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JOINT COMMITTEE ON PUBLIC WORKS

**Reference: Replacement nuclear research reactor, Lucas Heights,
Sydney**

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SYDNEY

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JOINT COMMITTEE ON PUBLIC WORKS

Wednesday, 5 May 1999

Members: Ms Moylan (*Chair*), Mrs Crosio (*Vice-Chair*), Senators Calvert, Ferguson and Murphy and Mr Forrest, Mr Hollis, Mr Lindsay, and Mr Ripoll

Senators and members in attendance: (Senator Calvert, Mrs Crosio, Mr Forrest, Mr Hollis, Mr Lindsay, Ms Moylan and Mr Ripoll)

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Committee met at 1.58 p.m.

CHAIR—I declare open this public hearing into the proposed replacement research reactor, Lucas Heights, New South Wales. This project was referred to the Public Works Committee for consideration and report to parliament by the House of Representatives on 17 February 1999 at an estimated out-turn cost of \$286 million.

In accordance with subsection 17(3) of the Public Works Committee Act 1969:

- (3) In considering and reporting on a public work, the committee shall have regard to -
- (a) the stated purpose of the work and its suitability for that purpose;
 - (b) the necessity for, or the advisability of, carrying out the work;
 - (c) the most effective use that can be made, in the carrying out of the work, of the moneys to be expended on the work;
 - (d) where the work purports to be of a revenue producing character, the amount of revenue that it may reasonably be expected to produce; and
 - (e) the present and prospective public value of the work.

This morning the committee undertook an extensive inspection of the Australian Nuclear Science and Technology Organisation's facilities at Lucas Heights. The inspection included the HIFAR reactor and the site proposed for the replacement research reactor. Today the committee will hear evidence from the Australian Nuclear Science and Technology Organisation, the Australian Radiation Protection and Nuclear Safety Agency, the Sutherland Shire Council, the Liverpool City Council, the Sutherland Shire Environment Centre, Mr N.A. Parsons and the Australian Academy of Science. The committee does plan to adjourn at 6 p.m.

Tomorrow the committee will hear evidence from the Friends of the Earth Sydney, the Australian Conservation Foundation, Greenpeace, Ms Hazel Wilson, People Against the Nuclear Reactor, the Campaign for a Nuclear-free Future, Dr Jim Green, the Australian Nuclear Association and Mr Hans-Peter Schnellbogl. I now call representatives from the Australian Nuclear Science and Technology Organisation.

[2.01 p.m.]

CAMERON, Dr Ronald, Director, Safety Division, Australian Nuclear Science and Technology Organisation

GARNETT, Professor Helen, Chief Executive, Australian Nuclear Science and Technology Organisation

HORLOCK, Mr Ken, Director, Nuclear Technology, Australian Nuclear Science and Technology Organisation

ROLLAND, Mr John, Director, Government and Public Affairs Division, Australian Nuclear Science and Technology Organisation

SEABORNE, Mr Garry, Project Manager, Australian Nuclear Science and Technology Organisation

CHAIR—On behalf of the committee, may I take this opportunity to welcome you. The committee has received a submission from the Australian Nuclear Science and Technology Organisation dated February 1999 and a letter dated 28 April 1999 covering ANSTO's responses to submissions received by the committee. Do you wish to propose any amendment?

Prof. Garnett—No.

CHAIR—It is proposed that the submission and associated papers be received, taken as read and incorporated in the transcript of evidence. Do members have any objections? There being no objection, it is so ordered.

The documents read as follows—

CHAIR—Would a representative of the Australian Nuclear Science and Technology Organisation now read the summary statement to the committee, after which we will proceed to questions.

Prof. Garnett—This is the summary statement to the Parliamentary Standing Committee on Public Works on the proposed replacement of the nuclear research reactor at the Lucas Heights Science and Technology Centre. ANSTO proposes to construct and operate a pool type multipurpose nuclear research reactor at the Lucas Heights Science and Technology Centre to replace the technologically obsolete high flux Australian reactor, HIFAR, which will be permanently shut down around December 2005.

In September 1997 the Commonwealth government announced its decision to fund ANSTO to construct the replacement reactor at an estimated cost of \$286 million, noting that it would be subject to an environmental assessment process under the Environment Protection (Impact of Proposals) Act 1974. A draft environmental impact statement was prepared and released on 17 August 1998 for public review and comment. Extensive public consultation was carried out in association with the EIS process. Some 935 submissions were received during the 12-week public exhibition period. A supplement to the draft EIS was prepared and submitted to Environment Australia on 18 January 1999 in response to issues raised in submissions on the draft EIS.

On 30 March 1999 the Minister for the Environment and Heritage declared that there were no environmental reasons—including on safety, health, hazard or risk grounds—to preventing granting Commonwealth approval for a replacement nuclear research reactor at Lucas Heights. On 3 May the Minister for Industry, Science and Resources announced that he had accepted the recommendations made by the Minister for the Environment and Heritage and that he had written to the ANSTO board chairman asking that ANSTO implement appropriate plans to give effect to the recommendations.

The objective of the facility is to provide the Australian government and Australia's medical, industrial, scientific and engineering communities with access to a modern, multipurpose reactor with the performance and facilities to maintain and enhance Australia's nuclear science and technology capabilities—and the application thereof—across a range of defined national and sectoral interests and needs. These encompass nuclear medicine and health; the national interest, including international obligations and advice to government; scientific and industrial research; education and research training; environmental and industrial applications; and the diffusion of nuclear technology to the general scientific and business communities.

Of the range of potential technical and strategic alternatives assessed by the government and through the EIS process, a multipurpose research reactor is the only proven means to effectively fulfil all of the requirements. The replacement reactor is to be constructed on an existing site within the Lucas Heights science and technology centre on a turnkey basis by a research reactor vendor, with a requirement of high quality Australian industry involvement. The project includes all works necessary for provision of a functioning pool type research reactor and facility, including the buildings, the necessary plant and equipment and the provision of interfaces to integrate with the existing site infrastructure, which is to remain operational to enable effective use of the facilities.

A detailed project management strategy and structure, including a dedicated project manager, project team, senior management steering group and a government facilitation overview committee, has been put in place to ensure effective financial and technical controls of the work and overall probity of the acquisition process. Furthermore, probity audits will be carried out by the Australian Government Solicitor's office.

To bring the replacement reactor to full operation by 2005 imposes extremely tight time constraints on this turnkey project, requiring a call for tenders by no later than the end of July 1999, close of tenders in December 1999, award of the contract to a reactor vendor in June 2000 and site preparation works commencing in January 2001. This has necessitated integrated and parallel development processes addressing the environmental assessment, as announced by the Minister for Industry, Science and Resources on 3 May; safety and licensing, including application to ARPANSA for a facility licence; site authorisation for the replacement reactor, lodged on 13 April 1999; prequalification of reactor vendors, completed in December 1998; and the Public Works Committee assessment now in progress. As well, there is preparation of requests for tender documentation, which is in draft form.

The key objectives of the acquisition process are to proceed to contract based on the preferred tenderer's demonstrated ability to achieve optimised facility performance consistent with design provenness and compliance with national and international safety and construction standards; provide proven technical project management and project integration resources and capability, provide adequate financial capability and manage the project risk effectively; and to conduct a transparent, equitable and auditable tender selection process, making appropriate use of independent resources throughout.

The first stage of the process has involved prequalification in December 1998 of four reactor vendors following a detailed examination of the capabilities and experience of all prospective vendors registering interest. The subsequent stages involve the preparation and review of the request for tender, including provision of a draft for reviewing comment by tenderers; tender preparation, including a joint briefing to all tenderers after release of the request for tender; tender evaluation against defined technical and commercial criteria by the project manager and preparation of a tender evaluation report; preferred tender selection by the tender selection committee comprising ANSTO and independent membership, including representation from both the Department of Finance and Administration and the Department of Industry, Science and Resources; and recommendation of the preferred tenderer to the ANSTO CEO. Following acceptance by the ANSTO CEO, board and responsible minister, both the preferred tenderer and unsuccessful tenderers would be notified and offered a debrief. Pre-contract negotiations involving ANSTO and preferred tenderer negotiating teams then finalise contract documentation and any outstanding commercial issues, and approval and award of the contract follows.

The out-turn cost of works is estimated in January 1997 dollars at \$286.4 million, including construction and project delivery costs and a contingency provision. The costing methodology was independently verified and cost estimates were endorsed by the Department of Finance and Administration. The \$286.4 million figure is subject to adjustment in accordance with the Department of Finance and Administration's inflation parameters applicable in the year of cash draw-down. This estimated cost is completely compatible with the cost of construction of recent research reactors, for example in Egypt,

and with published information from vendors, for example in Canada, and was confirmed as appropriate in discussions with potential vendors during 1998. This cost estimate is therefore believed to be the most realistic estimate obtainable prior to issue of a request for tender.

I would like to take the opportunity of adding to the above comments, which I believe have been previously distributed to you. The issue of the capital cost of the replacement reactor is clearly of interest to the committee. To prepare the estimate, ANSTO approached a number of reactor vendors, initially in 1992, seeking indicative budget costs for a replacement research reactor based on a performance specification. A base figure was then determined from this study, which involved independent consultants, as providing an appropriate cost estimate for the provision of a reactor compliant with ANSTO's requirements. This base figure has been tested subsequently over the years through discussion with a number of international experts and has been updated to meet the specific requirements of the project and to accord with the Department of Finance and Administration criteria. The costing methodology has been independently verified by Sinclair Knight Mertz, consultants for ANSTO, who also analysed the impact of inflation and exchange rate variants. The cost estimates and process were endorsed by the Department of Finance and Administration following their own independent review.

The \$286.4 million figure is subject to adjustment, as I have said, in accordance with Department of Finance and Administration inflation parameters applicable in the year of draw-down. The capital cost of \$286.4 million in 1997 dollars is based on the replacement reactor being located at the existing Lucas Heights site with maximum utilisation of existing infrastructure. This cost estimate includes the cost of the reactor facility, some new neutron scattering instruments, interfacing with existing site services, project management and approval processes, transition costs and an allowance for contingencies. This cost is consistent with those not only of recently completed reactors of similar capability and others under construction but also those in final detailed design elsewhere. The cost estimate is therefore believed to be the most realistic preceding the request for tender. The total value of domestic content is estimated to be approximately 50 per cent.

Annual operating and maintenance cost will be covered from ANSTO's budget for the replacement reactor and will be approximately \$12 million per year in 1997 dollars, which includes the costs associated with environmental management such as spent fuel management, waste management, safety and environmental monitoring.

As I have indicated earlier, the project has an extremely tight time scale to allow for the replacement reactor to commence operation in 2005. I have mentioned that there have been a number of parallel activities encompassing the preparation of documentation associated with the acquisition process, including the prequalification. I will ask Mr Gary Seaborne, the project manager, to brief you on this process. The second parallel process has been the environmental assessment process, which has now been completed and finalised with the announcement by the Minister for Industry, Science and Resources earlier this week. The third is the application to ARPANSA for the facility licence, which has been lodged. The fourth parallel activity has been the submission and process associating with the parliamentary Public Works Committee.

This concludes my initial comments, but I would like to ask Mr Gary Seaborne, who has been recruited from the private sector and has been involved in project of the public-private sector interface, to make a few brief comments, utilising some overheads, in relation to the acquisition process and the planned project schedule.

Overhead transparencies were then shown—

Mr Seaborne—By way of introduction, I have been involved for 30 years in private industry. The most recent major project that I was involved in as bid manager and as the engineering and project manager for the first three years was the Anzac ships project, of which you would be aware. I am an invited fellow to the Institution of Engineers Australia.

The acquisition process description, which I want to run through very briefly with you, is a process where the vendors are pre-qualified. The request for tender is then developed and issued for the response by tenderers. There is an intermediate step in there, that is, we are working in a very close relationship with the four reactor vendors by issuing draft documentation and ensuring that we have their comments back for consideration before we issue the final requests for tender. We will also undertake a formal red team review of all of the request for tender documentation within ANSTO and that will be independently led prior to the issue of the RFT.

Tenders will then be evaluated for compliance and we will do that in what we are calling a two-envelope system. Effectively, the offers will come in in two parts on the one day. The first part will be the technical and commercial offers, the second part will be the financial offers. Both envelopes will come in on the one day. The financial offers will go unopened into safe keeping. They will not be opened or seen by anybody. We will undertake a rigorous evaluation, initially using our own resources by ourselves for a period of up to three weeks. Then we will have a period of up to 56 days where we will have intense clarifying sessions with each of the reactor vendors until we reach a point at the end of February where we have agreement with each of the reactor vendors that we have an agreed position in terms of the technical and performance attributes of their specification and of the commercial conditions.

Only at that point will we then ask them to go away and to submit any repricing that they feel is necessary as a result of that interchange between ourselves and them. When the repriced schedules come in—and the repriced schedules will be in exactly the same form as the original schedules submitted on 6 December—we will then undertake the financial analysis and complete the risk evaluation.

This is a very good process for ANSTO and for the Commonwealth in that we can compete the four reactor vendors extremely intensely against each other without having to worry about issues of money at that stage. What we are really driving at in this whole process is to get the best technical offer with commercial compliance at that point and have that locked in so that there is very little movement for growth in the period leading up to selection of the preferred tenderer and negotiating through the contract. So we will not finish that process of evaluation commercially and technically until we are satisfied we have reached that point, that we have a clear understanding that we have four performance

specifications which will meet our contract performance acceptance criteria to which they will be contracted.

I will run the tender evaluation process, but we will have a clear split between the tender evaluation process and the tender selection process. As you will see in a moment, I will not be a member of the tender selection committee. I will report to the tender selection committee, provide iterative evaluation reports and the final report. It will be up to the tender selection committee to make a decision based on what I am recommending, but they are within their rights to ask for that to be changed or for it to be accepted in whatever form.

We then go into a period of contract negotiations and then contract award. That separation of powers between that of the project manager and that of the tender selection committee is very important to understand. From a probity point of view, I think it is important as well.

Contract documentation is important to understand. We are going through the tender process at the moment. There are the normal pro forma documents, the invitation to tender and the tender form. There will be the conditions of tender and evaluation material that we require to use with the tender which, after we have been through the tender evaluation process, goes away—it has no further use—the conditions of contract and the principles project requirements which has four sections. The first section of that is the statement of work which becomes the contract statement of work. The other sections, sections 2, 3 and 4, particularly sections 2 and 3, detail ANSTO's technical and performance requirements.

I can characterise the process that we are going through at the moment as we are identifying our technical and performance requirements, we are indicating the standards, the codes, the practices that we require each one of the reactor vendors, the tenderers to work to. But then it is for the reactor vendors to come back with an offer which includes a performance specification. That performance specification is then negotiated. Where we believe that needs to be changed in this interactive process, we get to the point where we have four specifications which meet our requirements and until we get to that point we keep negotiating.

We then move into the contract documentation and there will be a formal instrument of agreement, the conditions of contract and the statement of work, which will have two appendices. The first one will be the contract specification and the second will be the contract deliverables. That will be a number of plans: a risk management plan, a project management plan, a design plan, et cetera.

CHAIR—Mr Seaborne, we do have some time constraints. While it is clearly important that the committee understand this process, we have a number of people to hear. So we will have to ask you to determine how you use this time.

Mr Seaborne—Okay. It is basically a tender selection process which runs through the total process but importantly points to the fact that the Australian Government Solicitor will undertake audits of both the process and of the adherence to the process. We will also use the Australian National Audit Office to undertake performance audits through the whole process of getting to contract.

The tender selection committee will comprise representatives from ANSTO, from the Department of Finance and Administration and from the Department of Industry, Science and Resources, noting that we have already had that representation from one of those departments in the pre-qualification process.

In summary, the process that we are using is thorough and rigorous. It has been planned in detail, is subject to external audit through all of the phases, that is, through the formal phase of the pre-qualification of the reactor vendors, the request for tender development, the tender evaluation and the pre-contract negotiations leading up to contract award.

The external audit processes include our own internal risk assessment which is being done externally—we are having somebody come in to externally audit our own operations. As I said, the Australian Government Solicitor will audit the process and the implementation of that process and the Australian National Audit Office will undertake a performance audit through the whole process.

In terms of costs of the work we are doing at the moment, we have developed a budget. We monitor those costs monthly. We are running under budget. We analyse variance on a monthly basis. We have a schedule at the master level and at detailed levels which have been integrated and which are being closely managed.

When we get into contract, the contract payments will be based on measurable contract events and milestones. It will be based on an agreement at contract award—not after contract award but at contract award—of an integrated work breakdown structure, the master schedule and the network, the contract design plan and the contract payments plan. They will be agreed when we go to contract.

The benefits of this approach are that it will be a high quality and comprehensive Australian industry program. We will use the services of the national network of the Industrial Supplies Office to achieve that. We will have contracted access to intellectual property and source code and software design data. We are requesting that the source code be in escrow in Australia. We will have a detailed technology transfer program which will get across all issues of design, construction, operation, maintenance and training. That will be a program which will be undertaken both in Australia and overseas.

Mr FORREST—What point have you reached in regard to that process which you have just described to us? Are you about to invite bidders?

Mr Seaborne—No. The point we have reached at the moment is that we have four pre-qualified reactor vendors. We intend to issue the request for tender on 22 July. We are in the process of preparing the RFT documentation. We have issued draft RFT documentation for review and comment by the reactor vendors, seeking their views, which we have undertaken to review but not to incorporate to any extent if we do not feel that anything they have come back with should be incorporated.

We received the comments on—

Mr FORREST—Three of those are going to lose, and they are prepared to put in all of that time and effort for no return; is that right?

Prof. Garnett—Yes.

Mr Seaborne—That is not unusual in the industry.

CHAIR—That question came from the Sutherland Shire as well—whether there would be any remuneration for the lengthy period.

Mrs CROSIO—Mr Seaborne, you have talked to us about what the contract and preparations are about. You did not mention any variations. I know that it will be very difficult until you receive the tender, but what happens to the clause of the contract with regard to variations? This is where the taxpayers' dollar goes out the door: you get cost escalation with variations. How will that be contained within the actual contract?

Mr Seaborne—The contract will be lump sum, but it is envisaged at this stage that there will be provision for rise and fall. The rise and fall provisions will be negotiated. We are aware of the fact that the funding is provided by the government and that that funding is varied in accordance with an inflation procedure within the government. We are mindful of that. We will be extremely careful and cautious to ensure that the price variation formula that we adopt is appropriate. The other approach on a contract that runs for five or six years, to not have that, is a cost of money issue.

Mrs CROSIO—You cannot convince me—I do not know about the other committee members—that someone is going to provide a lump sum contract that will run over five years.

Prof. Garnett—The history in this business is that people do contract for projects. In fact, with regard to some of the reactors that I have just mentioned, people have contracted to provide a particular facility at a particular cost. The Egyptian facility was contracted on that basis. The facility that is currently being built in Thailand has been contracted on exactly that basis.

This is why Garry spoke about the documentation for the process, whereby the documentation moves across; there is agreement as to what is to be delivered in the contract; and it is a fixed price. The issue of rise and fall and whether that is accepted is something that we are discussing with the Department of Finance and Administration and the National Audit Office. They have indicated that it would be appropriate for limited rise and fall provisions.

Mrs CROSIO—What about design variation?

Prof. Garnett—No. It is a cost contract at that price.

Mrs CROSIO—Who is preparing the specifications?

Prof. Garnett—The specifications for the facility have been developed after consultation with the Australian community. From the point of view of the reactor specifications, they are quite clearly known; they are available in public documentation. The detailed specifications with regard to code, et cetera, which is the sort of thing which is being refined now as to exactly which code is required, is being done by people within ANSTO and with the use of external consultants from the UK and Sinclair Knight Mertz. So we have a team of people, including our own people, external overseas consultants and civil engineering groups in Australia who are developing those specifications.

As Mr Seaborne mentioned, there will also be what he called a red team review, which means that before the documentation would go out it would be effectively reviewed by an independent person who will be brought in from outside, the idea being to make sure that you cannot read apples for oranges, et cetera, so that it is absolutely clear.

Mrs CROSIO—So everyone knows the costing at this stage; everyone is aware of the specifications. Examples have been given of what is occurring in Egypt and Thailand. How do we prevent in this country collusive tendering?

Mr Seaborne—There is intense competition. We have recently been in contact with each one of these reactor vendors. There is intense competition between the four reactor vendors. One of the real advantages of the two-envelope system—

Mrs CROSIO—Are you telling me that because of the intense competition they will not speak to one another?

Mr Seaborne—I do not know. I cannot say whether they will or will not. I am saying that it is our view, and it is my personal view, having been through a number of large projects, that they are all working extremely hard to win, individually, this project. This is a prestige project for them. With the process that we are going through, using the two-envelope system, we are not considering price; we are leaving price aside and simply driving until we get to the point where we have four reactor vendors, four tenderers, who have offers that we consider—initially by our own evaluation and then in clarification with them—meet our requirements in terms of the technical and the performance criteria. We will be contracting these companies. They will be contracted to specific, identified contract performance acceptance criteria. They are known, and they are very clear to these reactor vendor tenderers at the time they go to tender.

Prof. Garnett—With regard to the issue of the teams, one of the aims of this project always has been to maximise the Australian content. To this end, last year we ran seminars for local industry. The idea of the pre-qualification process—as well as the fact that it got down to the list of those who really did appear to have the capability to deliver on this, so that others were not spending an awful lot of time and money—was to allow Australian industry to talk to prospective vendors and to form their teams and partnerships. That, of course, has been happening. There has been quite a lot of competition out there amongst themselves. While at this stage it is knowledge to us rather than an absolute fact, because it has not been written, it is very clear that different civil engineering companies, for instance, are teaming with different vendors prospectively so that they will be in a position to prepare bids. Again, there is competition between them.

Mrs CROSIO—What experience has Sinclair Knight Mertz had to enable them to review the costing? What experience have they had in this field to come out as an independent reviewer of costing to provide this \$286 million?

Prof. Garnett—Sinclair Knight Mertz, as I mentioned to you, are working together with AEA Technologies in the UK. They are working as a team. AEA Technologies in the UK have built reactors in the past and they operate extensively in the nuclear arena. So Sinclair Knight Mertz have subcontracted AEA Technologies onto their team.

Mrs CROSIO—I would like to come back to your report as well, but there are some other questions I want to have clear in my mind. How does ANSTO come up with a costing when you have not got a design? I have to have that answer for the record.

Prof. Garnett—I understand that. I think it is not really the case that we do not have a design. We do have a design. We have a reactor with a particular neutron flux that we require. It is a pool type reactor with certain beams and irradiation rigs, et cetera that go in it. All of that is a similar cost, regardless of which model you might end up with. I do not mean to be simplistic, but I liken it a little bit to deciding what to buy in a six-cylinder utility—a motor car. We want certain performance and safety specifications. We want it to be able to pull a trailer, to go at a certain speed. All of that has been defined. The issue of the design differences is really about the shape and whether the cruise controls are on the steering wheel or somewhere else. In reactor terms—and you visited ANSTO this morning—the real issue is in that core that you saw in the model. The different reactor vendors might well come with slightly different designs and arrangements of the fuel type. That can impact on where the neutrons come out and the maximum number of neutrons you can pull off. But all the rest of the infrastructure—the pool, the pipes, the ventilation, the guides, the beams—is common, regardless of which model you choose.

Mrs CROSIO—When was the Egyptian reactor actually built—the model for these costings?

Mr Horlock—It was completed 12 months ago. It first went critical just over 12 months ago.

Mrs CROSIO—And did that come within the budget?

Mr Horlock—It did, and it came on time.

Prof. Garnett—And there are two reactors being built in Canada at the moment which are on time and on budget.

Mr FORREST—What size was the Egyptian one?

Mr Horlock—It is very similar to the one we wish to have, but these reactors vary in detail, depending on what you want to use them for. In that regard, they are individual.

CHAIR—Following on from Mrs Crosio's questions, you said that you still have to determine a formula for rise and fall clauses within the contract. If we have a model—such

as the Egyptian model on which you have based your main costings—why could you not have used that information to also determine your rise and fall formula? Why has that not been done at this point?

Prof. Garnett—Because we have to abide by the Department of Finance and Administration's guidelines. There are two or three different ways that it can be done. The government facilitation group that I mentioned in my opening statement includes departments such as Finance, the Australian Government Solicitor, the National Audit Office, Health and Environment, et cetera. In their most recent meeting, they agreed that it would depend on the economic forecasts they used at the time of going to tender as to which of those different methods they would prefer. It depends on the likely economic circumstances in Australia; so it is not our decision really.

CHAIR—Has there been any modelling done on the different ways that you might calculate that? Clearly, this has been an issue not only for members of this committee but also for members of the public. I know these were some of the questions that the Sutherland Shire were asking as well.

Prof. Garnett—When we talk about rise and fall, it is not meant to be open-ended. It will be very prescriptive, in essence—

CHAIR—But there has been nothing in the documentation to really indicate—

Prof. Garnett—The issue of whether we would even allow rise and fall has been under discussion. Within ANSTO and my board, we felt that we should not even allow that. The department of finance has advised us that they believe it is probably going to be preferable to do it, because if you do not allow for it—as Mr Seaborne has said—reactor vendors will build that into the up-front cost. Their view is that, given the economic circumstances and predicted economic circumstances, it will probably be better for us to build it in. But we still have the option of not doing it and going on an absolutely fixed price contract with no rise and fall.

CHAIR—When that is still open-ended, it gives rise to a number of questions and some uncertainty in the minds of the public.

Prof. Garnett—All I can answer is that the advice we have had from Finance is that that should be determined at the time. In fact, it could even be negotiated up until contract. The possibility is still there for an absolutely fixed price. In out-turn dollars the \$286 million, as I think you probably realise with the department of finance parameters, comes out at about \$309 million. The department of finance have to advise us as to whether we should go for absolutely fixed or whether their belief is that the rise and fall changes over the period of time are such that it will remain constrained within that envelope. But we have no intention of going outside that envelope. And it will be that advice from Finance which guides us. It will either be fixed price or, on their modelling and advice, it will rise and fall. But it will not be on our modelling and advice.

CHAIR—The critical issue for this committee is the extent of that envelope. We need to know that and the public needs to know that.

Prof. Garnett—All I can tell you is that we do not intend to go beyond the \$286 million in 1997 which is \$309 million in the estimated draw-downs over 2005. We have no intention of going beyond that envelope.

Mr FORREST—To ask the question a different way, seeking a nice simple answer: will you guarantee, under oath in the evidence on record today, that the final cost of this project—in Australian dollars—is not going to be more than whatever the figure is? It is obviously not \$286.4 million because that was in 1997. There is an estimate of inflation since then. Will you give a guaranteed figure that it will be no more than a certain figure? That will shut everybody up about the fact that this is a funny cost estimate.

Prof. Garnett—As we have said in our statement, the exact costs will come in when we go to tender. We are bound by the processes in that we have this committee now before we are in fact allowed to go to tender. But in all of the estimates that have been done, there is a Canadian facility and two Canadian reactors currently being built, there is a third Canadian facility which is in detailed design and their cost estimates accord exactly with the sorts of cost estimates that we have put on the table.

CHAIR—But this is the point. Is there not some precedent set here about rise and fall clauses for the cost of construction?

Prof. Garnett—No. Because the rise and fall depends on the economic circumstances at the time.

CHAIR—I understand that, but there would be formulas that are used. We are talking now about a formula being applied, and there would be formulas used in other reactors. Although we might not be able to totally determine the additional cost, we should be able to say, ‘This is the formula that has been applied to other reactors that have been built in recent times.’

Prof. Garnett—Correct. And we have said to you that they have come in within budget. But we are tied by the department of finance’s criteria. So it does make it very difficult for us. As we have said, we have got a couple of options. One is to have an absolute fixed price. The other is to discuss rise and fall dependent on the department of finance’s predictors. But the fact is that we know there is a fixed bucket of money and this facility has to be built within that. In fact, the discussions that have been held with the four prospective vendors indicate that they believe that this is a feasible project within that bucket of money.

Mr FORREST—We are already in an awkward position. A referral was made to our committee for a project to the value of \$286.4 million. Already you are talking more than that.

Prof. Garnett—That was 1997 dollars. With all due respect, it is the department of finance’s figures and the way they operate. In fact, when it was initially approved, it was \$286 million in 1997 dollars which means that the length of the project in the forward estimates the figure is within Finance’s automatic parameters, recognising that there has been virtually no inflation. It is normal practice. Again, I refer you to the fact that inflation has been minimal. It is a very small change. The department of finance’s current figures are for

a very small change. It is important that over 50 per cent of the content of this is Australian content. It is bound by the conditions in our own country.

Mr HOLLIS—\$23 million on a project worth \$286 million is hardly a small increase. If the government is talking about inflation as being down to less than two per cent, that even exceeds the government's inflation figures.

Prof. Garnett—Those figures are not mine; they are the figures of the Department of Finance and Administration. That is what the department of finance has in its documentation.

Mr RIPOLL—Have we got a comparative charter to compare costs between, say, the dollar per power output unit of our reactor to ones overseas, the ones you have just mentioned?

Prof. Garnett—It is extremely difficult to do that because, as we have said, what you have is a facility but it depends on what you are doing with it. A multipurpose reactor is designed for Australia. In Canada they are building three reactors to do the same things. We cannot afford three reactors. So we are heading towards one multipurpose reactor. It depends on all the things you put in it and all the things you pull off it.

Mr RIPOLL—Have we got a comparison of a similar project? Then you would have some idea of this project's value compared to another similar project.

Prof. Garnett—The Egyptian facility, without its irradiation rigs and without its beam facilities and without all of the goodies, was \$US100-odd million. We know what the cost differential is for all of the rigs and the beams and everything else that goes in. The Canadian neutron source, which is under detailed design, has about \$90 million for what they call CANDU equipment in it. The estimate for that facility is \$398 million and that facility has \$98 million of special infrastructure that is associated for them to be able to test their CANDU reactors. Those two comparisons show you that the costings really are in line with international comparisons.

Mrs CROSIO—I take you back to your report to the Public Works Committee. I will come back to why I am asking these questions later. On page 18, you state:

... ANSTO held Open Days in May 1998 for industry, academia and the general public ...

Could you inform the committee how many actually turned up to that?

Prof. Garnett—Four thousand.

Mrs CROSIO—What was the general reaction?

Prof. Garnett—Very positive. This year we took a stand at the Royal Easter Show in Sydney and we had an enormous amount of feedback. The work was done by our staff and we actually won third prize in the commercial exhibit section at the show.

Mrs CROSIO—On page 19 in the second paragraph, you state:

A series of workshops was intended to review the results of the first three months of consultation. Due to a lack of interest from state and local government stakeholders and the community the workshops turned into a forum for informal discussions . . .

What happened between May 1998 when you had 4,000 come to an open day and the workshops? Were they not advertised or didn't the message get out or were people just not invited? What happened there?

Prof. Garnett—Those workshops were extensively advertised. I think there is a difference between the public coming to see what is done in the broad sense, go through the facilities and talk to the scientists—and many of those people have done that on successive open days—and actually coming to detailed workshops which were specifically on the consultation process. Clearly there were not that many people who felt that they wanted to come along and jump up and down. There was an extensive communication process during the preparation of the EIS.

CHAIR—Mr Forrest felt that we should complete the line of questioning on the costings, if you would not mind.

Mr FORREST—I am not sure whether Professor Garnett wanted to finish her presentation. We actually interrupted.

Prof. Garnett—No, we had finished.

Mr FORREST—The issue of cost is one that is a major source of submission from other people. One assertion in evidence was \$600 million and that ANSTO has not got a clue what it is doing here. We need to lock it right in and have some sort of assurance of your confidence about the figure. What do you say to someone who has some scientific background that this is going to be a project nowhere near \$600 million? How can you be so confident?

Prof. Garnett—Because, as I have just said to you, facilities have come on-line in Egypt in the last year. There is a reactor under construction in Thailand. There are two under construction in Canada and a third in final design. We know what those costs are. Some of those costings have been provided to us. We can, I think with reasonable confidence, say that for that kind of money we are talking about we will get the sort of facility with the sort of delivery that we expect. People talk about \$600 million. They do not always understand. There is a facility being built in Germany at the moment where someone might say that the cost is about \$500 million or \$600 million, but that facility is building an awful lot of the infrastructure that already exists at the Lucas Heights site. They are not just building a reactor; they are building a hospital for patient care so they can do nuclear medicine things on site, et cetera. That is all included in those cost estimates. We do have a very good idea of what current facilities that have either been built or are under design and construction have been costed for.

CHAIR—Professor Garnett, MHB Technical Associates, consultants for Sutherland Shire Council, in May 1993 on page 5 of their report said:

When the U.S. nuclear industry used very generalised estimates for its initial cost estimates for commercial reactors, the cost values quickly escalated following the signing of the contract, and continued to escalate as the plants were further defined and as the designs were completed in more detail.

They noted:

This seems to be a very parallel situation to the ANSTO estimates which are based on very little hard design information.

Prof. Garnett—That is a 1993 report. If they looked at the design information that was available, they would not say that it was not at all a proven design. We are going for a proven design, and we are going for a design that we do know how to cost.

CHAIR—So ANSTO has moved on from the 1993 position and you now have a much more detailed design?

Prof. Garnett—We would have contested some of those statements in 1993. I think the designs are there, and they are proven designs and that is what we are going for. That is why we can talk the way we are about the sort of facility we expect to be delivered and the likely cost of that facility.

Mr FORREST—A small reactor like this with what you want to do with it—it has to do so many things—is unique. This is the Australian way—we want it to do all things. I liked your example of the Holden ute. I would be interested to know whether we are getting a BMW or whether it is just an old Aussie ute.

Prof. Garnett—We are not getting a Rolls Royce. What we are getting is, in Australian terms, a very good, serviceable, six-cylinder Ford or Holden—a car that will last, a car that is designed and is flexible. During the visit this morning people saw rigs that were in and out of the reactor. ANSTO has built almost all the infrastructure that is going in and out of our existing reactor. We have done it ourselves. We know what the cost of that is. We are building rigs today for silicon irradiation. We built the last new machine. From first-hand principles we know what those costs are as well.

Mrs CROSIO—Your costing is for the building of the new reactor. Has any costing been done for the decommissioning of the existing one?

Prof. Garnett—Estimates of costing were done for decommissioning some time ago and these were based on a number of scenarios. The scenario that is preferred is one where when the reactor is turned off the fuel and heavy water are removed and then the facility is allowed to sit, under what we would call a care and maintenance regime, for 30 years. This is because in the existing facility that you went through this morning there is heavy water which flows around, there are lots of pipes, there are lots of metallic structures inside that get irradiated and it is appropriate for it to sit for about 30 years for that radiation to decay so that the decommissioning can be done with remote control, et cetera. Under that scenario, the net present value of the likely cost is extremely low.

Mrs CROSIO—When you say ‘sit’, does that mean just put a padlock on it and let it stay there for 30 years and no-one goes inside it? Is that what you mean by ‘sit’?

Prof. Garnett—In essence.

Dr Cameron—Except it is a care and maintenance regime, which means that people will regularly inspect and monitor the process going on to confirm that everything is appropriate during that period. The fuel will have been removed completely and the heavy water from the tank will have been removed completely. So we will be left with just the components and structures, and maintenance and monitoring processes will be put in place to make sure that that is maintained in that state.

Mrs CROSIO—Given the period of time since the commissioning in late 1958 or whenever it was, has any provision been made in your current budget to now meet those costs or is this going to be all from government costs? ANSTO is government and the government is the taxpayer, so will it be a budget submission saying we need X number of dollars to start decommissioning that existing facility?

Prof. Garnett—The strategy for the existing facility since its initial operation has not been to provide for decommissioning and, as we have said, at the moment—again, from talking with the department of finance and other people in Canberra—given that it is a 30-year time out, the net present value of that is extremely low.

Mrs CROSIO—Could you put a guesstimate to it?

Prof. Garnett—If it had been sitting for 30 years and we were going to do the decommissioning tomorrow—

Mrs CROSIO—No, I would like to be more current; I would like it to be within the next 10 years. If this were to go through, you have a commissioned plant, you have one that is now going to be decommissioned—\$309 million has gone out—and the very next year, in the budget year, there is going to be a wish list coming in from ANSTO for X number of dollars to start decommissioning a plant. Will we talk about \$50 million, \$80 million or \$100 million? What are we talking about?

Prof. Garnett—It will not be in that time. It will only happen in 2035. The money does not need to be expended until then. Security and those sorts of issues are covered by our existing security people, et cetera. There is no additional expenditure that will be sought from government until about 2035.

Mrs CROSIO—Also for that same period of time—and you mentioned the fact of what has to happen to the heavy water and the fuel—again we have gone from 1958 to 1999 and we will probably go to 50 years if you are going to get a new reactor coming on board. What has happened over the previous 50 years to the disposal of waste?

Prof. Garnett—I think you are fully aware that some of the spent fuel that has arisen from HIFAR has been shipped overseas. There were shipments in the sixties. After that it was government policy to stop shipments, and the shipments were stopped by government policy. The desire to ship has again become the current way of handling things and we have negotiated contracts with the US and France. A shipment has already gone to the US and shipments of the US origin material will go between now and about 2007 to the US and it

will be handled in that way. The rest of the material will be shipped to France and reprocessed.

Mrs CROSIO—There has been much talk about a contract that was supposed to have been signed by the minister on 26 January. I think ANSTO said yes, it had been signed either before that or after that. Has that contract been absolutely signed and is it feasible or possible for us to see a copy of it?

Prof. Garnett—I do not think it was 26 January. It is a contract between ANSTO and COGEMA. As a customer-client relationship, it is a commercial-in-confidence contract and unfortunately we are not at liberty to provide that contract, and the minister has said that in the Senate as well.

Mrs CROSIO—Could you also inform this committee exactly how much waste ANSTO would have stored?

Prof. Garnett—I am sorry to ask this: are you referring to the spent fuel? We do not call that waste. The spent fuel rods will go overseas and approximately six cubic metres of long-lived, intermediate level waste will come back as a result of that reprocessing. That will go to the designated national storage facility. It will not come back to Lucas Heights.

Mrs CROSIO—Can I use the spent rods as an example, and excuse my ignorance on this: you told me that up until 2007 the US will take them; after that or even prior to that the US is saying only that it is going to take what has originated in the US.

Prof. Garnett—No, the US has a special program on and it will take back US origin material up to 2007.

Mrs CROSIO—Then it will finish with that?

Prof. Garnett—The US would not take material from us because the rest of our material is not US origin material.

Mrs CROSIO—So how much is the rest of the material?

CHAIR—I am sorry, but we are going to have to move on. We have other questions as well to take. Can we finish on that?

Prof. Garnett—All the rest of the material goes to France and will be reprocessed, and that will be what comes back as the six cubic metres.

Mrs CROSIO—So we have no way of estimating how much the rest of the material is?

Prof. Garnett—Yes, we do. We have said we have 1,300 rods. We know exactly how many rods we produce per annum; we have exactly the number. We produce about 38 per year and so we know exactly the number. We know what we have, they are under safeguards, we know what we will produce and they are all covered by the contracts.

Mrs CROSIO—Will the new nuclear reactor coming on generate any extra rods?

Prof. Garnett—The replacement reactor will be fuelled by low enriched uranium, so the fuel type will be different. The number of fuel rods will vary—and this is where the variation does come in—with how exactly they make that bit in the middle work. That is the major difference in the different models. The number of rods will vary, but we do not expect that to be significantly different from the current generation of about 38 to 40 per annum. The plan is for those rods to be sent overseas and processed. The contract with COGEMA allows for handling the spent fuel arising from the replacement reactor.

Mr HOLLIS—Was any consideration given to any site other than Lucas Heights for a replacement reactor?

Prof. Garnett—Yes. Cabinet considered the issues and our submissions—which were put through the Department of Industry, Science and Resources and were in fact DISR submissions—did in fact consider other sites. In our EIS statement we gave the issues of the requirements for a site. We have also previously stated to a Senate committee that appropriate locations for a reactor per se could be found adjacent to some of the other Australian capital cities. But the issue, when you take a desirable site together with the issue of maximum utilisation of existing infrastructure, was brought back to Lucas Heights because, as I think you are aware, there is a very considerable investment in infrastructure on that site and much of that infrastructure would need to be duplicated for efficient use.

As for the costing of an alternative site, the minimum was twice, and depending on the site it went up. This was using parameters that exist within the building industry in Australia for civil works, which the Department of Defence uses. Depending on where they were to locate the facility, the variance was at least twice and up to three times the cost of the two hundred and eighty-six.

Mr HOLLIS—So you are saying we would be looking at—

Prof. Garnett—Six hundred million to nine hundred million was the range.

Mr HOLLIS—I do not want to rehash what has gone on before about costing, but I must say this is the first time in my experience that we have ever used buildings in, say, Egypt and other parts of the world as a comparison to justify costs in Australia. If we were doing that for office buildings or anything else, it would seem to me to be a strange comparison.

Prof. Garnett—I can understand what you are saying, but the island and the reactor technology will come in from overseas. But let me assure you that, as part of those costings, what we, Sinclair Knight Mertz, their consultants and the department of finance did was to look at the sort of buildings and the infrastructure. For the costs that would be incurred in Australia we used the normal Australian standard figures for working out costs. That was done.

Senator CALVERT—You used the analogy of a Holden or a Ford. I suppose we would have to call the current one a T-model Ford, wouldn't we?

Prof. Garnett—About an A40.

Senator CALVERT—Without going into all the detail and the like, 50 years down the track there must be some huge advantages from the new proposed replacement reactor, both from the environmental point of view and from the output point of view. When you were assessing this project, obviously you would have taken all of that into account. How much better will the replacement reactor make your operation? How much more profitable, from every point, will it make your operation? And we have only half an hour!

Prof. Garnett—That is not easy. It will allow many sorts of scientific research which simply cannot be done at the moment to be done. That particularly includes advantages for the Australian community in moving into the areas of large molecules in biotechnology plastics—polymers, catalysis, et cetera—and many of the emerging materials which require facilities without which we cannot simply do good work on at the moment at all. It will allow us to expand our range of isotopes for medical purposes. There are a number of isotopes that are under trial in the US at the moment for various therapeutic applications and certainly it will allow us to increase the range of those.

It is also anticipated that we would be able to increase the volume of some of those to keep up with the demands. I showed a curve this morning of the rate of growth of nuclear medicine in numbers of procedures, not in dollars or anything else. It was numbers of procedures, so that it was not misleading. There is a continuing rate of growth in nuclear medicine, and it will allow us to provide and supply. So, yes, the radio pharmaceutical business should grow. The enabling research and technology which will underpin technology development in Australia will be significantly enhanced.

Also, as far as safety is concerned a pool type design is inherently safer than the design we currently have. As for the pool, the protection and not having to take that top plate off and work in there—which, in fact, you were lucky to see them doing this morning—that will not happen. So the dose to our staff will reduce. So there are a number of improvements from the point of view of exposure to our own staff and to safety operations as well as enhanced capacity. But quantifying all of that and putting dollar figures on it, I might say, is extremely difficult.

Senator CALVERT—Yes, but you did enlarge on what I was getting at; it is obviously going to be a lot safer for the users. Have there been any incidents in the last 50 years that you would class as not so much ‘dangerous’ but ‘out of the ordinary’?

Prof. Garnett—There has been no incident at the AEC site with any health impact on staff or on anyone else. There are operational events. Those happen, unfortunately, from time to time, but they have not resulted in exposures which would be considered to be of a problematic nature.

Mrs CROSIO—You also said in one of your reports that the existing reactor does not meet the stakeholders’ expectations. Who exactly are the stakeholders?

Prof. Garnett—We would classify as stakeholders the academic community, the research community and all of Australia’s research organisations. At the moment there is work, for

instance, DSTO would like to do, but the existing facility cannot do it. There are things that we would like to be able to do for the industrial and business community, but we cannot. When it comes to our government stakeholders, the operation of a facility like the one we currently have, which is old technology, does not necessarily allow our people to be as well trained and able to provide them with advice on what might be going on in facilities and reactors around the world which are based on modern technology. So there is a range. We talk about our stakeholders as being everybody who benefits from the operations of the reactor.

Mrs CROSIO—From ‘those who benefit’ do we exclude those who wish to use it and make a contribution towards the cost of it? Do you have many stakeholders like that, who are actually on a user pays basis?

Prof. Garnett—On a user pays basis for the use of facilities, there is additional fuel used in the production of radio pharmaceuticals, and that is all costed and embedded in the cost of radio pharmaceuticals. Others who use the reactor for irradiations are charged with irradiation time. But, again, it comes back to the multipurpose nature of the facility. As I say, some of the neutrons that are being produced are being used to irradiate targets for radio pharmaceuticals that are being pulled in and out. At the same time you have got researchers who are using the neutrons that are pulled off at the side. So it is not easy to apportion costs. What we have to do is look at the impact on the utilisation, the staff, the health physics, et cetera, and those costs are apportioned to users that are using it on a commercial basis.

Mr LINDSAY—I have 70 questions to ask in a minute and a half. In the identification of the needs you said that you wanted to achieve the construction of the operations facility in a manner that meets all health and safety and environmental standards, and then you said that this includes meeting community expectations. What you think are the community expectations that you should meet?

Prof. Garnett—I think that the community wants to be assured that the sort of facility that is to be located there is, in fact, best practice with regard to environmental emissions, that will be operated safely and that it is a kind of design that is inherently safe.

Mr LINDSAY—Okay, stop there. In the comparison of HIFAR and the replacement reactor, you say that under the replacement reactor it would have cold and then potentially hot neutrons sources. Is ‘potentially’ not a very certain word?

Prof. Garnett—It is scientific jargon, with all due respect. Just as you can put in something like liquid helium or something that will actually make an area of the core cold, which slows the neutrons down, you can, in fact, put facilities in the core which will have a ‘hot spot’, so to speak, where the neutrons will heat up and go faster. So there are fast and slow neutrons.

Mr LINDSAY—You said that additional benefits to health care would be derived from the development of the new radio pharmaceutical and drug delivery systems. What are those additional benefits?

Prof. Garnett—I alluded to the fact that there are something like 100 different trials going on the US at the moment with some 30-odd different isotopes. A large number of those trials are focusing on treatment of cancer and also diagnosis of various neurological diseases. The easiest way to describe it is that you cannot have a one shape fix-all when you come to irradiation treatment, because cancer if it is on the bladder is just a single cell—

Mr LINDSAY—I see that direction you are heading in. That is fine.

Prof. Garnett—and, otherwise, you have got a lump. Different isotopes are needed for different types of cancer.

Mr LINDSAY—I understand. How are you going to keep your buffer zone there in the future? How can you be assured that the buffer zone is always going to be there?

Prof. Garnett—We own the land.

Mr LINDSAY—You talk about the likely energy usage during operation of the replacement reactor as being a maximum of 2.4 megawatts. Today in the current reactor I did not see anything that would use anything like that kind of power level. What would use 2.4 megawatts of power?

Prof. Garnett—I will ask Mr Horlock to answer, but what you did not see today was the lower level underneath where all of the pumps and so on exist.

Mr Horlock—There is power concerned with just operating the circuits themselves, to remove the heat generated by the reactor. You have to pump water through the reactor to a secondary cooling system where there are heat exchanges, and then you pump that secondary cooling water to cooling towers where the heat is given up to atmosphere in evaporation. All of that absorbs power. Plus there is space conditioning, plus all the normal services

Mr LINDSAY—Is native title an issue?

Prof. Garnett—No. We have had legal advice on that. Again, as I say, the property and the land have been fully investigated.

Mr LINDSAY—This is a non-technical question. What protection have we really got against a repeat of what happened with the Collins class submarine?

Prof. Garnett—The process that we are putting in place is exactly not what they did with the Collins class submarine. Garry will answer that.

Mr Seaborne—I just contrast the Anzac ship project with that of the Collins class submarine and leave it at that. We use proper processes. The processes we are going through in getting to the point where we get that commercial and technical view is extremely important, and we do not go any further until we get to that point.

Prof. Garnett—It also comes back to this issue of variations. There will not be variations afterwards.

Mr LINDSAY—You said that you might get 50 per cent Australian content in this. Is that right?

Mr Seaborne—Yes.

Mr LINDSAY—Why cannot we get more?

Mr Seaborne—At least 50 per cent, I would say, but 50 per cent is—

Mr LINDSAY—Will you go for more if you can?

Mr Seaborne—Our emphasis is very much on the quality of the content and not so much on the quantity. There will inherently be at least 50 per cent, but we are after the quality.

Mr LINDSAY—In your project management plan, why do you need an Australian Taxation Office audit?

Mr Seaborne—We do not need an Australian Taxation Office audit. We have now been through and assessed all of the audit activities, and we have been advised through the chief financial officer that that, in effect, is not required for the project. It was on the list at the time.

Mrs CROSIO—Would you take the cheapest tender or the best tender?

Mr Seaborne—We do not necessarily take the cheapest tender; it will be the best tender that meets all of our requirements.

Prof. Garnett—But is consistent with the available funds.

Mr RIPOLL—I just want to ask a very simple question. We have been very specific about the cost—\$286.4 million. Does that include GST?

Prof. Garnett—The issue of GST is being discussed. We have had advice on that from government. We have been advised that, in fact, the GST to us for this project would be cost neutral.

Mrs CROSIO—That will be one of the variations they will need.

Prof. Garnett—Our act at the moment, in fact, precludes us and actually protects us from taxes.

Mr RIPOLL—So the organisations that are tendering are taking into account in their tendering process a cost for GST?

Prof. Garnett—No. They would not be taking into account a cost for the GST at all. We have received advice from the tax office and from the department of finance. In fact, I

believe the director of corporate services provided it. We could provide you with their written advice.

Mr RIPOLL—The reason I ask that is that we may or may not end up with a GST in the very near future. These organisations providing these services will then have to incur a cost. Surely that will impact on their profit margins and so forth. There must be at some point some inclusion, or are you being GST exempted?

Prof. Garnett—What we have been advised is that GST will be cost neutral to the project.

Mr RIPOLL—What does that mean?

Prof. Garnett—This is the department of finance's advice. We wrote to them and sought advice. This is the written word that we have got back. What we have got back is that section 30 of the act provides that ANSTO is not subject to taxation under any law of the Commonwealth, or state or territory. There are then various other words, and it ends up that in effect the GST will be cost neutral to the project.

Mr HOLLIS—Can we have that tabled?

Prof. Garnett—I can provide you with it. The chief director of corporate services has given me the grabs out of the finance advice.

Mr HOLLIS—We would not mind seeing the full financial advice.

Mr RIPOLL—Yes, I would like to see that advice.

Mr HOLLIS—Is that a difficulty?

Prof. Garnett—We will provide you with what we can provide you separately.

Mr HOLLIS—That says nothing to us. We want to know whether you are going to provide us with the evidence or not.

CHAIR—Mr Hollis, that can be provided separately.

Mr HOLLIS—That is what I am asking—whether it will be provided to the committee as a tabled document.

CHAIR—It can be provided as a tabled document.

Mr FORREST—Requests for tenders will not be required until 22 July. The question is hypothetical at the moment.

Mr HOLLIS—Yes, but we still want the advice.

Mrs CROSIO—Would Lucas Heights in total be affected by the Y2K bug? I saw replacements of some computers today, but what about the internal reactor?

Prof. Garnett—You saw the reactor but, with all due respect, the reactor was built before computers.

Mrs CROSIO—I know that—well before. But I also saw a hell of a lot of computers there. Some are being replaced, some aren't.

Prof. Garnett—Those computers are desk top computers. Let me assure you that the Lucas Heights site has had a very extensive Y2K program. We provide our reports to the relevant government office on a regular basis, and we have indicated that not only will we be compliant but we will have contingency plans in place by 30 June.

CHAIR—It was in the report, Mrs Crosio, that they would be compliant by July this year in line with government policy. Unless there are any other questions at this point, I think we should have a brief adjournment.

Mr FORREST—Madam Chair, is this the last opportunity we have to hear from ANSTO?

CHAIR—No. We do have another opportunity to question representatives from ANSTO. Thank you very much. We will now adjourn for 10 minutes.

[3.27 p.m.]

LOY, Dr John, Chief Executive Officer, Australian Radiation Protection and Nuclear Safety Agency

McNAB, Mr Don, Acting Director, Regulatory Branch, Australian Radiation Protection and Nuclear Safety Agency

CHAIR—On behalf of the committee, I welcome you. The committee has received a submission from the Australian Radiation Protection and Nuclear Safety Agency of 16 April 1999. Do you wish to propose any amendment?

Dr Loy—No.

CHAIR—It is proposed that the submission and the Australian Nuclear Science and Technology Organisation response be received, taken as read and incorporated into the transcript of evidence. Do members have any objection? There being no objection, it is so ordered.

The documents read as follows—

CHAIR—I now invite you to make a short statement in support of your submission before we proceed to questions.

Dr Loy—I will be very brief in simply adding to our submission. Around the time we lodged the submission, we also received from ANSTO an application for a licence to site the replacement research reactor, and the processes of the ARPANS act are now applying to that application. We have advertised it in the gazette and newspapers, and we have called for public submissions on the application and will consider those. That will be ARPANSA's first formal licensing decision in this reactor project.

Our submission sets out briefly a position in principle on the proposal but says that is a position that must be turned into a reality through the licensing process, and the application for a site licence is that first step. Our submission also briefly touches on safety issues in relation to continued operation of the HIFAR reactor and goes into some little detail about the processes of licensing that will apply to the proposed replacement research reactor.

Mr LINDSAY—When you talk about your 'position in principle' on the replacement of the reactor, you say that the replacement is justified in radiation protection terms. You qualify that by saying, 'That is, the good that will be achieved by the proposal exceeds the detriment that may arise.' With the way that reads to me, it seems as though it is only marginally that one exceeds the other. Is what you say here giving me the wrong impression?

Dr Loy—It may be. I do not think we are trying to make a quantitative judgment, a sort of cost benefit analysis or anything of that kind. Rather, it is a general judgment that, given a reactor of the modern general design proposed and built and operated in accordance with contemporary procedures, that will result in the likelihood of very little exposure. So, given that small risk, the outputs from the reactor are appropriate.

Mr LINDSAY—So they greatly exceed any possible—

Dr Loy—I think that would be fair.

Mr LINDSAY—Safety assessments: you say, 'There is a small number of nuclear installations in Australia of unique design and operation.' Could you give me some examples of what you mean by that?

Dr Loy—In terms of nuclear installations as defined in the Australian Radiation Protection and Nuclear Safety Act, that would include the existing reactor and the shut-down small reactor on the Lucas Heights site, Moata. It would include the radioisotope production facilities at Lucas Heights and a number of other production facilities on the site.

Mr LINDSAY—So it just refers to Lucas Heights?

Dr Loy—Yes, it does at this point; that is right.

Mrs CROSIO—Taking you to the page 5 large 3 of your submission, we have ‘Continued operation of the HIFAR reactor’. At point 17 it says that the upgrading of the safety systems of HIFAR:

... be undertaken by about 2003, unless the reactor was permanently shut down within a period from that date which, in the agency’s view, is acceptably short.

What period do you think past 2003, and what does the agency consider to be ‘acceptably short’?

Dr Loy—Again, I do not think there is a formula or an algorithm for that; it is a judgment. But, in the context of the proposal to replace the reactor in 2005 and perhaps shut down say in 2006 for HIFAR, that is an acceptably short period from 2003. If you went up to 2009 or 2010, I guess we would be having reservations.

Mrs CROSIO—So, for the record, we could say 2003 in this paper, but what you really mean is 2008, 2007.

Dr Loy—It is, if you like, going back to a historical view of saying that we would have wanted a commitment in 2003 for significant upgrading to have been undertaken by then, unless there were a plan to shut down the reactor in the relatively near future thereafter.

Mrs CROSIO—But, just repeating: you do say in this paper:

The agency would treat the safety assessment of any life extension significantly beyond about 2003, including the upgrading of research and production facilities, in a way similar to that for a new reactor.

I read that as basically saying that, within 2003 or within a short expectation of the life of that reactor not being closed down, action would have to be taken. Now you say that I have a larger span, I can go another six years after that.

Mr McNab—Let me try to put it into context.

Mrs CROSIO—I can only take from what you have given us in information.

Mr McNab—I am probably the author of those words, so perhaps I can put into context what I meant when those words were put down.

Mrs CROSIO—It would help.

Mr McNab—In 1992 we put ANSTO on notice that, if the reactor is to operate for a significant length of time—for example, be upgraded and operate for a goodly fraction of the life of a new reactor, say, ten or 20 years—we would expect that reactor to be assessed against modern standards. In that case, we would expect to see some significant upgrading of the reactor to achieve those modern standards, or as close as possible to them.

Considering the fact that the reactor is now operating and has been operating for 40 years, 2003 does not mean that that reactor will suddenly become unsafe; nothing has changed. But over a period of time standards have changed and evolved, and modern safety

practice has also progressed. In our judgment, in 1992, we felt that that would be a prudent time to re-examine the safety of the reactor and to see if, in our judgment, significant upgrading was needed; for any long length of time—and we were not talking a year or two—it would be expected to upgrade the reactor. We do not believe that the reactor suddenly becomes unsafe in 2003, but its variants from modern codes of practice and standards from when it was designed would be sufficient to warrant some upgrading of the plant.

Mrs CROSIO—What is the current staffing of ARPANSA; and will more highly specialised and qualified staff be required for examination of the licence you now have spoken of assessing when the advertisements go out?

Dr Loy—The current staff of ARPANSA is around 100, and we expect to expand by about another five to 10 people. That includes both our activities in Sydney directed to regulation and our activities in Melbourne on radiation protection and scientific activities. I have forgotten your second question.

Mrs CROSIO—When you were answering a previous question asked by Mr Lindsay, this was going through my mind: you had then the expertise on board to look at what will be a very, very unique licence, because Australia has no other which you can look at and make comparisons with—unless you go to Egypt or Canada.

Dr Loy—Yes, we believe we have the expertise available to us and available in Australia at this point. As the project goes through and as we make subsequent licensing decisions, there will no doubt be particular parts of those decisions where we will be seeking to essentially purchase additional expertise to help us with making those decisions. It will be impossible for us to keep on our staff the full range of expertise we need as the project goes ahead.

Mrs CROSIO—It was February of this year that the act verifying ARPANSA came in, was it not?

Dr Loy—It was proclaimed or came into force in February of this year, yes.

Mrs CROSIO—You say that it is impossible to keep experts on staff when they are wanted to be brought in for specific projects. But do you have the means—in other words, the budget—to allow for all of this at this stage, or will you be taking another bite into next year's budget?

Dr Loy—No, it is not. The arrangement is that ARPANSA, when it was set up, inherited some appropriation funding from the former Australian Radiation Laboratory and from the former Nuclear Safety Bureau. It received some additional funding for set-up and initial costs from the Department of Health and Aged Care and from the Department of Industry Science and Resources. It will recover ongoing regulatory costs through fees and charges on the licensed organisations.

Mrs CROSIO—So, looking at the licence for ANSTO, you will charge them, will you?

Dr Loy—That is correct.

Mrs CROSIO—So one government department will be paying another government department?

Dr Loy—Yes.

Mr FORREST—I have some questions about the working of the process after a successful tenderer has been achieved through a process that will be gone through by ANSTO. Who will be the licence holder to your organisation? Will it be the vendor, or do you control that by insisting that it must be the operator?

Dr Loy—It will be the operator. ANSTO will hold the licence, and they are charged under the act and the licence conditions fulfilling the various conditions.

Mr FORREST—You will have to have some control and say in the transfer of technology to ensure people on-site operating the reactor know what to do when there is an operational difficulty. Is that part of your control and the licence conditions?

Dr Loy—Yes. We would be able to make requirements within our licence conditions that would go to the competence and training and requirements for operating staff. Mr McNab can expand on that, including in relation to the current arrangements.

Mr McNab—We have a requirement of ANSTO to provide management arrangements and appropriately trained and accredited operating staff, staff for maintenance, and so on. We monitor that—we audit the processes. One of the processes we will be very interested in and will be looking at closely—and ANSTO is aware—is the transfer of technology and the commissioning of the reactor.

Ultimately it will be ANSTO that will carry the responsibility for the safety of the reactor. It will not be the vendor. ANSTO must obtain the knowledge of that technology and obtain sufficient resources and knowledge about the way the reactor is operated to ensure that it, as a licensee, operates the reactor and maintains it in a safe condition.

Mr FORREST—It has to be a requirement of their tendering specification that they ensure that the vendor is willing to pass the technology that they possess right through to ANSTO. What I want to know is whether you can police it and make sure that it happens. Somehow or other we have to make sure that the specification is right. How is this process going to work to ensure that that technology comes to the Australian site and is not kept somewhere else?

Mr McNab—This will be part of ANSTO's tender specifications. We have seen a copy of them. There is an area in the safety analysis report that before the vendor can construct this particular plant there will be a requirement for a construction permit or construction licence. In order to gain that licence, ANSTO will submit to us the safety analysis report and other various management plans involving those sorts of things. We will be very interested in the mechanisms with which ANSTO will gain the knowledge technology and retain the

resources to commission and to operate the plant safely. There are mechanisms in place that will allow us to keep an overview of that and to audit the process as it goes on.

Mr FORREST—This is going to be a very comprehensive piece of documentation. You are going to need procedure manuals—operating manuals—for every small piece of equipment and a disaster plan for when one piece does not work properly.

Mr McNab—That is certainly the case, and it will have to fall within a quality system that we expect to be in place as well.

CHAIR—My question follows on from that. On page 10 of your submission, paragraph 32, you say:

Research reactors have a small fission product inventory and generally have less demanding physical operating conditions than nuclear power plants, but the utilisation of research reactors is more varied and less predictable. Therefore, the INSAG-3 principles need to be applied as carefully to research reactors as they do to nuclear power plants.

I have two questions: can you give us an idea of what you mean by ‘less predictable’? In the event that INSAG-3 principles were not adhered to by ANSTO, what are the mechanisms by which you would make sure that those principles are adhered to strictly?

Mr McNab—Let me try to address the first question about the way it is less predictable than power reactors. Power reactors, generally, are taken to power and operated at full power or high power for a long length of time—for 18 months or thereabouts. A research reactor by its nature is one in which there are experiments going on. HIFAR, for example, is operated on a 28-day cycle instead of an 18-month cycle. There are rigs that are placed in the reactor and taken from the reactor for radioisotopes and other experiments that are going on. To come to the second part of the question, when we assess the safety of the reactor and its associated operations, we look at all of those things.

CHAIR—So you are saying that the risks are just as high but in a different area?

Mr McNab—They are somewhat different. The fission product inventory is much smaller because it operates on a shorter time frame and at a much lower power level. So the inherent risk in relation to the fission product inventory is smaller, but there are more opportunities for human factors to cause uncertainties—there are more operations going on on a research reactor. So we will look very closely at the human factors associated with the operation of the research reactor.

In assessing the safety of the reactor, ARPANSA has developed some safety assessment principles that are derived largely from INSAG-3, other recommendations of the International Atomic Energy Agency and precedents that are set around the world by other regulatory organisations. We believe that that provides a very thorough framework against which to judge the safety of the reactor and its operations.

CHAIR—How will you ensure that those principles are being adhered to? What mechanisms do you have in place to reconcile disputes between your agency and ANSTO in regard to this particular issue?

Mr McNab—We can assess it through the safety analysis report, procedures, quality documentation, and so on. We can carry out inspections to see that the plant is constructed as it has been designed and that the procedures being used are as they have been written. We can carry out audits of processes. So we do it through review of documentation, inspections of plant operations and audits of processes as well. If there is something that we are concerned about, within the legislation the CEO has the ability to put conditions on the operation of the plant, and at any time conditions can be attached to that licence, with which the licensee must comply. Dispute mechanisms that allow the testing of the requirements upon ARPANSA and decisions made by the CEO are written into the legislation.

Dr Loy—A point that flows from that, and from Mrs Crosio's observation that we are imposing fees and charges on a government department, is that the legislation is structured as though it were a regulator regulating an external industry; it is not structured as an internal process. There is very much a whole set of processes whereby the CEO can impose conditions—there can be inspections, people cannot hinder inspectors and so on and so forth. It is a structure that is quite consciously modelled on having an external regulator of an industry rather than being an internal government process. I think that is relevant to some of the questions you have asked.

CHAIR—Mr McNab was saying that they would look at the documentation in relation to this issue. How can you reassure the public that the documentation that you see is what is actually happening on a day-to-day basis. For example, would you do spot checks on the operation of the reactor?

Mr McNab—Yes, we certainly do that at present and will continue to do that in the future. We would have somebody out there most days of the week—quite often several people. As an example, we have been carrying out a very intensive audit of the maintenance operations of HIFAR to see that ANSTO does in fact operate in the way that they say they do. We have carried that out against criteria that we have drawn from international practice and from ANSTO's procedures and instructions. We will draw some conclusions of compliance and non-compliance against that audit and whether ANSTO is operating in a safe fashion. This is a continual process, and a process that will be reported openly and publicly to the parliament.

CHAIR—Given the new technology of the replacement reactor, what expertise do you have currently on staff to ensure that that process is carried out with an understanding of the requirements or, if you do not have that, what arrangements are you making to ensure that you have qualified people to carry out that procedure when the replacement reactor is in place?

Mr McNab—Within the regulatory branch we have staff who have upwards of 100 years experience between them in various aspects of the nuclear industry. We have a wide variety of expertise—mechanical engineers, chemical engineers, nuclear engineers, physicists, and so on. We feel that we have the core expertise to make those judgments. We also maintain very close relationships with other regulators around the world. We have bilateral arrangements with North American, European and Asian agencies, and we attend many international fora in order to maintain a knowledge of the state of the industry.

Mrs CROSIO—Mr McNab, I want to go back to an answer you gave to Mr Forrest. Did I hear correctly—and I have to read the *Hansard*, I suppose—when you said at one stage, looking at the application of how you are going to judge licences, ‘providing we get a quality system in place.’ Have you got a quality system in place?

Mr McNab—Yes, there is a quality system in place.

Mrs CROSIO—Also, with regard to your words that you are going to ‘access the safety of the reactor’, of those 100 years of expertise that you have within your staff already, without bringing in other specialist people, have any of those people previously worked for ANSTO?

Mr McNab—Some people have. It is number of years since anybody has. I think it would be a wrong inference to draw that any people who work for ARPANSA are beholden to ANSTO in any way.

Mrs CROSIO—No, I do not mean it in that way. I mean they are very specialist in their field of operation. You cannot bring in a mechanic to look after a nuclear reactor or a person who is a specialist in another field to look at a nuclear reactor, can you? These are the things I am worrying about—the specialties of staff.

Mr McNab—Yes, they are specialist staff—there are no two ways about it. We have people who have had experience in the nuclear industry in Canada on various types of reactors and from the United States and the United Kingdom with experience on reactors. We also have a couple of people who have been operators of a HIFAR reactor and who therefore have a detailed knowledge of the design of the plant and the way it is operated. We find that to be very useful to us in understanding the arguments put to us to justify the safety of the operations.

Mrs CROSIO—You cited a report to parliament. Are you required under the act to report on a yearly or a half-yearly basis—what does the act say with regard to your organisation reporting to the parliament?

Dr Loy—I think we would report to the parliament more than any other organisation. We have an annual report and a quarterly report.

Mrs CROSIO—Has that taken place, yet? I do not remember reading or seeing one.

Dr Loy—No. Our first quarterly report for the period 5 February to 31 March was dispatched to the minister yesterday, I think. So it should be tabled some time in the forthcoming sittings.

Mrs CROSIO—I try to read most of what comes across my desk, but I do not remember seeing anything as to what you are doing at this stage. So the first quarterly report is actually on the minister’s desk, and we hope to get access to it eventually. Is that then tabled in the parliament?

Dr Loy—Yes, it is required to be tabled in the parliament.

Mrs CROSIO—Turning back to page 7 of your submission, which is entitled ‘Regulation of the proposed replacement research reactor’, at ‘4.1 Licensing’ it says:

The Act also requires that the CEO gazette the receipt of all applications for facility licence, and, in the case of nuclear installations such as the proposed replacement research reactor, invite public comment on the applications. In deciding whether to grant a licence, the CEO is required to take into account public comments submitted.

What exactly does that mean? Do you read them, stamp them and say, ‘I have received them’? Do you actually take them on board; do you have a hearing; do you listen to public comments? Do people feel that they have another avenue in which they can raise their concerns? How does taking ‘into account public comments submitted’ come about?

Dr Loy—This is a new process, and I guess we will all have to explore exactly what those words do mean. What I intend to do is to receive the public submissions, consider them and, having made a licensing decision, explain the basis for that decision and respond to the public comments received. So that there will be some explanation of either how the public submission has been taken on board in, for example, a particular licence condition or how we considered it but did not believe it was well founded. So at least there will be a clear description of what was done in terms of my consideration of the licence to the public submissions received.

Mrs CROSIO—In other words, the public will be informed after you have made the decision. They will not be informed on any submission they have put to you with regard to their concerns about that particular licence prior to your making that decision.

Dr Loy—I think I will have to take that as being horses for courses. It may well be that there are such issues raised in public submissions that I feel it would be appropriate and valuable to perhaps make a draft decision and publish it or to seek a discussion with people who have made a public submission or to proceed in some other way. I do not have a closed mind on that, but it will be a matter of judgment.

Mrs CROSIO—Does the granting of the licence, after the advertisement is taken out by you as the CEO, rest just with you? You have no other committee?

Dr Loy—That is correct.

Mrs CROSIO—You and you alone will do the licensing?

Dr Loy—Yes. I need to qualify that by saying that, of course—

Mrs CROSIO—In consultation with the other staff, I should imagine?

Dr Loy—No. There are matters set down in the act that I am required to include in the decision making. It is not entirely capricious.

Mrs CROSIO—It is very hard to ask you to answer off the top of your head questions as to what is set down in the act, and I do not remember it either. But for the benefit of *Hansard* and what we are going to have in our report, what are some of the things you are obligated to take into account?

Dr Loy—The act certainly sets out that the CEO must take into account ‘international best practice’, if I am not mistaken.

Mrs CROSIO—Who decides international best practice?

Dr Loy—The *Oxford English Dictionary* could be appealed to.

Mrs CROSIO—Not describes it; who decides it?

Dr Loy—It could have a very precise meaning in some circumstances and it could have a very generalised meaning in others. The precise meaning might be: if ANSTO were proposing a certain practice that was very similar, almost identical, to practices carried on by other operators of similar equipment and the other operators were achieving lower exposures—doses—for their workers, then we would expect ANSTO to meet that level. That would be a precise use of international best practice. In other senses of the word I think it would be saying that the guidance laid down in the internationally accepted documents should also be used in my decision making.

Mrs CROSIO—So would you have like a tick board—you would see how the licensing comes in, what the public submissions are, what ANSTO has supplied and then you would just tick it off?

Dr Loy—It certainly would not be a whiteboard—I am sorry; I couldn’t resist.

Mrs CROSIO—I could give a reply to that but I won’t.

Dr Loy—I think something of that ilk is what I will do in describing that I have made a licensing decision, here are the things I took into account and here are my responses to the public submissions. So, yes, in that sense there will be a checklist.

Mrs CROSIO—I even have concerns with the report you have submitted to us because: (a) you are a new organisation that has come into place—as you have stated, your act came into place in February 1999; (b) you have taken over a certain role that was previously administered by a number of other people; (c) you have brought their budgets into place; and (d) your staff—you have told me and confirmed it—have 100 years of experience and expertise.

I am still, deep down, a little worried about whether that expertise is there to qualify a licence for something that the community will possibly have for the next 50 years. That is what I am worried about. You are telling me now that as the CEO you will approve that licence, that you will take into account public submissions—you may or may not, but you will take into account as the act indicates—and that there are a number of provisions you must go through, as the act states for you. I am worried about where the other expertise comes in to assist in the granting of that licence.

Dr Loy—There is of course the expertise in the staff of the agency. But as I said, this particular project is not a one-off decision. There will be a set of decisions going through the process, whether it be through—

Mrs CROSIO—But the licence is, is it not?

Dr Loy—No, the application now is for the siting. If you like, a Commonwealth entity is forbidden to even prepare a site for a nuclear installation without a licence. So this licence will allow ANSTO to go forward with their preparations on that particular site. It will not allow them to construct, commission or operate a reactor. Those decisions will be taken further down the track based upon, of course, the more detailed information that comes forward.

Mrs CROSIO—And that will be further licensing?

Dr Loy—Yes.

Mrs CROSIO—Further public submissions?

Dr Loy—Yes.

Mrs CROSIO—And everything open again as advertised?

Dr Loy—Yes, absolutely.

Mrs CROSIO—And gazetted as well?

Dr Loy—Yes, that is right.

Mr McNab—Could I come back to the international practice and how the CEO will make a judgment on the advice of the staff of the organisation. We will go through the act, the regulations and the guidelines and draw up a set of requirements that must be satisfied in order to gain a licence for a particular conduct, siting, construction, operation and so on. The guidelines that we have put in place have been drawn from the wealth of experience worldwide. It is based on INSAG-3, which is a consensus document from the accumulated experience of organisations around the world. It will use the design guidelines, siting guidelines and operation guidelines of the International Atomic Energy Agency and also of regulators around the world with whom we have very close relationships.

So if we need, we can go to other organisations to get advice. We keep our finger on the pulse of what is going on around the world so we can make judgments that are comparable with those of other agencies that have similar responsibilities to us.

Dr Loy—It might be useful to the committee if I table the information to assist with the preparation of submissions on the siting licence that we have published. That does set out the kinds of information that we are seeking and gives you some idea of the criteria and the like.

CHAIR—Thank you. There are no further questions.

[4.04 p.m.]

SCHREIBER, Councillor Kevin, Mayor, Sutherland Shire Council

CHAIR—On behalf of the committee I would like to welcome the witness from the Sutherland Shire Council. The committee has received a submission from the Sutherland Shire Council dated 8 April 1999. Do you wish to propose any amendment?

Mayor Schreiber—No, I do not.

CHAIR—It is proposed that the submission and the Australian Nuclear Science and Technology Organisation response be received, taken as read and incorporated in the transcript of evidence. Do members have any objection? There being no objection, it is so ordered.

The documents read as follows—

CHAIR—I now invite you to make a short statement in support of your submission before we proceed to questions.

Mayor Schreiber—We have a few questions of ANSTO, if you do not mind. The decommissioning of HIFAR and the new reactor are left very open-ended with respect to the costs committed to the decommissioning of HIFAR. We have some concerns about the waste management as well, about the waste going into the sewer lines and as emissions into the air. The other concern we have is on the long-term storage of the spent fuel at Lucas Heights, because we do not want to see that site turned into a nuclear waste dump or into an area that is going to have long-term storage. They seem to be the major concerns we have from the council about it. These are the concerns that have been raised numerous times by the community to us, and that is where our concerns lie.

CHAIR—Thank you. Are there any questions?

Mr HOLLIS—We have heard from ANSTO that they had a very successful open day and they led us to believe, rightly or wrongly, that the locals, if not exactly gung-ho about the replacement reactor, were relaxed about it. From your position as representing the area, what is your reading of the local people? How do they feel about the replacement reactor?

Mayor Schreiber—There are quite a number of people who are opposed to the reactor, and there is a great deal of support for it within the community as well. I believe that it was through the council asking ANSTO to give more time and more areas for community consultation that the public consultation was extended to other areas of the shire, mainly down into the Sutherland area and into the Como area, instead of just being held in and around the Menai, Alfords Point and Engadine area. The number of people who attended were not substantial, but a number of people did attend them and did try to find out more information and show their concern about the replacement reactor.

Mr HOLLIS—I think it is true to say that that area around there is one of the faster growing areas. People have purchased or built quite substantial houses there knowing that reactor was there.

Mayor Schreiber—Yes, that is the impression I get—that most people knew the reactor was there and that it was there 40 years ago. I think most of them are happy to build in the area with what has been going on there.

Just back on the consultation period, we did have an open council meeting where members of the community did come along and they could ask questions of different experts who were there. I think some 200 people attended that meeting at the council, even though there were some difficulties on the night with blackouts. I think members of the community were quite well represented and did get some answers that they were looking for.

Mr LINDSAY—Is your council in support of or opposed to the new reactor?

Mayor Schreiber—The council at the moment is supporting the reactor, subject to the spent fuel issue being handled.

Mr LINDSAY—Have you been to the site yourself?

Mayor Schreiber—Yes, numerous times.

Mr LINDSAY—Have you felt safe when you were there?

Mayor Schreiber—Yes.

Mr LINDSAY—In the submission that you put to us, there is a heavy emphasis on cost. Why does that concern you as a council?

Mayor Schreiber—The worry about the cost is that, if it is going to blow out, will that affect the safety issue of the reactor and the spent fuel? The spent fuel is our major concern—that is, what is going to be done with it? If it is going to be left at Lucas Heights for 10 years or more, doesn't that turn it into a long-term repository?

Mr LINDSAY—That is not the major thrust of the information that you put in your submission. Having heard the evidence from ANSTO today, are you now satisfied that those costs are covered?

Mayor Schreiber—Subject to, as it was asked earlier, the GST and where we are going to go. Again, if that is going to be incorporated into it, that will turn it into about a \$320 million project, which is starting to get into the line that the council has projected, at somewhere between \$300 million and \$500 million.

Mr LINDSAY—In your evidence today, you talked about the environmental monitoring and, in your submission, it is quoted that MHB Consultants 1998 point out that background radiation near the site has not been measured. Today the committee was given this document, which is a 1997 document, which outlines all of the measurements that were done right across the site, including down to the Potters Point sewerage outfall and so on. It is an ongoing measurement. Does that mean that this evidence in this submission you have given to us is wrong?

Mayor Schreiber—No, it means we are concerned about the information we have put in that and we are trying to find more evidence of what is happening with the readings out there and what is happening at Potters Point. We have been told that there are no problems with what is happening with discharge at Potters Point, but we have our concerns. I know that monitoring is going on continually to make sure that nothing goes out through the sewer lines.

Mr FORREST—What is at Potters Point?

Mr LINDSAY—The sewage outfall.

Mayor Schreiber—The sewage treatment works. There is a new one being built there.

Mr LINDSAY—Under ‘national strategic benefits’, you say that international expertise in nuclear issues can be purchased for fairly modest expenditure. Is that really saying we do not need a new Australian reactor?

Mayor Schreiber—I think it is saying that we want to look at the costs more effectively to make sure that we do need it. We are concerned about the overall costs of the replacement reactor. We have not had a great deal of information on the costs and what it will do for the community. We realise it is a medical research reactor and that it is greatly needed within the community, but again, costs are still a major concern for any sort of expansion.

Mr LINDSAY—Finally, I understand part of the submission is from a consultant to the council. Under the heading ‘other benefits’ it talks about substantial economic and employment benefits and local employment benefits. It then goes on to say that it is Alice in Wonderland nonsense to try to argue that these costs are really benefits. Does that mean the shire would be arguing against benefits from the replacement reactor in its own region? Do you reject what is said in this submission?

Mayor Schreiber—I reject the fact that it is Alice in Wonderland stuff. We get a lot of benefits in the shire from the people who work at ANSTO. It is the second largest employer within the shire and a lot of benefits come back into the shire with regard to jobs and security.

Mrs CROSIO—I would like to talk about your submission as well. I know that a lot of preparation was done for 1993 which was updated to a certain extent in 1998. You say that council supports the extension to the—

Mayor Schreiber—The replacement reactor.

Mrs CROSIO—Is that a unanimous decision of the council?

Mayor Schreiber—No, it is not. It is a split council.

Mrs CROSIO—What is the split?

Mayor Schreiber—Eight-seven.

Mrs CROSIO—When did council finally change its mind? If I remember all the press in the past, council was very much in charge of the Light Brigade, wasn’t it?

Mayor Schreiber—Two or three years ago—1997, I think.

Mrs CROSIO—Was there any particular reason? Was further evidence supplied to you? In 1997, the EIS was just being examined.

Mayor Schreiber—The evidence was as to the safety of the replacement reactor. We were assured of the safety of it and that it was a necessity within the community and within Australia. That was when we had our concerns about the spent fuel. Council has always

taken the stand that the spent fuel has been their major concern—about the area being turned into a long-term repository, which we do not want out there. We are looking at maybe five years as being the length of time that the spent fuel should be kept there until it goes off-site.

Mrs CROSIO—If the replacement reactor comes on in 2005 and in 1997 council decided, eight-seven, that they supported all of it going ahead, why, in a report dated 1998, would you say that, for the purposes of economic evaluation, it is now necessary to develop and cost some credible alternatives in some detail; the EIS does not do this?

Mayor Schreiber—We had to answer the EIS, and we were concerned about different issues coming out of it and the cost of the replacement reactor. But we have still always said that it has been of benefit to the community and to the whole economy of the shire. I could not tell you the amount of money that is spent from it in the shire per year, but it is substantial. There are about 700 employees of ANSTO and it is something that is important to an area like ours and to the councils around it. Our area has 206,000 people. In that Lucas Heights area, there are 30,000 people, in and around Menai and Alford's Point.

Mrs CROSIO—All of this was in evidence for your shire prior to 1997. Every time we picked up a paper, Sutherland Shire was voicing their concerns and anger about what was happening.

Mayor Schreiber—During that period of time, council was probably in a different political stance; a different political party was in power at that stage.

Mrs CROSIO—I hope the council did not change its mind because politics changed at a federal or local level?

Mayor Schreiber—No, I do not think so.

Mrs CROSIO—You would only change your mind based on facts, surely?

Mayor Schreiber—We did change our mind on facts, and the facts were that we got a safer reactor put to us. We have been told that it is a very safe reactor and that the ageing one which is there has to be replaced by about the year 2005. The one that we are getting will supposedly be safe. Again, I come back to what we said: we have always had a concern about the spent fuel and what is going to be done with it on-site.

Mrs CROSIO—Have you ever felt, as a council or as a mayor, representing the shire, since you changed your mind in supporting the application in 1997, that when you have had any problems with, for example, the spent fuel and what is happening to waste, that ANSTO have not been freely available with information, help and assistance to you?

Mayor Schreiber—No, I have not had any problems with getting assistance from ANSTO in that way. Maybe we have had difficulty at times with communication on other issues, but never with what is going on in a major way. If, at any time, I want to speak to the director out there, it is only a matter of making a courtesy phone call and they will always speak to me.

Mrs CROSIO—Is the response the same to all of your councillors? You said that you have visited the site; have the others visited the site?

Mayor Schreiber—The opportunity has been there for each and every one of them to visit the site.

Mrs CROSIO—They have been able to assess the situation for themselves?

Mayor Schreiber—Yes.

CHAIR—You outlined for us some anxiety about dealing with the spent fuel and not having Lucas Heights as a long-term repository for spent fuel. I notice that the Research Reactor Review in 1993 laid out some conditions for the replacement reactor. One of those was that a high-level waste site had been firmly identified and that work should be started on proving its suitability. I understand that that has occurred. Does that address your concerns about the long-term situation in relation to spent fuel?

Mayor Schreiber—As long as that site is not at Lucas Heights.

CHAIR—I understand that there has been a commitment to it.

Mayor Schreiber—There may have been a commitment to it, but we still have our concern about Lucas Heights being turned into a long-term repository.

CHAIR—There has been a site identified for that long-term repository.

Mayor Schreiber—Yes, but I still believe that we have got to get it off the site before 10 years. Five years, I believe, is a safe period of time for it to be on-site at Lucas Heights.

Mr FORREST—Why have you formed that view?

Mayor Schreiber—We have a scientific division within the council, under Dr Gary Smith. The information coming back from him to myself and other councillors is that we would like to see it off the site before the end of that 10-year period, and five years, we believe, would be a safe period of time. If it were any longer than that, you would then be looking at it being turned into a long-term storage facility.

CHAIR—With the site now having been identified to achieve that, does that clarify—

Mayor Schreiber—Maybe they can move it within five years.

CHAIR—that issue to the satisfaction of the council?

Mayor Schreiber—It would clarify it. If it could be moved within that five-year period, we would support that.

Mr FORREST—From your submission, that is the only issue; if that were removed, there would be support from the Sutherland Shire for the project. Is that right?

Mayor Schreiber—I believe you would find there would still be support within the council if that fuel issue was answered and it was being moved. Again, I could not tell you what the vote would be, but I believe it would be supported if we were getting rid of that spent fuel within that period of time.

Mrs CROSIO—Eight-seven is not a very comfortable vote, is it?

Mayor Schreiber—You would be right.

Mrs CROSIO—You have never had to use your casting vote in that respect?

Mayor Schreiber—Not on this issue.

Mr FORREST—It is called democracy.

Mrs CROSIO—You only need the one vote. As the chair suggested, the government is looking into other sites as waste repositories. How do you feel as a council when the chief advice going to the government on nuclear waste is from ANSTO, when ANSTO is storing nuclear waste on their site?

Mayor Schreiber—I believe ANSTO knows the stance of the council and the way we feel about a long-term repository. I would sincerely hope that they are putting across the message of our concerns about it being a long-term storage and that another could be identified as soon as possible. As Madam Chair has said, one has been identified. We could then get rid of the spent fuel which is at Lucas Heights.

Mrs CROSIO—I am not quite as optimistic as Madam Chair—fairies at the bottom of the garden. It has only been identified as a particular address at this stage.

Mayor Schreiber—We have to take that as it is.

CHAIR—We have moved a long way from having no site identified to actually having one identified in February 1998 and that work is proceeding to try to deal with this particular issue. In addition to that, there have been arrangements made for the transportation of rods to the country of origin, to the United States, to the United Kingdom and to France.

Mr RIPOLL—You have consistently said you have concerns about it being used as a long-term repository, about waste and about storage of cells, and so forth. Will the council be monitoring soils or air? Will there be any money expended by the council to monitor these things?

Mayor Schreiber—Council gets all the information. That will come back from ANSTO and from ARPANSA when it is fully operational. We will be getting all possible information from there.

Mr RIPOLL—So you will not be doing any independent—

Mayor Schreiber—We have our own scientific people who, if need be, can do their own testing.

Mr RIPOLL—Are you proposing to do that in the future? Do you have plans to monitor?

Mayor Schreiber—No, we have not put money into the budget at this stage. The replacement reactor is not due until the year 2005 and we will wait and see what happens between now and then.

[4.22 p.m.]

CHIN, Mr Philip Andrew, Environmental Management Planner, Liverpool City Council

CHAIR—Welcome. The committee has received a submission from the Liverpool City Council dated 7 April 1999. Do you wish to propose any amendments?

Mr Chin—No.

CHAIR—It is proposed that the submission and the Australian Nuclear Science and Technology Organisation response be received, taken as read and incorporated in the transcript of evidence. Do members have any objections? There being no objection, it is so ordered.

The document read as follows—

CHAIR—I invite you to make a short statement in support of your submission before we proceed to questions.

Mr Chin—Thank you. I would like to read the additional material that has been handed out to you. It expands on our written submission which was provided to you earlier. The Liverpool community and council is totally opposed to having a nuclear research reactor at Lucas Heights. The proposal and EIS is totally inadequate, is entirely obscure and confusing. ANSTO's response to council's submission to this committee is repetitious of the EIS and offers no further clarification or insight, nor directly answers the points and concerns raised in our submission.

We have no greater confidence or satisfaction on risk and danger posed to the public, nor on waste management and repository and on the seismic stability with contingency planning. ANSTO has not pursued alternatives to the reactor. The justification of benefits from the reactor such as radiopharmaceutical science and research, industry, national interest can be satisfied, we believe, by simpler radiochemical facilities without a reactor. For example, iodine 131, molybdenum 99, technetium 99 generator, the bulk of the radiopharmaceuticals doses produced by ANSTO can be directly imported.

Rather than meeting the challenge posed by the reactor research review in 1993 and granted the grace of period of five years and responding by being innovative and creative in pursuing new fields in nuclear sciences and medicine, ANSTO has chosen instead to create a market, a reason for being, for its reactor products and reactor-dependent projects. The proposal takes an issue-specific approach, taken in isolation from one another. This approach is seriously deficient in identifying and addressing flow-on consequences. Rather, we believe a cross-functional, multimedia approach should have been adopted for this development.

The proposal in terms of best management practices is also seriously lacking in other areas such as providing design details. Without design details, there can be no true estimate of work schedules and project costs. Similar projects with design details developed later have had serious cost over-runs. Without design details, there can be no surety and confidence in the proposal's risk assessment, specifically actual practical aspects of man on the ground responses. The risk assessment undertaken is self-servicing in its choice of likeliest accident and in its way of working and developing risk probability statistics. In summary, the replacement reactor should not go ahead and the current reactor should be immediately decommissioned.

CHAIR—Thank you. Are there any questions?

Mr LINDSAY—Why are there no councillors from your council here today?

Mr Chin—I am afraid we were notified too late for our councillors to arrange to appear before the committee.

Mr LINDSAY—Have you been to Lucas Heights?

Mr Chin—Yes, I have been to Lucas Heights.

Mr LINDSAY—Did you feel safe at the site?

Mr Chin—Yes, I did feel safe at the site.

Mr LINDSAY—In the written submission that was provided to the committee, your council said—you alluded to it also in your statement today—that:

The current or proposed reactor is not needed for the production of the identified medical isotopes as these can be produced by cheaper and 'cleaner' alternative means.

We have alternate evidence which says that, while each of the other technologies can produce some isotopes, they cannot produce a range of isotopes that can be produced by a reactor. How do you respond to that?

Mr Chin—That begs the question of being innovative and creative. Professor Garnett referred to current medical research being undertaken overseas—30 new isotopes are being generated. Some of those will not be of the short-life type of isotopes that will not allow them to be imported. There will be some that can be directly imported and therefore can be used in substitution for isotopes that are currently being used that are being generated by a reactor here in Australia.

Mr LINDSAY—In relation to the seismic stability which you have given written evidence on, are you aware that the evidence to the committee is that the seismic hazard is less than one in a million chance per year?

Mr Chin—I am not aware of what particular evidence you have cited. Our judgment is from the EIS proposal, the evaluation done on the seismic in general geology undertaken, from memory, by a geotechnical engineering company. We do not have great confidence in what we call an opinion. We believe a more suitable group should have been consulted or referred to, a professional organisation such as the Australian Geological Survey Organisation.

Mr LINDSAY—The next point you made was that a nuclear accident would cause widespread public exposure, but that was not what was in the EIS. Is that right? The EIS looked at what might happen if there was a critical accident and basically said that anything that might happen would be contained within the site. How do you reconcile what was in the EIS with your statement here?

Mr Chin—Could you identify that point?

Mr LINDSAY—It is page 2, at (g):

A nuclear accident would cause widespread public exposure to radioactivity.

Mr Chin—I guess what it comes back to is the difference in selection of reference accidents. ANSTO has chosen a reference accident that it considers to be the likeliest. We do not believe that is the appropriate reference accident to use. We believe in a worst case scenario; that it should be absolute disaster, complete failure, rather than partial failure.

Mr LINDSAY—All right. In the opening evidence you gave today, you indicated that the Liverpool City Council was totally opposed and you wanted to see the current reactor decommissioned immediately.

Mr Chin—That is correct.

Mr LINDSAY—Yet the closing paragraph of your written evidence says:

Furthermore, Liverpool City Council opposes increased nuclear research.

That seems to indicate that it was not opposed to the existing research and if the same level of research went on it would not be opposed, and if a new replacement reactor went on at the same level of research the Liverpool City Council would not be opposed. How do you reconcile the opening statement you made with your written evidence, which says you are opposed only to increased nuclear research?

Mr Chin—We reconcile that on the basis that in this evidence provided to you we believe that most of the so-called needs of having an Australian based reactor can be substituted by importing radioisotopes from overseas or carrying out the physical materials kinds of studies overseas with an overseas visiting program.

Mrs CROSIO—In the submission you have just read out supplementary to your written one, point 2 is:

The proposal in the EIS is totally inadequate and is entirely obscure and confusing.

Just for the record, do you realise that PPK are the same people who prepared the Badgerys Creek EIS? That is only me having a little dig.

On the last page of your submission, the second paragraph, you say:

Without design detail there can be no true estimate of work schedules and project costs. Similar projects where design details were developed later have had serious cost overruns.

You heard some of the questioning that went on before to ANSTO and to the professor and staff. You were sitting in the gallery at that time.

Mr Chin—That is correct.

Mrs CROSIO—How do you feel about the answers given there on costings when they were saying there will be no more money, that is going to be the cost and that is how the tender has got to come out? What is your surmise?

Mr Chin—I guess my surmise, being put on the spot, is that if the upper limit is fixed at \$310 million then there is a potential that parts of the project may be chopped or slashed back so that it meets the budget. Consequently, the proposal as such may not deliver on its design specifications and may actually not deliver on the so-called current justifications for the reactor in terms of delivering on this, this and this. That list for delivery of services could be slashed back.

Mrs CROSIO—So you feel that if there are 20 things they have got to deliver on they may only deliver on 12 instead of the 20.

Mr Chin—For that fixed budget of \$310 million.

Mrs CROSIO—In your submission that you supplied to us on page 3 at (i) we come back to the EIS. You said:

The supplement is deficient in not identifying risk contours, nor identifying numbers of population at risk in each scenario.

Has the EIS not taken into account the surrounding population of Liverpool city? What do you mean when you define identifying the risk contours?

Mr Chin—I believe the risk contours are necessary for showing clarity and visual understanding to the community about the risks and the dangers posed from the reference accident and the other scenarios and risk aspects identified in the EIS.

Mrs CROSIO—The mayor of Sutherland Shire has said that they have had free consultations, their answers and everything like that. Have you had access, as Liverpool City Council or the Liverpool community, to information and knowledge and inspection of the area? I know you yourself have been there, but what about the rest of your council?

Mr Chin—I cannot answer for the council. I am a recent member of council, so I really cannot answer—

Mrs CROSIO—And is the council's disagreement with the whole proposal a unanimous decision of the elected representatives, or, as indicated for Sutherland Shire, was it a vote of 8 to 7?

Mr Chin—It was a council resolution that has been developed that council was opposed to the Lucas Heights reactor. I should add that submissions have been made, at least to my knowledge, back in early 1998 to the Senate economics committee. So we have a history of being opposed to the reactor.

Mr FORREST—Could I ask Mr Chin what his qualifications are? I will explain why I ask this question. I am a member of this committee and I am going to give this inquiry my best attention. I have been through a stack of information a foot high, and I read so much information that is based on the head, the facts, and tests the veracity of the facts. Some is based on the heart and some is based on parts of our anatomy much lower than that. What I see happening here is intense suspicion about a process. I asked someone this afternoon how big they thought this reactor was. How big do you think the reactor is? Can you describe the size of it?

Mr Chin—I have been fortunate enough to have visited the reactor, so I know it is—

Mr FORREST—How big is the actual reactor itself?

Mr Chin—The actual fuel cell component?

Mr FORREST—Yes.

Mr Chin—I believe that the fuel size pool reactor is probably 10 by 15 metres or something like that.

Mr FORREST—Would it surprise you for me to tell you that it is less than the size of your washing machine or refrigerator? It is not anything like the reactor that is located at Long Island nuclear power station in New York, the one that is mentioned in your submission. Unless you are a highly qualified nuclear scientist of something, I have to think about dismissing your evidence as being emotive. It is not based on fact. It describes incidents about air emissions. In all of the stuff I have read, and I have put a lot of time into this over the last two days, nobody has described an incident that has any resemblance to fact. The reality is that a nuclear reactor of the type we are considering today is not a power station, it is a small research reactor. The standards are world best, the control and the management. Why is your council—

Mr Chin—They have said that probably also for the Long Island power reactor, but that has never been utilised. In fact, that was sold to the New York government for \$1 and has never been turned on.

Mr FORREST—Right. So why are you quoting it in your evidence?

Mr Chin—That just goes to show that the best practices et cetera have failed in one area, which was the so-called disaster plan. I would presume that during construction or prior to approval it went through that kind of assessment, they said that disaster plan would be sufficient and it turned out that it was not sufficient. They were not given a licence. It has never been turned on and it has subsequently been sold for \$1.

Mr FORREST—But it is 10 times the size of the reactor that is proposed here in this replacement reactor. It doesn't bear any sort of technical connection to this reactor. Why is it referred to?

Mr Chin—Because it is an example of what potentially could happen. It is a fact that the Long Island power reactor has not been turned on.

Mr FORREST—I submit to you that it is a long bow. I am struggling to give your evidence any credence at all. That is the position I am trying to assess. Do I give an enormous amount of weight to your submission, or do I dismiss it? That is what I struggling with. Unless you are a highly qualified person, this is emotive; it is not based on fact that all. What technical qualification do you support in this submission to me that could convince me to the contrary?

Mrs CROSIO—Madam Chair, that is unfair. I would ask the previous mayor who came in representing the Sutherland Shire what expertise he had. He was representing the wishes of his council. I understand Mr Philip Chin is representing the wishes of his council, and, as

representative, he is carrying out a message from the council, who obviously were not informed early enough to send representatives. He is a member of staff.

CHAIR—It is quite within order for the member to ask questions about the qualifications of the person who prepared this particular report, and it is not out of order.

Mrs CROSIO—Every person who comes before us as a witness—and let this be on the record—I will demand their qualifications when they take the oath.

CHAIR—You are quite within your rights to do that.

Mr Chin—My qualifications are that I hold a masters degree in chemical oceanography. I obtained that from the Florida State University. I have had experience working in radiochemistry facilities when carrying out postgraduate work for that masters degree and also for a doctoral degree which I do not finish. I have experience in both the design and construction projects.

Mr FORREST—Anything to do with nuclear power stations or nuclear reactors?

Mr Chin—No.

CHAIR—Are there are any other questions?

Senator CALVERT—No. I missed the start of the evidence, so I do not think it is fair for me to come in at this stage.

[4.42 p.m.]

PRICEMAN, Mr Michael, Convenor, Nuclear Study Group, Sutherland Shire Environment Centre

CHAIR—On behalf of the committee I welcome you. The committee has received a submission from the Sutherland Shire Environment Centre dated 7 April 1999. Do you wish to propose any amendment?

Mr Priceman—No.

CHAIR—It is proposed that the submission be received, taken as read and incorporated in the transcript of evidence. Do members have any objections? There being no objection, it is so ordered.

The documents read as follows—

CHAIR—I now invite you to make a short statement in support of your submission before we proceed to questions.

Mr Priceman—First of all, may I ask whether I am covered by parliamentary privilege here?

Mr FORREST—Yes.

Mr Priceman—The reason for asking that is that I would like to correct Mayor Schreiber's memory. In February 1997 when Minister McGauran actually suggested that there be a reprocessing plant and a new reactor at Lucas Heights, the present council was in place, having changed hands the previous year. The mayor set up a committee which is mentioned in my submission. It was called the ANSTO Task Force, which was opposed to both proposals. Two of the members were also councillors, who are here this afternoon with the mayor.

They opposed the proposals until September. In fact, the mayor was on television the week before the proposal was actually made public, on the day that the Holsworthy airport EIS was turned down. It was only two days after that announcement that he decided to change his mind, taking along with him the rest of the conservative members of the council. That is for the record.

Now to my opening statement. I have had a look through my submission and I am reminded that several of the areas covered relate to the deficiencies of the process so far as it has gone, and to some of the more obvious questions which must be asked about the estimated costs of the project. ANSTO's response to the public submission has provided answers which do not enhance its case but give strength to our criticisms.

As examples, sections 1.1 and 1.2 refer to stringent assessment process of the Environment Protection (Impact of Proposals) Act 1974. This act has been described by Minister Hill as being 20 years out of date and that is why it is being revised. Whether the revision has improved it from an environmental or community point of view remains to be seen, but at present it is the act behind which Environment Australia and ANSTO as proponent duck for cover.

In my submission I have referred to a radio interview with Minister Minchin on 3 February when he assured the interviewer that the reactor 'would be built at Lucas Heights' without making any reference to the ongoing EIS. ANSTO's submission to this committee, also dated February, is couched in terms so positive that it must have known the results of the EIS at that time.

A small point is that ANSTO mentions that HIFAR is one of about 265 research reactors worldwide which, whilst it is correct, it is also misleading. Research reactors started in the early 1950s and the number peaked at about 600 worldwide. Now there are less than half that number and this shows to me that their use and usefulness is in decline. Also, most of the countries that have used them have had to appeal to the United States to take back their spent fuel because they do not know how to deal with it. This includes Australia—the clever country.

The reasons for the decline in the use of research reactors should be examined by this committee and perhaps Professor Barry Allen of St George Hospital could provide an opinion. The decommissioning of HIFAR has been glossed over with mention of returning the site to a greenfield condition after 30 years. In 1992 the director of external affairs, Mr John Rolland, described the three normal stages as being:

Removal of spent fuel and other removable radioactive equipment, followed by a period of 30-50 years of care and maintenance when fixed equipment outside the reactor's biological shield could be dismantled and removed. Then, following another period of 50 years the shield and reactor internals could be removed.

That is a far cry from what they said today. Another option not mentioned in ANSTO's responses is that of encasing the reactor internals in concrete and leaving it permanently on site. This is a prize that will be treasured by future residents of the area.

Another mystery has been cleared up by ANSTO, that of the collocation store for the long lived intermediate level waste such as that to be returned from overseas spent fuel reprocessing. For those of you who have been following the 20-year period of looking for a low-level waste repository, you will notice that over the last four or five years a collocation store has been mentioned as a kind of whispered afterthought—something so scientifically technical in importance that it can only be discussed after the national dump site for low-level waste has actually been chosen.

Now the secret is out. It will be a relatively low-cost, secure industrial site with a weatherproof building to house the waste casks. In fact, it will be a shed, presumably a brick shed with a lock on the door. This has not been costed either. At least it will be weatherproof, unlike the dry storage area for the spent fuel at Lucas Heights where rainwater corroded some spent fuel elements for several years with no discouragement by ANSTO management, because they had not noticed it. Here the committee might wish to compare that incident with ANSTO's quotation from the safety review committee's glowing 1991 report on the excellence of its waste management practices.

Finally, I will make some comments on community consultation and liability. Again, ANSTO hides behind the phrase 'adhered to the requirements of the EPIP act 1974'. Twyford Consulting was called in towards the end of the EIS process after strong criticism of PPK by independent auditors SMEC over its community consultation strategy during the Holsworthy airport EIS. Twyford's report was very instructive to someone like me who knows very little of the community consultation industry. I learnt that:

Community consultation programmes are normally designed to suit the level of community input of public participation that is required by the overall project. This level can vary considerably from project to project. Some projects seek a high level of participative decision making from the community. Others seek merely to increase the community's awareness of a project and allow them the opportunity for comment.

Community consultation programmes within administrative approvals such as Environmental Impact Assessments typically fall towards the lower end of the consultation continuum.

They also said, to show transparency, stakeholders are informed as to why they are being asked to participate and the level of participation or influence they can expect in any of the

decisions relating to the project. This never occurred. I will pass three pages of that report to the secretariat and recommend that you read the marked sections.

Arnstein's eight rungs on the ladder of citizen participation are particularly interesting. Section 11, page 18 of ANSTO's response deals unrealistically with liability. It starts off with an inaccurate, unscientific and patronising phrase:

It is claimed that residents are unable to obtain commercial insurance against health, property and environmental damage from a serious accident at Lucas Heights.

This was not a claim but a statement of fact. If ANSTO cannot differentiate between a claim and a fact, then perhaps it should be reconsidered as the chief adviser to the government on matters of national interest. Residents cannot obtain commercial insurance covering such an event.

Its last paragraph on that section descends down a rabbit hole into a fantasy world, one in which the federal government accepts—without a lengthy court battle—claims from a community for damages caused by one of its agents. We are all well aware that even getting an apology from government is almost impossible. The reason: because it might lead to claims for damages? No. Residents are not able to get insurance cover from commercial insurers, in spite of the claims of safety made by Professor Garnett. I ask that the committee take this up with the finance minister and ask him to sign a deed of indemnity with our local community which clearly removes the reference to winning a case against ANSTO or the Commonwealth government under common law before reparations are made. When we see that, we will believe it.

Our call for an independent inquiry still stands. ANSTO refers to eight reviews on its activities. Only one could be considered as independent—the research reactor review of 1993. As we all recall, it decided that the case for a new reactor was not proven, especially because it was impossible to carry out a cost benefit analysis. The figures did not add up then, nor do they now. I will stop there, although there are piles of stuff in their submission that could be argued.

CHAIR—Mr Priceman, do you consider this to be an independent public review?

Mr Priceman—No, because it is parliamentary. It is the government's review.

CHAIR—But it is across parties, Mr Priceman.

Mr Priceman—It is across party lines, but the problem I find here is that it is a government project. It is run by ANSTO, which is a government instrumentality. They carry out the environmental impact study on themselves. At the same time, they are the chief adviser on all nuclear matters to all government departments.

CHAIR—We are talking specifically about this process now. We are a group of people across the parties within the parliament. This is not just a government process. I am asking you whether you think this is an independent public process.

Mr Priceman—It is probably the most independent, if I can use that word. It is probably the best process that I have come across since the process started—since the draft EIS guidelines were put out.

CHAIR—Thank you. Are there any other questions from other members of the committee?

Mrs CROSIO—I have a few. On page 3 of your report, Mr Priceman, under 3.4 it states:

So it was left to the community groups to arrange, at their own cost, public meetings, sending invitations to the above interested parties and leaving empty chairs pointing out their non-arrival.

I hope that was not referring to anyone from ANSTO. Did they not turn up to your public meetings or what?

Mr Priceman—ANSTO did not turn up. The local member for Hughes did not turn up. Nobody from the council turned up that was capable of putting a case in favour of the new reactor. They all declined.

Mrs CROSIO—I assume you were here when ANSTO were first questioned over the public meetings that they held at which no-one turned up. What happened there?

Mr Priceman—They were too little and too late. They were put forward as meetings when Twyford's came in, and that was right towards the end. The thing had been going on for nearly a year. The whole idea of public meetings is that they should be at the start of the process. ANSTO could then have explained their side and what the project was all about. People who had an opposition point of view could put their point. You have a crowd of people that asks questions, and everybody can hear the answers. That is our idea of a public process. We complained about this for several months. In the end, whilst the council takes some of the credit for bringing in an independent auditor on PPK's consultation work, I spoke to Vivian Twyford and said, 'You have come in too late.' I think people had lost faith in the process by that time.

Mrs CROSIO—On page 6 of the report under 7.6 you refer a lot to the submission by Professor John Stocker. Could you, in your opinion, say why you believe he was not called to give any opinion?

Mr Priceman—That is very difficult because he has an entirely different position now. He might not have wanted to give an opinion. As to why he was not asked, I can only assume that they were probably frightened. The government was probably frightened that he would give the same opinion as he did when he was in charge of the CSIRO, because nothing had changed.

Mrs CROSIO—You also mention in your submission regarding spent fuel:

ANSTO have informed us that, as with a number of other reports regarding the EIS and some of the criticism of it, in respect of spent fuel arising after the life of HIFAR, the government has already allocated the sum of \$88 million, which is sufficient to cover the estimated cost for overseas shipment and reprocessing of all the spent fuel.

Do you believe that is sufficient?

Mr Priceman—I have no idea whether it is sufficient or not. Around about \$88 to \$90 million falls in line with what it has cost them so far for the one shipment that they have made to Dounreay in Scotland. If you take those 114 spent fuel rods—and I hope my mathematics are right here—it would cost them about \$6 million. If you multiply that by 13, you would have 1,600 spent fuel rods. I do not know what it is costing us to send them back to America, because half the spent fuel rods that were on site belong to the Americans. They are going to take them back and not reprocess them but store them there. We will get nothing back. But I have no idea what the costs are there.

Mrs CROSIO—I do not think anybody else does either.

Mr Priceman—Well, commercial in confidence.

Mr LINDSAY—Mr Priceman, in your evidence that you gave today you referred to the inability to obtain commercial insurance, and I understand that. But I think you are aware of the ANSTO evidence which said that the government indemnity works just like commercial insurance. In fact, it gives perhaps a better coverage than under terms of commercial insurance. Do you dispute that?

Mr Priceman—I disagree with it totally. The government deed of indemnity that they have signed is with ANSTO covering ANSTO staff. It is only with this document that they have ever mentioned that it is better than commercial insurance. With commercial insurance, you fill out a claim form and they pay you for the damage. Before this document came out, they said that we would have to win a case in court under common law. My understanding of that is that this would cost many thousands of dollars in a High Court case. Say a local community wanted to sue the government. The government would not take us to one side, pat us on the back and say that they were going to cover us.

Mr LINDSAY—I understand your point. I will undertake to further investigate that with other witnesses. In your submission you talk about synroc and say:

After twenty years and \$40 million invested where it is now?

That is really saying it has not gone anywhere. Are you aware of the tender that was secured with the United States? Are you satisfied that the technology is valuable and is being used?

Mr Priceman—I hope it is going to be valuable. If half their claims are right—that it is a thousand times better than anything else on the market—I hope that at some stage it may be used. It has taken 20 years for it to be trialled by the Americans. This is a trial and I understand from the *Hansard* of a Senate economics committee hearing, probably back in February, that there was some doubt as to whether we were going to get any economic benefit from it. I think the agreement with the Americans had run out and nobody knew where it was.

Mr LINDSAY—The last point in your submission was a question: will the committee's report be available to the public? The answer is yes.

Mr Priceman—That is good—except for the bits that you cannot get access to, which are commercial in confidence. I cannot understand that part. How can an organisation which is a government instrumentality and works under a minister tell a committee like this that you are not allowed to see a contract which is going to last for 40 years? I am sure you will go further on that one.

Mrs CROSIO—Yes.

Senator CALVERT—At the beginning of your evidence you were quite critical of the mayor. I notice in your submission you comment that the mayor was stating his opposition in a television interview a week before the announcement but that later he and others changed sides. You say:

Pressure from Canberra had enabled them to see the light!

Have you any evidence of that?

Mr Priceman—No, none whatsoever. It is pure coincidence that the week before the announcement was made all the Liberal members of parliament—state and federal—and councillors were opposed to it—I have it all on record in newspaper clippings over several months—and two days later they were all in favour of it—a blinding flash of light.

Senator CALVERT—Did anything happen in those two days that may have changed their minds? Did they visit the place or did they have a meeting? Are you aware of anything?

Mr Priceman—No, and it is pure coincidence.

CHAIR—Thank you very much.

[5.04 p.m.]

PARSONS, Mr Norman Anthony (Private capacity)

CHAIR—On behalf of the committee, I welcome you. The committee has received a submission from Mr J.R. Fredsall and Mr N.A. Parsons dated 7 April 1999. Do you wish to propose any amendment?

Mr Parsons—Yes, I would like to point out some typos.

CHAIR—You can refer any typos to the secretary later. Are there any actual amendments?

Mr Parsons—Not really. It changes the sense slightly but that is all.

CHAIR—Thank you. It is proposed that the submission and the Australian Nuclear Science and Technology Organisation response be received, taken as read and incorporated in the transcript of evidence. Do members have any objections? There being no objection, it is so ordered.

The documents read as follows—

CHAIR—I invite you to make a short statement in support of your submission before we proceed to questions.

Mr Parsons—May I say firstly that Mr Fredsall tenders his apologies. He recently had a heart bypass operation and was not well enough for the journey. We would have preferred to have made a joint presentation. Be that as it may, our position in general has not changed from our share in the ANA submission for 1993. In other words, we support the replacement of HIFAR by a more suitable reactor and the sooner the better, although I think that Mr Fredsall feels the time may well have passed and that the caravan of science may be moving on. I do not share his view.

Our submission really arose from our disappointment with the quality of the ANSTO evidence on cost benefit. It addresses well the costs of the reactor but we feel it does not properly address the question of the ongoing operating costs. While the case is supported with a long list of the undoubted potential benefits, the case is rather short on numbers. We have borne in mind that ANSTO—and before it the AAEC—has been in the business of neutron irradiation and beam science for some 40 years and has had quite an effective suite of beam instruments for the last 10 years. We feel that in fact it should have been able to present in its submission a number of outstanding scientific benefits by now. We did not find any.

We feel it does not bring to book the ongoing costs of using the reactor facilities nor does it quantify the demand for them. Because the demand is not quantified, ANSTO has really not been able to show that the size and complexity of the reactor and beam laboratories has been optimised. For the same reason it is not clear that enough of the potential benefits will be realised to justify the investment, and we recommend that the committee ask ANSTO to provide this missing evidence.

In paragraph 3 we point out that all but one of the ANSTO objectives are readily achievable at less cost than the proposal. The key objective of ANSTO is to provide a world-class neutron beam facility to be a regional centre of excellence. In other words, it has the admirable intent of moving from a modest beam facility to one halfway towards the top world standard, which I think is the ILL beam facility in France. One of the centres of excellence in this field is the Institut Max von Laue—Paul Langevin, which we call the ILL, at Grenoble. The director's report of 1997 gives the ILL recipe for success—and I have a copy here if you would like it tabled—in that success depends on a high-flux reactor within integrated hot and cold sources, and that is the proposal that I think has been well put to you here.

Also the ILL plays host to scientific researchers from a truly international community. Its director reports about 1,350 participators in the 1997 series of experiments. Its instruments suite has put the ILL at the forefront of neutron science. Thirdly, it maintains its position thanks to continued efforts to develop the instrumentation. To draw the sort of scale of this, HIFAR has about eight instruments; the ILL has something like 25 ILL instruments, about another 10 funded by cooperative agreements and about 10 instruments under development. The one that ANSTO is putting to you now falls halfway between the two. It has about 17 beam instruments proposed.

In paragraph 3 of our submission we try to bring to book all ANSTO costs that will accrue to the scientific and national interest. You have to appreciate that a reactor, by itself, is of no value at all; it just reacts and produces neutrons. It requires rigs and beam instruments to get going. We have included in our costs a guess—an intelligent one, we hope—about the ongoing costs of the development of the instruments. You will note that, after deducting commercial revenues, the present value discounted, total expense comes to about \$670 million or 2½ times the original cost.

This is not a matter that surprises anyone. The ongoing costs over 40 years are bound to be much larger than the original cost of the reactor, but I think it is prudent to identify these at the beginning of the operation. If you do not discount the costs, the cost rises to about \$1,200 million or four times the initial cost. We are saying that, using ANSTO's costs for the reactor and the reactor operating costs and putting in our own costs in appendix A for the things we feel they have left out, it comes to an operating cost of about \$20 million a year. This should not damage the project. ANSTO may well choose to divert \$10 million of its funds from other site areas, because its annual budget—at least in my time, 10 years ago—was about \$50 million. So it could divert some of that to the reactor, thinking that this is a more important project than some of the rest of its work. But we think it is a number that should be identified.

In paragraphs 5, 6 and 7 of our paper, we examine the increased capacity of the NRR compared to HIFAR and show that the project provides for a six-fold increase in beam experiments and a four-fold increase in irradiations. ANSTO has given gross figures showing an increase in the future value for the national and regional medical isotope demand. On the other hand, there are no figures for their market share and how much would accrue to ANSTO. If you recall, their 1993 review said that the reactor was never going to pay its own way, that the government must decide whether the value that accrues to the national and scientific benefit is worth it. We are trying to quantify that for you.

It may be teaching a snake to eat eggs, but we suggest a number of questions to ask ANSTO about beams which aim to reveal how many scientists will actually use the facility. You see, it is fine to identify the potential, but you have got to identify customers as well. There are some 52 experimenters directly employed by the ILL with about 300 extra staff as well. They have about 1,300 visiting scientists each year, all contributing to a program of 760 experiments. This reactor is not in the class of the ILL, but it is halfway towards it, so you would expect to see a substantial number of scientists identified as being potential users of the instruments. You would expect to see perhaps 20 in-house experimenters. Our costing has only allowed for 15. We think that for such a major project, like any other major project, ANSTO should be asked to produce the business plan for it. In other words, what is going to be its market share of isotopes? How many scientists are going to be able to use it? How are they going to attract these scientists and how are they going to fund them?

In support of our numbers, we did look at the American ANS which was an advanced neutron source proposed for America. This has actually been thrown out. The DOE was the applicant. They reckoned the total cost over 40 years would be three times the original reactor cost which is somewhat in line with our numbers and gives us confidence. Although one member of the Science House Committee on Energy—that is in America—estimated the total cost would be much higher than that at four and a half times the original cost. We want

to say that it is not that we do not support the reactor, but we feel that the financial cost in running it and the benefits that come from running it should perhaps be better quantified than they are.

Mrs CROSIO—At the very end, you said you are supporting it, but you question the costing. Have you—as a previous employee of ANSTO, I think you mentioned some 10 years ago—been provided with the opportunity of putting these facts and figures, as you have researched them, to Professor Garnett or any of the people involved?

Mr Parsons—No, I have not; though I know they have seen them.

Mrs CROSIO—You have?

Mr Parsons—We did not send them to Professor Garnett; but I know a copy of this has been given to ANSTO.

Mrs CROSIO—Yes, there was a comment made. You have not actually had any correspondence backwards and forwards—

Mr Parsons—No, we have not.

Mrs CROSIO—where you could make a query on a one to one basis, saying, ‘We believe’ or ‘Why haven’t you been able to do this’?

Mr Parsons—No, we have not, although I think the man who is even more qualified to talk about the ILL and the cost of running a beam facility is Professor White, who will be following me. He was, as you probably know, director of the ILL for some years.

CHAIR—Mr Parsons, on page 14 of your submission at appendix B, you say:

This appendix explores the optimisation of HIFAR for useful service for the next decade or so. This is not to say that HIFAR should not be replaced if justified, for it was under this assumption we were both contributors to the ANA submission to the RRR . . . that urged the replacement of HIFAR as soon as possible.

Are you saying to us that, at the moment, you do not see the justification for the replacement?

Mr Parsons—Yes, we do. We totally agree. Although I would not call the HIFAR technically obsolete; it is functionally obsolete. It was designed for materials testing, and that is no longer done.

CHAIR—And that is what ANSTO has said.

Mr Parsons—I quite agree with that. It should be replaced; in fact it should have been replaced when ANSTO first started and materials testing was forbidden under the act.

Mr FORREST—What is your opinion of other methods that have been suggested—for example, cyclotron and other means of creating neutrons? We have an existing reactor that needs replacing. Do you agree with that?

Mr Parsons—Yes.

Mr FORREST—You would be in a position to advise us with what, in terms of neutrons. How do you comment on suggestions that other neutron generating devices could be used instead of this proposal?

Mr Parsons—They can be used, but I do not think they are the preferred solution at all. All the ones I have seen, like cyclotrons, cannot replace reactor isotopes and, for some reason, the medical profession feel that in many cases these are their preferred isotopes, that others will not substitute. Spallation sources have been offered and some spallation sources are being researched now but, until now, they have been expensive, unreliable and not in the same field as the sorts of reactors being sought today. So my view is that, if you are going to be in this business, you start with a reactor. If you can then afford it and you want to move on—and perhaps in 20 years time people will have moved on—you go to spallation sources.

Mr FORREST—Could I go to the cost estimate in Mr Parsons's submission. It gives a total of \$670 million. That includes an assessment of the present value of all the things that you have been talking to us about now, doesn't it? Do you fundamentally agree with this first up figure we are working on?

Mr Parsons—It is \$300 million first up for the reactor and its initial set of instruments, yes. I do not doubt it.

Mr LINDSAY—In relation to the other uses of a reactor, is it possible under cyclotron or spallation technology to do what is currently done at Lucas Heights in terms of irradiating silicon?

Mr Parsons—No.

Mr LINDSAY—You have to have a reactor.

Senator CALVERT—In your submission, you said that HIFAR had been under utilised. In your experience, how could it have been better utilised? And, if that is the case, could the replacement reactor be better utilised? We were talking about an Austin A40 and you may have heard the comparisons.

Mr Parsons—It is virtually a handmade Austin A40 which costs \$4 million. It was a class of reactor that has proved to be very successful. There were about six built, which is quite a lot for research reactors. There is just a lack of demand. I understand the beam instruments have been in reasonable demand since about 1993, which explains ANSTO's interest in building a better beam laboratory. But the actual irradiation facilities have only been half used virtually throughout their life. Back in 1959, people thought that HIFAR was the best reactor to buy, and in fact it was a little bigger than they needed. That is all.

Senator CALVERT—This one, we have been told, is smaller. The neutron beams come out at a different angle, which makes them a better quality.

Mr Parsons—It is a more powerful reactor; it has twice the operating power.

Senator CALVERT—Therefore, to follow your argument, it could be grossly underutilised.

Mr Parsons—I am sure ANSTO is aware of the difficulty of compromise in selecting the facilities you build in. If you build a reactor for materials testing, you need a large core and lots of space. If you build a reactor for beam work, you need a tiny and very intense core. If you try to put too many irradiation facilities in a beam reactor, you will compromise its beams. If you put too many beams in, you compromise the space for the facilities. As you have said, the core is quite small. The space around the core is only so big, and from that you have to get beams for 17 instruments and a few tonnes a year of radioisotope targets. So I hope ANSTO, when it makes its selection, will not choose the reactor that gives the most facilities but the one that gives them the best quality, but that is a decision for them to make.

Senator CALVERT—They were saying this morning that it does open up the possibility, if railways wanted to bring—

Mrs CROSIO—Tangara Trains could then be assessed as to whether they are encroaching—

Senator CALVERT—They wanted to bring train bogeys into check them. They could not do that with the reactor they have now.

Mr Parsons—No, because you need to take the beam out of the reactor and you therefore need space at ground level to wheel your bogeys in. One of the big advantages of the modern reactor is that the core is at ground level, so the beams come out at ground level. So, outside the containment, you can build all sorts of beam rooms to take these extra experiments as the demand arises.

Senator CALVERT—Are you happy with the technology in this new one and its different modus operandi?

Mr Parsons—They are very simple machines. You have a moderator which is either heavy water or light water. You have a set of fuel elements and, in the case of this one, you have a heavy water tank around it. It is quite simple stuff.

Senator CALVERT—Quite simple and quite safe?

Mr Parsons—Yes. They have built pool reactors in the middle of cities.

Senator CALVERT—So this reactor, with all its new technology, would be a much safer one than the one that exists here at the moment?

Mr Parsons—I would put it this way: it eliminates certain possible accidents because it has a lot of water instead of a little and because you do not take fuel out of the reactor to change it; you just move it along the pool. So there is no chance of exposing it—and there

has been a bit of fuss about exposed elements of late. There is a slight disadvantage in that it is a quicker response to transients. In other words, if it takes off, it takes off quicker. But there has been much work on these things to show that that is controllable. In the 1970s they solved all this.

Senator CALVERT—Thanks for that.

Mrs CROSIO—I thank you for your submission as well, and you will notice that I never questioned your qualifications. On page 5, paragraph 6.0, 'Outstanding questions', you said:

It is submitted that, while a new reactor will provide the opportunity for good science, such a costly enterprise merits more objective assessment of the future and the costs of using it than are given in the ANSTO evidence.

I know you elaborated on that in part of your evidence to us, but when you say an 'enterprise merits more objective assessment' do you feel that ANSTO and ANSTO's staff should get out there and say, 'We've got this new beaut thing that all of you people should line up now to come in and use it?' Do you feel that they should be doing something different from what they are doing now, as you have indicated, and that they are not even utilising the resources they have now?

Mr Parsons—They certainly need to sell the reactor, particularly if they want overseas people to use it. Firstly, you have to establish that it is a good one.

Mrs CROSIO—But you would have to build one before you could sell it, wouldn't you?

Mr Parsons—You would have to build one, you would have to establish that it is good and then you have to pass the word around internationally.

Mrs CROSIO—So you are not a bit premature in putting a submission like that in there?

Mr Parsons—I think not. If this were a fast ferry from Melbourne to Hobart, you would ask all the people of Tasmania and Victoria and all the travel agents, 'Is this a good thing?' If they said, 'Oh, beaut. We'd like that,' you cannot then say, 'Righto, we'll build the biggest ferry we can afford.' You would go and find out how many people were going to use it. I think the first study should be quite an elementary study of the number of postgraduate scientists—the number of established scientists—who will use this technique. How will they be funded? Is their university going to fund them? Or is industry going to fund them? I think that simple plan, if you like, is missing from their assessments.

Mrs CROSIO—I assume then that costing is the same—that you maintain that anything to do with costing has got to do with ongoing maintenance. Costing has got to do with the use costing as well as the disposal of spent fuel.

Mr Parsons—Yes. I was very interested to hear ARPANSA today saying that the rules have changed, and therefore HIFAR has to shut down or \$150 million has to be spent on it. This appears to be not a question of whether HIFAR was safe or not, it is just that the rules

have changed. The same is going to happen to this reactor. In 10 years time, it may well be that the rules will change. ARPANSA has set its precedent—that, safe or not, you have to comply with the rules, and therefore someone is going to have to spend some money on this. So there is a general estimate of quite a significant amount of money equivalent to the original cost may have to be spent for every 10 years.

Mrs CROSIO—If we are going to go back to the model of cars, once upon a time we drove without baby seats for our children. Now we say we have to have constraints and restraints.

Mr Parsons—Yes, but if your car does not have a restraint, you then have to buy it, and that is what I am saying here: if the reactor does not comply with a new set of rules, within a certain time ARPANSA will insist that it does and you will then have to modify it.

Mr FORREST—I want to go to the point you made about getting the committee to seek more information on the marketing aspect that you have made such a strong point of. In their submission, they have offered some information already, but we could pursue it. They talk about the radiopharmaceutical market being expected to grow at \$40 million annually over the next 10 years and, in addition, the export of some longer lived radiopharmaceuticals to nearby countries increasing to more than \$150 million over the same period. How do you respond to that comment, when your own figures have allowed for something of that order?

Mr Parsons—I agree. In fact, I have a pencilled note that ANSTO has in fact answered the fundamental question: what is the total size of the market. I would suggest they could do a little more, because the market in the region is going to be very competitive. We have heard about Nordion building two reactors in Canada, so there is going to be fierce competition for that market. The questions are: how much market share will ANSTO get, and how much of that will accrue to the new research reactor to offset its costs?

Mr RIPOLL—Have you any idea of comparative costs of similar projects overseas or of other projects?

Mr Parsons—I have not, but I see no reason to doubt ANSTO on this. If they make a mistake, it is too obvious.

[5.29 p.m.]

WHITE, Professor John, Secretary, Science Policy, Australian Academy of Science

CHAIR—The committee has received a submission from the Australian Academy of Science dated 9 April 1999. Do you wish to propose any amendment?

Prof. White—No, I do not wish to propose any amendment. I draw the committee's attention to the fact that relates to other submissions which have been made to the Senate, and indeed to the Reactor Commission before that, updated in 1998.

CHAIR—It is proposed that the submission and the Australian Nuclear Science and Technology Organisation response be received, taken as read and incorporated in the transcript of evidence. There being no objection, it is so ordered.

The documents read as follows—

Prof. White—I am a professor at the Australian National University, I am a Fellow of the academy and a Fellow of the royal society. I have 35 years experience of nuclear reactors and their use. I was the Director of the Institute Laue-Langevin in France for five years. I am Chairman of the Neutron Scattering Commission at the International Union of Crystallography. I am Chairman of the Australian National Committee for Crystallography and I am Science Policy Secretary at the Australian Academy of Science.

I would like to say something about the process by which the advice given to you has been derived. That process was initially engaged with a group of people chosen as essentially non-nuclear participants, or non-nuclear adepts, from the Fellowship of the Academy of Science and from the Australian scientific community. They worked as, I hope, an objective committee to look at the submissions from ANSTO to the McKinnon commission in the first instance. But I would like to say to you that I have recalled that committee in connection with the Senate inquiry a year ago, in connection with the environmental impact statement last year and in connection with this particular meeting today. So it has the authority of the council of the Academy of Science but it also is derived from a process of consultation—being included in those, people who were to some extent antinuclear. I thought that was the best, as it were, contestable method to get some advice for our academy. That is the basis of it.

The advice itself I would like to come to, just to briefly summarise it. You will see, as we summarised in our letter of 9 April to you, that the academy was of the view that the justifications for this reactor were concerned, firstly, with the national interest; secondly, with the strengthened integration of strategic research industry links, including of course the radiopharmaceuticals and other type technology; and, thirdly, the maintenance and renewal of internationally recognised Australian basic and strategic research. That is a deliberately chosen order, and I would like to make some comments about that as we go through.

I would like to say that the academy made quite a number of recommendations both in 1993 and in 1998—the key one was concerned with the formation of ARPANSA. The academy notices to you, and indeed to the other inquiries to which we have submitted, that the way in which the government and its predecessor have followed the advice that we offered, and indeed presumably others too, to put the Nuclear Regulatory and Radio Protection Authority under the department of health is commended. That has been done.

Another key matter was raised by the academy in its recommendations was the establishment of a cost-effective and efficient method of waste management and storage. Again, as you have said, Madam Chair, we have heard already this afternoon that the government has taken this in hand. The academy, of course, surrounds its advice with the desire, and indeed the strong suggestion, that this must be followed very seriously and carried through.

Finally, the academy in its advice, and I would wish specifically to draw the attention of the committee to it, made a recommendation that the scientific aspects of this new reactor—which, as I think you have heard this afternoon, will be, hopefully, of world class. I expect it to be of world class from the point of view of the information that I have had—should be used in possibly a novel way for the benefit of science.

I think the last person who gave you testimony spoke about it being international in some sense. Therefore, the question of governance, and indeed the sense in which this facility becomes a national facility, is something which does need attention as a key recommendation, but only for the third point—namely, the maintenance of the scientific aspect and the strengthening of it as an international, truly contestable facility which might draw in, in a contestable way, people from other parts of our region. I can enlarge on a number of these things, and indeed on related to developments in our region and in Europe and North America, where I have advisory roles of one kind or another.

Senator CALVERT—You heard the previous witness and commented on that. He did not argue about the replacement reactor nor its quality, but he did question whether there would be enough work for people. Would you like to comment about the amount of usage it would receive, given that there may be one or two reactors being built in Thailand and that perhaps the region might not need one?

Prof. White—I would say, first of all, that this should be a much better reactor than any of those that I know about in these region, and indeed it should be better than the most modern reactor in this region, the one that has been recently refurbished at the Japanese Atomic Energy Institute near Tokyo. It should be much better because a lot of the lessons that have been learnt from most recent reactor constructions will have been incorporated in, for example, the delivery of the neutron beams that were talked about earlier on.

If I might come directly to the question you asked about the usage, I think one of the things he was referring to was the irradiation usage of the reactor, and that related particularly to the configuration of the core. He did speak about that. If you build a general purpose reactor, as one did in 1958 or 1959, it has to do everything. I think it has become much clearer now that you should build something rather more specialist, and I think he made that point. So the reactor which is foreseen, as far as I can understand—and of course it does depend upon the choice of the supplier—is one in which there will be, as it were, less general use but more specific use, and hence it should be much more used.

Mrs CROSIO—Are you happy with the way the tender documentation has been prepared, following the advice that your academy would have been given?

Prof. White—Yes. I think that it has been cleverly done in the sense that ANSTO appears to have not specified in tremendous detail what tenderers should provide but rather what they would like to have within a certain cost envelope. So they have really said to the tenderers, ‘It’s up to you to think of a clever way to provide what we have specified.’ That seemed to me to be quite a good idea, rather than to have a checklist of things which the tenderers can quickly tick off and then forget about other imaginative ideas they might well have wished to suggest and which might, in the final tender competition, have been a key method of choosing between them.

Mrs CROSIO—With your expertise in that field, do you believe that the budget they have supplied to us will be sufficient?

Prof. White—I cannot give you any detailed analysis of that. I think I would have to do a very careful analysis, and I would need expert help to do it. But I would say that the

global figure is right. I would have some concerns about the running costs because there is very little said about that, and that is the point that your last witness made. So it does seem to me that that question should be reflected back to ANSTO eventually. Of course it may be untimely at the moment, but it certainly will be very timely between now and the time the reactor choice is made.

CHAIR—Can I just follow on from that, because I think you have asked an important question there which needs a little follow-up?

Mrs CROSIO—Yes.

CHAIR—One of the witnesses earlier this afternoon, as I understand, said something along the line that this process could lead indeed to corners being cut and getting something less than what was desirable in terms of the reactor—by setting down the broad parameters and then saying, ‘This has to be done within this price structure.’ Would you like to comment on that?

Prof. White—Yes. I think that it is a fair comment as a general comment, but that means that ANSTO has to be sure, and indeed kept on the track, of specifying what are the key things which are not negotiable. Of course safety is one of the keys things which is not negotiable; but other performance factors are not negotiable, too. So I think the way in which this committee finally recommends will probably have to touch that sort of point.

Mrs CROSIO—On page 2 of your report of 24 November 1998 where it talks about the EIS, it says:

This matter highlights the need for a national storage facility for long-lived intermediate waste which will have to be in operation in good time to receive returned waste from spent fuel (10-19). The Academy expects these questions will be resolved in a natural way during the next three years, but wishes to flag them as matters of likely public concern.

I completely agree with all you have said, but could you define for me ‘natural way’? What does the academy mean by that?

Prof. White—I think what we meant at the time was that they were getting on with it, and what we were flagging was that if they ceased to get on with it, that would be a matter for public concern. Our position is reserved in so far as it essentially requires expeditiousness in solving their problem.

Mrs CROSIO—But does the academy feel that, just by saying, ‘We think it could go in a certain state, a certain spot,’ without anything else to back that up at this stage, it is getting on with it?

Prof. White—I do not think we would like to make a judgment about that, with all due respect. We do believe—and that is all I can say to your committee—that it is essential that that matter be solved effectively.

Mrs CROSIO—Can I just follow that through? If, by the time this reactor comes on stream and the other one is decommissioned, adequate facilities are not there for the disposal of waste, what would the academy feel about that?

Prof. White—It would have a negative view about that situation.

Mrs CROSIO—Do you have an input through which you can provide advice to government, other than providing evidence like this?

Prof. White—Yes, of course.

Mrs CROSIO—Is it discussed? Are suggestions put forward?

Prof. White—We meet from time to time with government departments. That is a channel that has been opened up fairly recently because the academy reckons to be fairly independent of government. I think we can use it without compromise to our independence. If we had any sense that these deadlines or objectives were not being met in a timely manner, it would be raised.

Mrs CROSIO—And you have the opportunity to put that on the agenda when you have consultation?

Prof. White—Yes, we do.

Mrs CROSIO—Thank you.

Mr FORREST—Mrs Crosio has asked the question I wanted to ask you. In your submission dated 24 November 1998 you flagged that as a likely public concern. Are you flagging it as your concern or are you saying that it is likely to be a public concern? Which one is it? Is it the academy's concern or a likely thing that the public will feel?

Prof. White—With all due respect, it is both. If it is our concern it should be a public concern, without being too vain about it, if you see what I mean.

Mr FORREST—That is what you said in November. Is that still your concern?

Prof. White—It has to rest there because it is the last thing we have written on the subject. I think that we would probably take the point that you have made recently and raise a question before very long to see how it is going.

Mr FORREST—Could we invite you for your opinion on that, as we proceed with this inquiry?

Prof. White—I would be glad to appear before you again if you so wish. I will be overseas for a month in about two weeks time.

Mr LINDSAY—Professor White, the Liverpool City Council gave evidence earlier today in relation to their concerns and opposition. Their written evidence indicated that they had concerns regarding the location of this kind of facility within a residential area. It is my understanding that you have worked on reactors in residential areas. What is your view of the safety or otherwise of such a facility in a residential area?

Prof. White—I can understand public concern. When I was director in Grenoble, the reactor there, which is the most powerful research reactor in the world, was situated about one kilometre from the centre of the town. I made it my job to have open days where the public were taken through this reactor and could look into the pool. They had the right to ask the radio protection and health services in the building any question they wanted to ask and the press were there, of course. I think that is the right way to do it. Over a period of five years that greatly reduced public concern, which was there because here was this building, shrouded in secrecy, inaccessible and so on. Naturally people worry. To answer your question directly, the hazards are very small, especially for a research reactor and especially for a modern reactor of 20 megawatts which is being proposed here. The reactor in Grenoble was 58 megawatts with a much smaller core and therefore the control situation was a very different one to a rather broader core such as will be installed here.

Mr LINDSAY—Thank you.

Mr RIPOLL—Professor White, in the executive summary of your submission you say quite strongly that you support siting the reactor at Lucas Heights. I can understand why you say the location is cost effective, given that you have existing infrastructure. You also say that, on the overseas evidence, this is considered to be both acceptable and logical. What overseas evidence would have Lucas Heights being the best location?

Prof. White—I am quite sure that no overseas person has ever considered the Lucas Heights case, but it is based on analogy with what I have just said about Grenoble being one kilometre from the town centre. Another good example is the National Bureau of Standards, or the National Institute for Science and Technology as it is now called, in Washington DC where the reactor is in a park with houses about 200 or 300 metres away. There is no particular concern from the people living nearby about that reactor being there nor indeed from the people who operate the reactor. As was said by the last witness, these devices are fairly simple devices, they are fairly easy to control and modern technology should be capable of assuring the public of a very safe operation.

Mr RIPOLL—In the ‘Reference Accident’ section of your submission you say there is some tentative fear about the fate of the spent fuel and how it will be dealt with, in particular with what happens after 2006 when the US no longer buys back US origin fuel. Has anything changed to give you more confidence as to what will happen with that?

Prof. White—No, I think not. That still lies there. We have seen some fuel from Lucas Heights being returned to the place of origin in the last year. There will continue to be a policy in the United States to minimise nuclear proliferation and that will still mean that they will allow some nuclear fuel to be returned to the state of origin.

CHAIR—In recommendation four, your organisation, the Australian Academy of Science, recommends that:

... in conjunction with the recommendation to build a new Australian reactor, an examination of the appropriate governance of licensing and operation of nuclear facilities be made with a view to adopting an efficient and non-bureaucratic system with responsibility shared between two ministries.

Are you satisfied with the procedures that are now in place?

Prof. White—Yes. The original suggestion was to use two ministries, but I think we are quite happy with the Ministry for Health and Aged Care being responsible.

CHAIR—Thank you.

Committee adjourned at 5.47 p.m.