



COMMONWEALTH OF AUSTRALIA

Official Committee Hansard

JOINT COMMITTEE ON PUBLIC WORKS

**Reference: Redevelopment of Radiopharmaceutical Production Building No.23,
Lucas Heights, NSW**

FRIDAY, 17 OCTOBER 2003

LUCAS HEIGHTS

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JOINT COMMITTEE ON PUBLIC WORKS

Friday, 17 October 2003

Members: Mrs Moylan (*Chair*), Mr Brendan O'Connor (*Deputy Chair*), Senators Colbeck, Ferguson and Forshaw and Mr Jenkins, Mr Lindsay, Mr Lloyd and Mr Ripoll

Senators and members in attendance: Mr Jenkins, Mrs Moylan, Mr Brendan O'Connor and Senator Ferguson

Terms of reference for the inquiry:

To inquire into and report on:

Redevelopment of Radiopharmaceutical Production Building No. 23, Lucas Heights, NSW.

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Committee met at 1.54 p.m.

CHAIR—I declare open this public hearing into the proposed redevelopment of Radiopharmaceutical Production Building No. 23, at Lucas Heights, New South Wales. The project was referred to the Public Works Committee on 24 June 2003 for consideration and report to the parliament. 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.

We had a private briefing this morning and were able to inspect the site of the proposed works. We thank ANSTO for their cooperation in that. The committee will now hear evidence from ANSTO. The Sutherland Shire Council will also be speaking to the submission by the Australian Conservation Foundation.

[1.56 p.m.]

CAMERON, Dr Ron, Acting Executive Director, Australian Nuclear Science and Technology Organisation

CARR, Dr Stuart William, Director, Radiopharmaceuticals, Australian Nuclear Science and Technology Organisation

DELLA PICCA, Mr Ivano, Capital Plan Coordinator, Project Leader, Radiopharmaceuticals, Australian Nuclear Science and Technology Organisation

WOODS, Mr David Alexander, Manager, Radiation Protection Services, Australian Nuclear Science and Technology Organisation

CHAIR—Welcome. The committee has received a submission from ANSTO, which will be available in a volume of submissions for the inquiry. It will also be available on the committee's web site. Does ANSTO wish to propose any amendments that to the submission made to the committee?

Dr Cameron—No.

CHAIR—In that case, I invite you to make a statement in support of your submission.

Dr Cameron—ANSTO is Australia's national research and development organisation. Our responsibilities include the operation of the HIFAR nuclear research reactor and the national medical cyclotron. We utilise these facilities to produce radioisotopes for use in medicine, industry and research. We estimate that in 2002-03 there were half a million patient treatments using our isotopes, in the form of radiopharmaceuticals, in the course of nuclear medicine procedures.

Our radiopharmaceutical production activities are regulated by the Therapeutic Goods Administration of the Department of Health and Ageing and other regulatory bodies. Products must be produced under the Australian Code of Good Manufacturing Practice for Therapeutic Goods. Radiological safety is regulated by the Australian Radiation Protection and Nuclear Safety Agency.

As you know, following a decision by the government in 1997, ANSTO's replacement research reactor is now being constructed, and is expected to be commissioned in 2005-06. One of the objectives of the replacement reactor is to maintain and enhance health care benefits provided to the community through reactor-produced radiopharmaceuticals and to ensure security of supply over the next 40 to 50 years. To this end, the replacement reactor will have a much greater production capacity for radioisotopes than HIFAR has now.

Turning to the limitations of our current building, ANSTO's manufacture of radioisotope products is largely conducted in building 23 at the Lucas Heights Science and Technology Centre. Building 23 was planned as a research facility but has now evolved into a full production

facility. The present layout, facilities and services infrastructure reflect their incremental development. This has led to an increasing number of occupational health and safety issues, an inefficient production workflow, an inability to increase production to any significant extent and inflexible, outmoded and inadequate material handling solutions.

Present work methods are labour intensive. Building 23 and its current production facilities are not capable of meeting the protected needs for the radiopharmaceutical market in Australia or other regional markets. There is a pressing need to streamline the production flow and materials handling in order to improve efficiency, to address occupational health and safety issues and to improve production capacity in the light of expected growth and demand for our radioisotopes.

In order to address these issues, ANSTO has decided to undertake two projects at building 23. One of these projects, the refurbishment and upgrading of the existing ventilation system, was approved by the Public Works Committee on 21 August 2003 as a medium work. The other project, the extension of building 23, is the project the committee is considering today. ANSTO proposes to extend building 23 on three levels to the north and east of the existing building. The proposed building site covers an area of approximately 1,700 square metres which, at present, includes concrete and asphalt hardstanding and lawn. There are no national or Aboriginal heritage issues relating to the site.

We have described the proposal in detail in our written submission. It is important to note that the facility will satisfy all relevant Australian codes and standards and will be built according to best practice principles in the pharmaceutical industry. It will satisfy the objectives which are listed in our submission. These include resolving a range of occupational health and safety issues, complying with the requirements of the various regulatory authorities and providing radioisotope production capability that will enable ANSTO to meet expected growth and demand for many years to come.

The project is subject to the risk management processes of ANSTO. Risks for this project are being assessed for their potential impact on, for example, budget, schedule and performance. The estimated cost is \$17.9 million. It is planned that construction will take place over a period of approximately two years, commencing late in 2003, subject to us receiving the relevant approvals. In the context of the project timing, we want to thank the committee for recently granting us approval to expedite the relocation of the building 23 delay tanks. Our planned timing for the project is quite tight and that approval is very valuable to us.

With regard to environmental issues in general, construction of the new extension will result in direct, short-term, localised and small-scale impacts to soils, air quality, flora and fauna, traffic and transport, infrastructure and services, and noise and the visual landscape. Management initiatives will restrict any impact on surface and ground water quality or from general waste management. In July 2003, ANSTO referred the proposal to the Department of the Environment and Heritage for consideration of whether it was likely to result in a significant environmental impact in terms of the Environment Protection and Biodiversity Conservation Act 1999. The department advised us that it had decided that the proposal is not a controlled action. We have provided the Public Works Committee secretariat with a copy of that advice.

CHAIR—You have said that this building should last you quite a long time. You have projected a 30-year lifespan for the building. Can you comment on the Sutherland shire's

comment in relation to the last hearing that neutron sources are being scaled back? Do you have some grasp of what that actually means? Does that have any impact on the future of such a facility?

Dr Cameron—I am not completely sure what Sutherland Shire Council was referring to, but my understanding is that it may well have referred to a decision that was taken early in the design phase with regard to how many instruments and types of sources we had within the reactor. I should point out that the issue of neutron beams and radioisotope production are not related. You could build a reactor to produce a radioisotope that has no neutron beams at all. Neutron beams are a research tool but radioisotopes are produced by placing them into holes close to the core where they get irradiated. There has been no change to any of that capability. I believe that, in discussion with the users of neutron beams, they made some priority listing of types of instruments and whether or not they would have a hot source within the reactor, but all of that relates to research capability and not to production of radioisotopes.

CHAIR—On the same basic topic, at paragraph 3 of your submission you say:

The radiopharmaceuticals division of ANSTO is Australia's sole manufacturer of radioisotope products.

You also say:

... turnover from radiopharmaceutical production grew at about nine per cent per annum from 1994-95 to 2001-02 ...

Would importation of radiopharmaceutical products meet the demands? You might answer that one first, and I will come to the other question about ownership of minicyclotrons by individual hospitals.

Dr Cameron—I will just make a point and then I will ask Dr Carr to deal with that general issue. The facility we are talking about constructing and refurbishing would be required whether we imported them or produced them here, because it is a processing facility, and it is the method by which we put the product in one end and produce the finished product out the other end, which are what we send out for use in medical treatments. So that has really no connection with whether we import or produce. But I think that, clearly, the fact that we have this national capability enables us to produce in a different way and more reliably. Dr Carr will address that issue.

Dr Carr—I think that importation to a limited extent is feasible but that, given the growth in the application of nuclear medicine in Australia, in the long term it is not a practical solution. I would like to follow up a point that Dr Cameron made. When we do import isotopes, we import bulk isotopes, which have to be converted to finished pharmaceutical-grade products, which are what we supply to the end users. Whether we produce the bulk isotopes in the reactor or we import them, we still need that facility to make the final products, so in a sense this facility is independent of that question.

Dr Cameron—I would just like to add that the important thing in any production is the quality of the product and the reliability of the supply. Having a national resource enables us to produce the right quality product and to guarantee reliability of supply. It also means that we can

produce a much wider range of radiopharmaceuticals, both diagnostic and therapeutic, than we ever could if we depended on importation.

CHAIR—I cannot find it right at the moment, but I think I did read somewhere in your submission that you export the product but there is also considerable domestic demand for the radioisotopes.

Dr Carr—Yes. Domestically the use of nuclear medicine continues to expand at a rate of between six and 10 per cent a year for existing applications, but there are new applications that are coming on on a regular basis. We export finished radiopharmaceuticals to the Asia-Pacific region, in particular to places like New Zealand, which is quite close to here, and to the countries to the north of Australia.

CHAIR—Thank you. Before I hand over to one of the committee members, would you comment please on the ownership of minicyclotrons by individual hospitals and the likely impact of the rate of demand for ANSTO's radiopharmaceutical products.

Dr Carr—Minicyclotrons are low-energy cyclotrons that are used to produce very short-lived isotopes—mainly fluorine-18, which is typically converted into a sugar derivative that has the acronym FDG. That has a two-hour half-life and so it is more practical to produce that locally. But that is a new application for nuclear medicine; it does not really cannibalise or change the existing applications.

CHAIR—So you would still need to have this facility if we were to continue to produce these products for both the domestic market and the international export market?

Dr Carr—That is correct.

CHAIR—Thank you.

Senator FERGUSON—I want to follow up on an issue that was raised in the previous hearing. It was claimed by the ACF that radioactive waste water was going into the sewer, which does not seem a very responsible thing to do. I was wondering if you could comment on that.

Dr Cameron—Clearly, all the discharges from this site are regulated according to the requirements of our regulator and those bodies that we deal with. We have a trade waste agreement with Sydney Water which allows us to discharge a certain amount of trade waste from this site—as with any other site—into the sewer system. It goes from there to the Cronulla sewage treatment plant. Clearly, there are very strict limits on what radioactivity can be in that trade waste discharge. It is at such a level that by the time it reaches the sewage treatment plant at Cronulla the radioactivity is below that which would be acceptable in drinking water. Mind you, there would be a lot of other reasons why you would not want to drink it but they would not be to do with radioactivity.

Senator FERGUSON—Is this to do with an internationally accepted level or is it an Australian accepted level? The general community, once they hear the word 'radioactive', think that there is something terrible being done with any nuclear waste. What level is it? What sort of a level does this waste have?

Dr Cameron—We monitor all our discharges before they leave the site. That is to make sure that they comply with regulations for what are acceptable amounts of radioactivity in discharged water. Those discharge levels are based on a number of regulations. For example, they are based on the National Health and Medical Research Council levels for tritium in water, they are based on levels set by the New South Wales Radiation Control Act and they are also based on levels that are now regulated by the Australian Radiation Protection and Nuclear Safety Agency. In fact, these samples are independently verified as complying with those levels as part of our auditing process.

Senator FERGUSON—So you would classify it as waste water but not necessarily as radioactive waste water?

Dr Cameron—We would classify it as trade waste—as waste water. In fact, the standards we use for what is acceptable drinking water come from the World Health Organisation.

Senator FERGUSON—The other claim that was made by the ACF—I should have found it before I asked the question—was that the value of the production of radioisotopes was about \$20 million per year, which would not justify the expense of the new reactor. Can you give us some idea of what you anticipate the return might be to ANSTO generally in the future? Is it going to increase at a rate that will make it economically a much better proposition? Is the capacity of the new reactor going to enable you to produce more isotopes which, if you find a bigger market, would then increase the output value of the radioisotopes? Could you expand a bit on that for us, please?

Dr Carr—We have done our own market projections but there are also several international studies from various groups that have looked at the likely demand for radioisotopes in the future. If you combine those various projections there is consensus that demand will increase between seven per cent and 16 per cent a year until the year 2025. The most generous predictions say 16 per cent; the more conservative people say seven per cent. If you think about the Australian scene, Australia fits well within that. There is consensus among the user community globally that the use of nuclear medicine will continue to expand. What we are seeing now is that its role in general medical practice is growing as new radiopharmaceuticals are developed to look at different disease states.

Senator FERGUSON—Is it growing because of the fact of life that people are actually living longer so they are more likely to contract a condition that might require nuclear medicine or is it because in other countries in the world medical knowledge is improving and their standard of living is improving so that they can afford to use nuclear medicine?

Dr Carr—I think there is an element of both of those. As we get older we do require more medical care.

Senator FERGUSON—I have noticed, yes.

Dr Carr—Nuclear medicine plays a role in that. I think also that, with medical advances, people have much higher expectations now of the level of medical care that they have, and nuclear medicine is part of that process. Think about nuclear medicine as a way of helping to control and save the health care budget. If you use a nuclear medicine diagnosis you can help the

doctors to make the right choices in treatment for heart disease and cancer, which are two of the main causes of mortality in our society now.

Senator FERGUSON—When was the replacement of the radiopharmaceutical building first mooted?

Dr Carr—We started the process of looking at it in about 1999. Since then we have gone through a detailed master planning process using internationally respected consultants. We have been through a detailed concept design and another process of very detailed design.

Senator FERGUSON—The reason I am asking is: has it become an extra project as a result of the approval to build the new reactor or should it have been included at the time we were considering the new reactor?

Dr Cameron—I think the funding process that we went through with government was for a replacement research reactor; it was not for the ancillary facilities. It was recognised that those would be part of another process and, in this case, a process by which the production of the materials would fund any development that needed to take place. I should point out that in addition to radiopharmaceuticals we produce a range of other radioisotopes which are used by industry. We irradiate silicon for the semiconductor industry, which is one of our major outputs. The reactor will give Australian scientists access to world-class facilities in neutron beam research. So a range of benefits are derived from a replacement research reactor.

Mr BRENDAN O'CONNOR—I know that we are constrained by time, but I want to touch on a number of issues that were raised in the ACF submission and that we heard in the earlier hearing and may hear again. Page 2 of that submission asserts that the delays occasioned in the construction of the replacement research reactor were caused by seismic uncertainty. What is the underlying geology and level of seismic activity at Lucas Heights? I have a number of questions that are related to that first one, but I will take them one at a time.

Dr Cameron—Lucas Heights is part of the Sydney basin, which is essentially built on sandstone. That sandstone is a very stable structure. We know that Sydney is an intraplate region. In other words, it sits within a plate, not near any plate boundaries, which again relates to how stable the region is. Nevertheless, we know that in our past there were some significant seismic and fault movements, particularly when New Zealand separated from Australia about 80 million years ago. There was extensive cracking, and you can see that in various places around this region. However, there has been no significant earthquake movement in this area for many years.

Mr BRENDAN O'CONNOR—Have any problems relating to seismology been encountered in the construction of the replacement research reactor?

Dr Cameron—Yes. It is public knowledge that there was a delay of four months in the reactor construction process, when some faults were found during the construction process. It was necessary to halt the construction to look at those faults and to make sure that they were very old. A number of significant analyses were done and experts were brought in, both nationally and internationally, to look at that. As a result of that, we were able to show that the last fault movement was a very long time ago—at least five million years and probably much longer than

that. On that basis, it was concluded that those faults had no significance for the construction and the construction then was able to recommence.

Mr BRENDAN O'CONNOR—Thank you. You have also stated that when the proposal for the building 23 works was developed, it was developed with extensive consultation with a number of internal stakeholders. You addressed that in some way when we were talking about the new main entrance in the earlier hearing, but you have added that other stakeholders will be consulted—I think that was in paragraphs 34 and 35 of your submission. Given that the proposal is now well advanced, do you intend to undertake genuine consultation with other stakeholders or simply provide information to them?

Dr Carr—As I have said and as the submission states, we have undertaken extensive consultation with our staff and interested parties within ANSTO that have a contribution to make to the project. We have also consulted with the user community—the people that use our products and services. That includes people like the Therapeutic Goods Administration, the FDA regulations; the Australian Radiation Protection and Nuclear Safety Agency; the Department of Health and Ageing; Environment Australia—you heard about that in the submission from Dr Cameron—ASNO, because we have nuclear materials; and ASIO. We have looked at all the relevant standards from the International Atomic Energy Agency, building codes and what we regard as all the relevant standards. We feel that the proposal complies with all state and federal regulations.

Mr BRENDAN O'CONNOR—Have you consulted with the council—I am not sure who the water authority is—

Dr Carr—Sydney Water.

Mr BRENDAN O'CONNOR—Have you consulted with them at all in any way?

Dr Cameron—Sydney Water is the group who provides the regulation on our trade waste agreement. Clearly we have given a commitment that there will be nothing as a result of this proposal that would have any bearing on our authorised discharges from this site. As usual, we will make information available on these two projects on our web site so that people have an awareness of what is actually going on. What we are building here is a processing facility that takes products from one end to the other, so the people that we needed to strongly consult with are those who are involved in that regulatory process, who will be working within that area or who need to approve things in that area.

Mr BRENDAN O'CONNOR—Finally, do you anticipate consulting with the Australian Greenhouse Office regarding federal government requirements in relation to greenhouse gas emissions?

Dr Cameron—Yes. Part of our environmental management strategy which I mentioned before is to ensure that all the operations in this site will be certifiable—able to be certified by another authority as part of our ISO 14001. We have an environmental monitoring group here who have looked at that building and will continue to look at it as it goes along to make sure that we comply with all those types of regulations. We did make the commitment for the replacement research reactor as well.

Dr Carr—I would like to add that during the design we have actually taken into consideration best practices in energy management principles for the type of facility we are building. Aside from Dr Cameron's answer, we have tried to think about those issues.

Senator FERGUSON—In 1999 you gave an undertaking that airborne emissions would not increase and you maintained that you had a significant decrease in airborne emissions. Have airborne emissions decreased and will this new building have any effect at all on your airborne emissions?

Dr Cameron—Yes, we did make the commitment in the EIS that, even though radiopharmaceutical production will increase, there will be no increase in our airborne emissions. Since the EIS, emissions from building 23A have reduced significantly through better processes and improvement in process control.

Senator FERGUSON—What do you call significant?

Dr Cameron—We are talking about reductions of 90 per cent of what we discharge some of our main isotopes.

Senator FERGUSON—Very good. Thank you.

Mr JENKINS—Mention has been made about the funding of this project. In paragraph 26 on page 10 of ANSTO's submission, you said:

Funds for the project will be sourced from ANSTO's own resources—ie, no additional appropriation funding will be required.

As I understand it, that is because the processing of the radioisotopes in the area is a business unit that is obliged to cover those costs. Have I paraphrased it or covered it well enough?

Dr Carr—That is correct.

Mr JENKINS—Is there any other way you want to describe it?

Dr Carr—Before we received support from the ANSTO board for this project, we undertook an extensive cost benefit analysis of the project to demonstrate to the board that there was a good investment for ANSTO. Does that answer your question?

Mr JENKINS—Yes. Do the payments by way of cost recovery go to the processing of the source radioisotopes?

Dr Carr—I do not quite understand the question.

Mr JENKINS—The isotopes that you are processing at building No. 23 are presently sourced from HIFAR and later on will be sourced from the new reactor. Is there an internal transaction within ANSTO to pay for those materials?

Dr Carr—Yes, there is an internal transaction with ANSTO to pay for those materials.

Mr JENKINS—When the reactor is in place will that include an element to cover the capital costs of the reactor?

Dr Cameron—No. They are really to cover operating costs, fuel costs and things to do with the reactor. The capital cost was addressed by a separate appropriation.

Mr JENKINS—Part of the reasons that you have given for the works to be done in extending the building are occupational health and safety aspects. I know it would be impossible in a way to disaggregate how much of the project is because of that but, at some stage, even without a new supply of material because of the new reactor, something would have to be done at the building. You have said that in the 44 years that the building has been in use things have developed in a topsy-turvy way, so at some stage something had to happen. Is the timing—that it is happening now—related to the new reactor coming online?

Dr Carr—It is aligned with the replacement of the reactor project because that is when we will have the additional capacity available.

Dr Cameron—That relates also to the fact that, if the government has made such a large investment in that, we do not want to be having it idle and unable to be used to its capacity. So we need to put in the infrastructure to make sure that happens.

Mr JENKINS—How many employees are involved in the processing of the isotopes?

Dr Carr—Probably about 105 to 110.

Mr JENKINS—What are the employment implications of the new building being finished?

Dr Carr—It will have no impact on employment. In fact, it may have a positive impact depending on how things go.

Mr JENKINS—But that would be because of growth of business.

Dr Carr—Yes, that would be because of growth of business.

Mr JENKINS—Will there be job losses because in some way there is more efficiency?

Dr Carr—There will no job losses.

Mr JENKINS—Thank you.

CHAIR—Thank you very much.

[2.29 p.m.]

RANKIN, Councillor Genevieve, Councillor, Sutherland Shire Council; and Chair, Nuclear Reactor Working Party and Sutherland Shire Local Emergency Management Committee

SMITH, Dr Garry John, Principal Environmental Scientist, Sutherland Shire Council

CHAIR—I now call on the representatives of the Sutherland Shire Council. The committee has received a submission from the Australian Conservation Foundation, to which you will be speaking. Do you wish to propose amendments to the submission?

Councillor Rankin—No.

CHAIR—I now invite you to make a brief statement to the submission, and we will proceed then to questions. Thank you.

Dr Smith—I will begin, if I may. We will go to, firstly, a couple of key points in the ACF submission, particularly those relating to the cost viability of the proposal and the reasonableness of the request for funding; and, secondly, some environmental aspects of waste, including waste in the sewer, and some occupational health and safety comments. In the first instance—the issue of the cost of the overall project—it seems to have been accepted that there are significant cost overruns in the overall project for the replacement reactor, which sources the radioactivity for the radiopharmaceutical facility. This project, though, in effect is a process or a project in radiopharmaceutical production which does have an income; it actually makes some money for the Commonwealth.

I want to address the reasonableness of current expansion in the light of the income from this particular proposal, which has been estimated at \$20 million currently. It is clear that the reactor itself is a major investment by the Commonwealth. Another way of looking at it is that it is major subsidisation of the production of radiopharmaceuticals, which make very little money, on this site. Earlier in the process of reactor approval and consideration, again the council acquired overseas expert advice about the viability of radiopharmaceuticals and their sales internationally, and it became quite clear to us that it was going to be very difficult for ANSTO to compete with very large producers of radiopharmaceuticals internationally who have dedicated reactors that do not have to do both research and radiopharmaceutical production, for example.

So it does not surprise us in a sense that the income is only \$20 million at this stage—and we note that refurbishment is a fair proportion of the proposal you are considering. We think that, based on the advice we received earlier and the fact that it is still only \$20 million—and this reactor proposal has been on the decks for five years; if the market were really taking off, we would have thought there would have been an improvement on that \$20 million—it may well turn out, as our experts and others predicted, that ANSTO will have difficulty in competing and that, really, radiopharmaceutical markets will be only at local sources in countries which like to have a local source so it does not take long to fly the material there.

It is quite clear that international companies much larger than ANSTO are producing these materials—and more and more, we understand from the experts, the materials are being put into kit form so they can be immediately usable. The research and development costings to produce these kits are highly competitive, and again we think that will be a competitive disadvantage for ANSTO. So whether or not the investment in the reactor, let alone the radiopharmaceutical expansion, is justified is, I think, still very much open to question.

On the environmental components, we are still very concerned about the emissions of radioactivity into the sewer. Looking at the analogy of the reduction of radioactivity in air emissions—we applaud that very strongly—there was quite an intensive search by ANSTO a couple of years ago, subsequent to the EIS process and ARPANSA regulation, to reduce air emissions. We applaud that. We were always told that the air emissions were not a problem anyway. But when it came down to concern from the council and the public and to a full regulatory process with a replacement reactor, attention was given to the issue and, lo and behold, we have a 90 per cent improvement. We applaud that. We do not applaud necessarily the ethic prior to that case of ALARA—that the traditional air emissions were adequate—when you can actually find a 90 per cent improvement.

What I want to do is extend that analogy to the issue of the sewer. Radioactive material is put into the sewer under a trade waste licence from Sydney Water. By the time it gets to the Cronulla sewage treatment plant it is significantly diluted. Notwithstanding that, council has been looking at sourcing water from the sewer, particularly during the recent and current drought. We are concerned about radioactivity going into the sewer—and particularly the possibility that it pre-empted the future use of sewer water. While there is quite a significant dilution on the way down the sewer to the other end, there are outlets upstream in the sewer system where radioactivity can get into local creeks. That has never been looked at very thoroughly. Particularly with respect to drought, Sydney Water and others have looked seriously at the idea of sewer mining where they mine sewer water not down at the sewage treatment plant but way upstream where the community needs it. Upstream is where this radioactivity is put into the sewer. So, in a sense, any sort of industrial waste—including radioactive waste—in the sewer pre-empted the options available to us as a community to use sewer water, particularly for those technologies such as sewer mining.

The analogy with respect to air is that we certainly have current concerns about radioactivity emissions entering the sewer in a liquid form. The point I am leading to here is that radiopharmaceuticals is supposedly a revenue income activity. What is wrong with putting some of that revenue towards eliminating radioactivity in the sewer? In fact the previous executive director of ANSTO made verbal commitments to the public that technology would be put in place at this site to eliminate radioactivity entering the sewer. Under New South Wales planning law, an industry which pollutes the sewer has to do so at a cost—and there is a cost imposed on ANSTO through licensing through Sydney Water—but the costs are actually used to gradually improve the technology to eliminate the pollution, and that is the idea of the state planning process for minimising pollution. Unfortunately, the Commonwealth does not have a similar process. Unless Sydney Water want to put the costs up substantially, they cannot force ANSTO to put more technology onto this site to eliminate radioactivity in the sewer. That is the environmental side of it, and that goes to some of the points that the ACF made in their submission.

On the OH&S side there are two points that we want to raise. One concerns the radioactivity put into the sewer. Before the material is put into the sewer it is processed on the site to eliminate some radioactivity. I think the technology used—the tanks and the solar drying pond—is very old technology. So we question whether the OH&S levels of protection are adequate for that processing of radioactivity before material goes into the sewer. More particularly with respect to radiopharmaceuticals, in the dispatch area of the radiopharmaceuticals plant some years ago there were some concerns over the dose levels—albeit that they met the OH&S guidelines. We hope that the committee really takes that OH&S point seriously with respect to this proposal and that enough is done to minimise worker exposure in that process.

Councillor Rankin—The ACF's submission on this matter basically raises a lot of public interest questions in relation to the building. I would appreciate it if the committee could, during its processes, seek answers to those questions. They have all been raised publicly in other forums and other submissions and it seems to me that, in relation to giving the go-ahead to this expansion, they are quite important. The other key thing is that the assumption concerning building 23 is very much that there is going to be a massive increase in production. I do not think we have seen any clear evidence, as Dr Smith has pointed out, that will necessarily come—either from a new reactor or otherwise. Consistent with the other hearing, we are still of the view that this committee should seek some reassurance that the conditions applied by the Public Works Committee and other bodies have been adhered to before further funds are expended.

We heard Dr Cameron agreeing that the hot source was now not part of the project, and that was clearly part of what was funded. My understanding is that that is not quite as non-controversial amongst nuclear scientists as was made out. The community right to know charter is fundamental to the operations of this building—what emissions go out and how much our community is affected. The community right to know, again, I think was dismissed by ANSTO in their previous comments. What they failed to highlight was the fact that a five-year process took place in a committee set up by ANSTO. All members of that committee agreed. They were all appointed by ANSTO and included the ANSTO staff. They took that agreement—after five years of negotiation—to ANSTO, who then referred it down to Canberra and came back and said, 'No. You cannot offer anything more than freedom of information legislation.'

I would like to table something as well—in case you think this is just council taking a peculiar view of this process—from Michael Priceman, who is a very well-respected member of our community, the Sutherland Shire and the nuclear study group. This document details the frustration of our community and the lack of faith the community now has in federal government processes as a result of that community right to know charter process. If I could table that for committee members and reinforce that it was not that we could not come to an agreement—agreement was reached in that working party. Instead, ANSTO—even though they had been part of the working party, set up the working party, funded the working party and funded the mediator, who made a very strong comment to parliament in writing that they were dissatisfied with ANSTO's action—came in at the end and refused to accept the charter, which was, as I said, a very mild, simple two-page charter that more than generously allowed ANSTO to hold back security and commercial-in-confidence documents. So again I would reinforce—notwithstanding comments made earlier—that, in terms of accountability, the community would certainly like to see many of these questions answered before the project goes ahead.

Dr Smith—Very quickly, I would like to comment on that community right to know matter because I was a member of that committee for five years—on Wednesday evenings, or whenever

it was. It was a very large input of time. I am particularly concerned to now learn that ANSTO have put on their web site a version of the community right to know charter, when the people who were negotiating it, such as me, were not convinced that it was a genuine community right to know charter. Frankly, I am concerned that it has strong potential to damage the trust of the community in the Commonwealth government. I really think this process needs another look because, while I applaud easier access to information from ANSTO and I commend them for doing so, to call that a community right to know charter and to claim that it is anything other than FOI, which we have had a lot of problems with, is really damaging to the increased trust in and cooperation of our community with not only ANSTO but the Commonwealth government as a whole.

Mr BRENDAN O'CONNOR—In the submission by the ACF—it has come up in evidence already—there is clear opposition to the disposal of treated radioactive waste water through the sewerage system, and obviously there have been concerns expressed this afternoon in relation to that. I was wondering whether the ACF, or indeed the council, had any alternative propositions as to what to do about such disposal.

Dr Smith—You will find that council have just made a submission to the New South Wales joint parliamentary inquiry into the transport and storage of nuclear waste, where we addressed the issue of the waste emissions into the sewer off the site. One of the reports we commissioned overseas explains, fundamentally, how to eliminate sewer emissions from the site using available technology and so-called best available technology.

With the will and with the budget, the Commonwealth certainly can eliminate those, and we have strongly recommended that. That is the point that the ACF make in their submission; I think they call it 'ALATA'—as low as technically achievable. The technologies are available; it is a matter of will. I am sure that ANSTO are quite aware of the technologies.

Senator FERGUSON—Dr Smith, you seem to spend a lot of time overseas getting advice from international experts, yet you do not seem so readily willing to accept international standards and levels of radiation.

Dr Smith—You are probably referring to the emissions in the sewer?

Senator FERGUSON—Yes.

Dr Smith—I have raised at the ARPANSA committee the issue of the doses of radioactivity that are potentially available through sewer water. The projected measurements show that the doses are low, and that is of some comfort to us. However, in the absence of full inquiries into these matters, issues emerge as we go along. For example, as I understand it from the ARPANSA committee reports, the UK sets a much more stringent level than the World Health Organisation and the NHMRC, and that is something we would like investigated further. But the point I was making earlier is that the potential use of water relates to where in the sewer system it is taken from. The fact that the doses are low way down at the end of the system—at the sewage treatment plant—is comforting and is not all that surprising, but we do not want to pre-empt the use of our water further upstream.

Senator FERGUSON—Presumably, the agreement is with Sydney Water.

Dr Smith—It is; that is right.

Senator FERGUSON—If they accept it, and ANSTO is below internationally accepted levels, is there any reason why that should not continue?

Dr Smith—If you take air quality as an analogy, I think the answer is yes. Our air quality has always complied with the accepted levels, but now we have found a 90 per cent improvement.

Senator FERGUSON—I understand that, but ANSTO has obligations to be below the internationally accepted levels and it has an agreement with Sydney Water. If ANSTO is below the internationally accepted levels, and Sydney Water agrees to what is happening, I would have thought that ANSTO has fulfilled its obligations. I do not know what else it can be expected to do.

Dr Smith—ANSTO is fulfilling its obligation under contract but, as we have pointed out, if the best available technologies are available they should be applied. Private industry has to do so. The New South Wales EPA has a regulatory scheme in which the fee is commensurate with the level of pollution. If the level of pollution goes up, the fee goes up substantially. That is designed to eventually get pollution down to a zero-emission approach.

Councillor Rankin—Another unique thing about this industry is that the standards have gone down; I am not sure whether it is unique, but it seems unique to me. I am involved with other hazardous industries in our emergency planning and, in most of them, the standards have risen over the years. A major concern that people have in dealing with this issue is that the standards for radiation have gone down and, as background radiation levels increase, the industry often uses that to say that we can be exposed to more radiation. That is certainly not accepted by the World Health Organisation. If we could get all the tritium out of the water at Wanda Beach, where our kids are swimming, why would we not do that? Whatever the world standard, why would you run the risk of being exposed to that? Tritium has a very long life—maybe it is not very long in nuclear terms—of 120 years or so. Why would we want our kids exposed to any pollutant that can be stopped by having good technology and good practices? If the federal government cannot insist that its own hazardous industries have good practices, then what hope can we have that private industry will do so?

Senator FERGUSON—I do not want to enter into a debate, but the federal government does insist that its hazardous industries act responsibly and below the prescribed levels which have been agreed internationally. If it was unsafe, the level would be lower. I know that now is not the time to debate it but, because we have the public issue of what you call ‘radioactive waste’ going into the sewer—

Councillor Rankin—It is radioactive.

Senator FERGUSON—But, to all intents and purposes, that sounds as though in excess of the accepted level is going into the sewer. But, from the evidence given by you and by ANSTO, it is not in excess of the international levels.

Councillor Rankin—Of the ALARA standards?

Senator FERGUSON—The internationally accepted levels.

Councillor Rankin—We have asked through the state inquiry to get access to that trade waste agreement so that it can be independently looked at. ANSTO said they do not have a problem with that. We expect out of the state government inquiry to at least be able to have a look at that and subject it to some scrutiny as to what levels are there.

Dr Smith—I think it is worth pointing out too if I may—and I take the point of your question, and they are below the standards at present—that the reason we keep raising this matter is not just that we are concerned about pre-empting future use of water. Whenever we do go overseas to international opinion, this issue of best available technology keeps getting raised. It is used overseas in the UK. The difference there is in a sense that their reactors are generating quite significant income, whereas this one is not. In fact it is getting what I call a heavy subsidy from the Commonwealth.

Senator FERGUSON—But theirs are not all research reactors either.

Dr Smith—We are vulnerable in the sense that that means that waste issues, like pollution, tend to be regulated up to the permissible levels rather than down. If the reactor were subject to New South Wales planning law, then there would be a different system in place.

Senator FERGUSON—That is simply not true, with respect, because you said that they build their levels up; in fact in the case of airborne emissions, they have got them 90 per cent down. So it is not fair to accuse ANSTO of building the levels up to acceptable levels, because in some instances they are bringing them down.

Dr Smith—That is not happening with the sewer case.

Senator FERGUSON—Okay. But you are making it sound as though it is across the board.

Dr Smith—I would put to you that that has only happened subsequent to the inquiries we and others have made.

Senator FERGUSON—And also the undertaking given to the Public Works Committee.

Councillor Rankin—That is why these processes are so good, and that is why we would hope there would be undertakings arising out of the Public Works Committee hearings.

Mr BRENDAN O'CONNOR—I have a quick point. I understand even ANSTO's submissions have indicated that all of their operations should be based on the application of as low as technically achievable principles. As I understand it, the point you are making—and correct me if I am wrong—is that, if it is technically achievable to reduce pollution, then it should be done notwithstanding international standards. Is that right?

Dr Smith—Yes.

Mr BRENDAN O'CONNOR—I think that is even ANSTO's objective.

Dr Smith—That is what we were promised, basically. They raised it at public forums, not us.

Councillor Rankin—When you say it is ‘even ANSTO’s’, I thought they were going by ALARA.

Dr Smith—I think you will find they are going by ALARA.

Mr BRENDAN O’CONNOR—We can ask them that in a minute.

Mr JENKINS—Can I just clarify: Dr Smith, you are saying that the sewage is only monitored at the plant, not at the point of discharge of the waste material into the system?

Dr Smith—Into the sewer—it is monitored here when it is released. There have been tests done on the dilution down the system and what comes out at the other end. There have been tests done on that, but they are not routinely done.

Mr JENKINS—What is your comment about monitoring at this end and the levels?

Dr Smith—The fact that it is diluted by the time it gets to the sewage treatment plant, when it goes out near beaches and various other things, or if we want to reuse the sewage treatment plant water, is of some comfort. But the process of sewer mining, which means going into a sewer upstream, means that the dilution effect would not occur.

Mr JENKINS—So you are saying that the monitored levels at the point of discharge into the system—

Dr Smith—Would be too high on the basis that they are not diluted all the way down the system.

Mr JENKINS—Would be or are? I suppose all I am asking is: do we know? Is it being monitored?

Dr Smith—It is being monitored into the sewer by ANSTO, and checked by ARPANSA, and then diluted down the system. When it surcharges into adjacent creeks it is not being monitored, as far as I know. Sewer mining is not occurring now; that is potentially for the future. One concern we have had is that, when it does surcharge with rain into the local creeks, it is not being monitored, and it is not being diluted all the way down.

Mr JENKINS—So Sydney Water, or whoever the responsible body is, is not doing upstream monitoring?

Dr Smith—That is my understanding. ANSTO do some monitoring in local creeks.

Mr JENKINS—So whether it is ANSTO or any other industrial concern discharging into the sewerage system, we are really not sure what is going on?

Dr Smith—No, at the point of surcharge from the system into the creeks.

Mr JENKINS—So if we were going to have water mining, that would be something that Sydney Water would well and truly have to address. I am not saying that ANSTO should get off the hook because it is not done generally, but I want to clarify that, in a general sense, that is yet to be addressed and would have to be addressed.

Dr Smith—That is the correct sequence, yes.

Mr JENKINS—My other question goes to comments that were made in the most recent inquiry, of about an hour or two ago, about the job creation potential at this site. Councillor Rankin, could you just clarify the comment you made about some expert advice you had received—and I think I am paraphrasing this correctly—which claimed that some actions of ANSTO had set us back by 50 years?

Councillor Rankin—Yes, that was in relation to two separate issues. The advice we received about being set back by 50 years was from Professor Barry Allen. He is a nuclear medicine expert who worked at ANSTO for 30 years. He now works at St George Hospital in Sydney. His research area is nuclear medicine. His beliefs, which have been represented in a number of different places—and I could get you the direct reference from him—are that reactor technology is old technology in this field, that the advances could all be made in non-reactor based isotopes and also that this would put Australia back 50 years because we would be going back to the 1950s with the old technology rather than developing new cutting edge stuff.

Mr JENKINS—So his contention is what is underpinning ACF's view?

Councillor Rankin—Yes, and that has come out in the various submissions. In terms of the issue of jobs, during the McKinnon review there was quite a lot of controversy about how many jobs on-site here—and you would have seen that it is a very large site with a lot of different activities going on—were actually dependent on the reactor. Expert opinion again ranged quite widely on this. McKinnon made an assessment based on the evidence he had before him—and Garry might remember exactly what it was at that time. Under the McKinnon review one of the advantages of the new reactor was said to be that it would require fewer workers to work the more modern machinery. We were saying that perhaps a better outcome would be to have more job creating activity relating to alternative energy, alternative medicine or alternative non-proliferation activities rather than proliferating through a nuclear reactor.

CHAIR—Thank you very much. We will now recall the ANSTO witnesses.

[2.57 p.m.]

CAMERON, Dr Ron, Acting Executive Director, Australian Nuclear Science and Technology Organisation

CARR, Dr Stuart William, Director, Radiopharmaceuticals, Australian Nuclear Science and Technology Organisation

DELLA PICCA, Mr Ivano, Capital Plan Coordinator, Project Leader, Radiopharmaceuticals, Australian Nuclear Science and Technology Organisation

WOODS, Mr David Alexander, Manager, Radiation Protection Services, Australian Nuclear Science and Technology Organisation

CHAIR—Welcome. I would like to remind you that you are still under oath. I wonder if you would like to respond—you will need to keep it fairly concise because we are running close to time—to some of those issues.

Dr Cameron—Thank you. We would just like to say—and obviously there were a number of issues raised there, some of them much wider than the context we are discussing today—with regard to building 23 that the proposals we have in place will reduce doses to workers significantly, and that is a very important benefit. We also point out that we have this continued process of reducing airborne emissions from building 23, and we are pleased that people have recognised the significant improvements that have been made along those lines. We further point out that building 23 has almost no impact on the discharges into the sewer because, as we pointed out today, the material from building 23 is mostly short lived, which means that it decays away in those decay tanks prior to being sent down there for discharge. So the operations of building 23 are going to have almost no significant impact on what is exactly discharged.

With regard to the trade waste agreement, our actual discharges and access to those, I would like to point out that we publish a report annually in which all that information is set out in extensive detail. It is set out table by table, isotope by isotope and stack by stack. That is available publicly and in council libraries, and has been for many years. So we are publicly accountable for all those numbers in terms of airborne emissions and discharges into the sewer. There are a lot of other issues raised here about tritium. Of course, there is no tritium produced in building 23 at all. Likewise, as I said, most of the material produced there is short lived, and therefore it does not get discharged because it has decayed away.

We continue to comply with the requirements. Those requirements that are put on us by Sydney Water are also independently verified by ARPANSA, and we only reach fractions of the levels that they set. Again, our numbers are much lower than those numbers. Should those numbers ever change for whatever reason then we will of course make sure that we comply with this process. But, as we are doing for airborne emissions, ANSTO continue to look at developing technologies to reduce emissions. As part of our continuous improvement we have been doing that for many years. As part of our commitment to environmental management under ISO 14000

we will continue to look at ways in which we can reduce our environmental footprint. That is part of the processes that have been going on in this organisation for many years.

There was a question raised about ALARA and ALATA, so I will perhaps tackle that. The international standard that is used all over the world and that is promoted by the agencies that deal with radiological protection is called 'as low as reasonably achievable', where social and economic factors have been taken into account. The reason why that is used is that there is a point at which you can continue to spend money with no discernible benefit and you have to decide that you have reached a level of 'as low as reasonably achievable', because there are better ways in which that public money may be spent. So internationally they have adopted this standard of 'as low as reasonably achievable'.

Reaching the ALARA objective is accepted as being when there is no justification in terms of doses or costs for doing any more. Nevertheless, having said that, the ALARA objective set by our regulator, ARPANSA, for discharges from this site is 20 microsieverts, the maximum dose to a member of a public. We have never been there. The doses that we reach are less than 10 microsieverts and are currently around five microsieverts. So, even though there is a level at which the regulator would say there is no need to spend any more money, we continue to do it as part of our continuous improvement. Five microsieverts is what you would have got today on your flight here from Canberra. Those are the sorts of numbers we are talking about.

Dr Carr—I would like to address, first, the point that I think Dr Smith made about the reactor being used for the dual purpose of radioisotope production and neutron research. While these applications are conducted in the same reactor, they are completely independent of each other and they do not have an impact on each other. The fact that the reactor is dual purpose has no material impact on either application. Second, they made a comment about the large companies in Europe and North America producing radioisotopes. Of course there are large companies in North America and Europe producing radioisotopes; there are greater populations there. And you have to remember that we are dealing with radioisotopes that essentially have a shortish half-life, that can be classified as perishable goods, and so the ability to distribute them and get them to the end users is critical. Therefore—certainly, for Australia—there will always be a requirement for local production to meet those needs. That also applies to our near neighbour New Zealand and to some of our near neighbours to the north of Australia.

CHAIR—Thank you. I noticed that ACF talked about a concern with ANSTO—ANSTO's 'comprehensive failure', in fact. Their submission talks about:

... the comprehensive failure of ANSTO's existing risk management, project oversight and quality assurance mechanisms
...

Would you like to comment on what you are doing in relation to risk management—just briefly?

Dr Carr—ANSTO have extensive quality assurance processes. Certainly the radiopharmaceuticals facility is accredited to ISO 9001/9002 standard. Also, we have adopted the Australian standards for risk management in all our activities and we have an extensive risk management process. In fact we are just going through a business continuity planning process at present which is part of our risk management process.

CHAIR—I wish to raise again with you for the record the fact that the committee would want to see more detail in relation to the design, costings and contracting arrangements. The committee would appreciate your providing that so that we can deliberate further.

Dr Carr—In the appendix to our submission there is a proposal about how we are going to manage the project in terms of appointing a construction manager and the works tendering packages.

CHAIR—I saw that.

Dr Carr—We can supply to the committee, on a confidential basis, the detailed design of the facility and also the detailed costings.

CHAIR—Okay. There are no further questions. Before closing I would like to thank the witnesses who have appeared before the committee today, particularly ANSTO for assisting the committee with both the inspection and the private hearings this morning. I thank Hansard and our secretariat for assisting the work of the committee.

Resolved (on motion by **Mr O'Connor**):

That, pursuant to the power conferred by section 2(2) of the Parliamentary Papers Act 1908, this committee authorises publication of the evidence given before it and submissions presented at public hearing this day.

Committee adjourned at 3.06 p.m.