest. In fact a recent survey we did really confirmed that there is a funding gap, very low amounts of funding required to remove some of that commercial risk. It is very difficult to get any sort of funding.

For a venture capitalist, a typical "bite" size may be $1 million, certainly no less than $1 million,

whereas in the very early stage of research it might only be $50,000 or $100,000 necessary to do a market survey or to protect IP, really to take it to what a venture capitalist would call a investable deal.

We are looking at that very early stage where the pre-seed funds have not been able to get down to that lower level of investment to see an investible deal.

If I can give you an example, I was speaking to a pre-seed fund manager last week. They have looked at about 200 potential deals and they have invested, I think, in two and I think they have another two committed. I can get you the exact numbers. They expect to have invested in four or five deals by Christmas this year.

Of those deals they see, about 60 per cent of the pitches they hear are purely on the technology and so you can imagine that the number of pitches they hear that relate or that talk about the market potential in any sort of realistic way is very low, and the institutions who do commercialisation well understand that. They understand the need for elements of the business plan to be presented as part of a proposal, but a lot of CRCs and smaller institutions surprisingly do not. They do not have the commercial skills to remove that risk to produce an investable deal.

CHAIR: Within the brokerage program there is the proposal of the AIC to establish regional hubs of expertise and advice. Does the AIC have thoughts at this stage as to where those hubs would be located, whether they would be within exiting clusters, or whether you would be developing new precincts, and where would New South Wales fit into that?

Dr GILMORE: We are most advanced in discussions with Victoria, Queensland and Tasmania at this stage and each State wants to take a slightly different approach. In Victoria and Queensland, for instance, the approach is to identify a particular industry sector and then locate IP in the smaller institutions, to produce some demonstration projects that could complete the circle.

In South Australia the approach is to work with the three Adelaide universities and to pool resources and to set up a new entity.

New South Wales, we have sort of left until last, if I might say that. One is because we found it more difficult to gain traction in New South Wales, but clearly what the AIC can bring is national best practice. It can bring international linkages. It can bring relationships with VCs. It can bring bulk or discounted services and it can bring protocols and operating procedures, but then the operations would be through a regional hub that would be established in each State.

The proposal in New South Wales would be to establish a regional hub that would have an investment committee, that would be a local investment committee and have local operations. Whether that is Sydney or a region, I guess, is totally dependent on potential New South Wales participation.

CHAIR: My understanding of the funding of the brokerage program is it is over five years, $12 million from State Governments and $20 million from the Commonwealth. How much funding is New South Wales currently contributing? How much are the other States contributing? What contribution is the program actually seeking from New South Wales?

Dr GILMORE: The AIC itself is underwritten $10 million over five years by the Queensland Government and out of that $10 million allocation, year one about $500,000 would go into the brokerage. South Australia may be more and Victoria also would be more, but I must stress at this stage we have no commitments other than understandings that the program would proceed if we obtained Commonwealth funding.

At the moment we have a proposal in to the Commonwealth for $20 million over four years and we believe, in talking with the States, that there is a good case to make for matching State contributions.

In the case of New South Wales, of the $20 million I would expect probably if New South Wales were to match the Commonwealth provision, maybe $4 million over four years, in that order of magnitude.

CHAIR: In terms of clustering, what does the AIC see as the benefits of clustering and how can the New South Wales Government assist in the establishment of clusters and support in gaining critical mass.

Dr GILMORE: That is a really difficult question. Clusters depend on critical mass. They depend on demanding customers. They depend on good policy environment, and they depend on good infrastructure. That is really quoting from the work of Michael Porter, who has done the most work on clusters.

In a policy sense the coordination of local and State councils is important. The need to have a real existing strength, competitive strength, in a particular area is, I think, important and also the need to ensure that the cluster addresses a local market requirement.

(The witness withdrew)

(The Committee adjourned at 4.30 p.m.)