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SENATE

STANDING COMMITTEE ON RURAL AND REGIONAL AFFAIRS AND TRANSPORT

Reference: Options for additional water supplies for South-East Queensland

FRIDAY, 11 MAY 2007

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SENATE STANDING COMMITTEE ON

RURAL AND REGIONAL AFFAIRS AND TRANSPORT

Friday, 11 May 2007

Members: Senator Heffernan *(Chair)*, Senator Siewert *(Deputy Chair)*, Senator Adams, McEwen, McGauran, Nash, O'Brien and Sterle

Substitute members: Senators Trood, Joyce, Hogg and Moore to replace Senators McGauran, Nash, Sterle and McEwen

Senator Ian Macdonald to replace Senator Adams

Participating members: Senators Adams, Allison, Barnett, Bartlett, Bernardi, Boswell, Brandis, Bob Brown, George Campbell, Carr, Chapman, Crossin, Eggleston, Chris Evans, Faulkner, Ferguson, Fielding, Hogg, Hutchins, Joyce, Lightfoot, Ludwig, Lundy, Ian Macdonald, Mason, McLucas, Milne, Nettle, Payne, Polley, Robert Ray, Stephens, Trood, Watson and Webber

Senators in attendance: Senators Bartlett, Heffernan, Hogg, Joyce, Ian Macdonald, Moore, O'Brien, Siewert and Trood

Terms of reference for the inquiry:

To inquire into and report on:

All reasonable options, including increased dam capacity, for additional water supplies for South East Queensland, including:

(a) the merits of all options, including the Queensland Government's proposed Traveston Crossing Dam as well as raising the Borumba Dam: and

(b) the social, environmental, economic and engineering impacts of the various proposals

WITNESSES

Committee met at 8.00 am

CHAIR (Senator Heffernan)—Welcome. I declare open this public hearing of the Senate Standing Committee on Rural and Regional Affairs and Transport. The committee is hearing evidence on the committee's inquiry into water supplies for South-East Queensland. This is a public hearing and a *Hansard* transcript of the proceedings is being made. Before the committee starts taking evidence, I remind all witnesses that, in giving evidence to the committee, they are protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee and such action may be treated by the Senate as a contempt. It is also a contempt to give false or misleading evidence to a committee. The committee prefers all evidence to be given in public but, under the Senate's resolutions, witnesses have the right to request to be heard in private session. It is important that witnesses give the committee notice if they intend to give evidence in camera. If a witness objects to answering a question, the witness should state the ground upon which the objection is taken and the committee will determine whether or not to insist on an answer, having regard to the ground which is claimed. If the committee determines to insist on an answer, a witness may request that the answer be given in camera. Such request may of course be also made at any other time.

Finally, on behalf of the committee, I would like to thank all those who have made submissions and sent representatives here today for their cooperation in this inquiry—and I think there has been a high level of cooperation both from government and non-government witnesses. I now welcome officers from the Department of the Environment and Water Resources and from the National Water Commission.

Senator HOGG—Before you do, Mr Chairman, could I just raise a threshold issue this morning. I notice that the proposed witnesses from New South Wales are not appearing. Does that mean that they are not coming at all?

CHAIR—I had a discussion with the new minister, who is obviously on a vertical learning curve, and he has been unable to get back to me. But I propose that the New South Wales witnesses come along to our hearing which is in early June.

Senator HOGG—Thank you.

[8.02 am]

EARLY, Mr Gerard Patrick, Acting Deputy Secretary, Department of the Environment and Water Resources

RANKIN, Ms Alexandria, Acting First Assistant Secretary, Approvals and Wildlife Division, Department of the Environment and Water Resources

COSTELLO, Mr Steve, General Manager, Water Programs Group, National Water Commission

RADCLIFFE, Mr Murray William, Project Officer, National Water Commission

CHAIR—Welcome. I invite you to make an opening statement. If you do not want to, you do not have to.

Mr Early—The secretary of our department, Mr David Borthwick, wrote to the Secretary of the Senate Standing Committee on Rural and Regional Affairs and Transport on Wednesday providing background to the department's involvement in the matters under inquiry. I would like to summarise that involvement.

In late 2006, proposals from Queensland Water Infrastructure Pty Ltd for two new dams—the Traveston Crossing dam on the Mary River and the Wyaralong dam on Teviot Brook, a tributary of the Logan River—were declared controlled actions under the Environment Protection and Biodiversity Conservation Act 1999, the EPBC Act. Both proposals require assessment and approval under the EPBC Act before they can proceed.

The Commonwealth's consideration under the EPBC Act must relate to all the relevant impacts of the action within the Commonwealth's jurisdiction—namely, the relevant matters of national environmental significance. In the case of the proposed Traveston dam, the relevant matters of national environmental significance are World Heritage, Ramsar listed wetlands, listed threatened species in ecological communities and listed migratory species. In the case of the proposed Wyaralong dam, the relevant matters of national environmental significance are Ramsar listed wetlands, listed threatened species in ecological communities and listed migratory species.

Both proposals will be assessed by a Queensland state government environmental impact statement accredited under the EPBC Act through the bilateral agreement under the act between the Commonwealth and Queensland governments. Environmental impact statements are being developed in accordance with Queensland's State Development and Public Works Organisation Act 1971.

That means that our department and our minister have legal obligations, which include examining the proposed actions in considerable detail to determine their likely relevant impacts, analysing information on any feasible alternatives and also taking into account economic, social

and environmental matters. As you would realise, the process under the EPBC Act, in large part, mirrors your own inquiry, albeit with a very different time frame.

As Mr Borthwick explained in his letter of 9 May, this places us in a difficult position during your hearing. We are in a statutory process, which is subject to judicial review, and it would not be appropriate for to us pre-empt the formal EPBC Act process by expressing opinions about matters before all the statutory documentation is available and in advance of the formal process being completed. It may therefore not be possible for us to answer questions from the standing committee which go to the merits of the proposals we will be required to assess. Nevertheless, we will seek to assist your inquiry as much as we possibly can.

CHAIR—That is very gracious of you. Could I start by being right off the square. Since we last had a hearing—and I thank the various departments for their cooperation; we do not want to bugger up other evidence—the resource operating plan for the Condamine-Balonne has been released. I am going somewhere, don't worry!

Senator SIEWERT—We figured that.

Senator MOORE—At least you are still in Queensland!

CHAIR—There is a set of Ramsar wetlands at the bottom of this section. In that plan, it is proposed to give a stream flow that has a mean annual flow of 1,200 gigalitres. In that overland flow plan it is proposed to provide one property and two landholders—Leith Boully has rolled her licence into Cubbie so you cannot distinguish it—369,500 gigalitres on top of an already existing 70,000 or 80,000 gigalitres licence, which is approximately 45 per cent of the mean stream flow of the entire system. Has your department or has anyone looked at the environmental effect through the EPBC Act or any other process on the Ramsar wetlands of the Narran Lakes?

Mr Early—Certainly we have not looked at it through the EPBC Act.

CHAIR—We have had it shoved down our necks for ages that all the science is done and this is a great plan. I think it is a great outrage; it is a national disgrace. I would just be interested to know what environmental planning we have been involved with with the Narran Lakes and the issuing of a licence for overland flow of 369,500 gigalitres. We are talking here about extraction from the Clarence River—this is duplicitous conduct by a number of people—of five to 15 per cent of the flow, and we are going to examine the merits of that, and certainly from the Mary river a similar proportion of about five per cent, and yet, without turning an eye or a lid or raising any criticisms, there is a resource operating plan that would extract that sort of amount of water out of a mean flow of 1,200 gigalitres.

Mr Early—Certainly through the EPBC Act, we have not examined that. It may be something that comes into the frame in the assessment of the overall proposals.

CHAIR—We just need to be consistent as a committee. Given that this is based upon the earthworks that are already done—without approval—and the water that is being diverted in some of these systems is unlicensed, unmetered, unregulated and free, I would like to think that we could consistently look at extractions of water. In this process we are talking about delivering

water to several million people over a number of years and the diversion of perhaps five per cent of the river, about which there have been all sorts of hell raised, and legitimately. We will look at all the propositions and the risk to the environment, but I would like to think that we could put it into perspective.

Senator O'BRIEN—So are we having an inquiry into south-east or south-west Queensland?

CHAIR—I was just putting it on the record, mate.

Senator O'BRIEN—We could have done that yesterday. I do not have any particular questions of the department other than the basic question of the process that is being used under the EPBC Act to make the assessment. There are a number of streams available under the legislation, and I just wonder if you could explain exactly what the process will be.

Mr Early—In terms of the assessment?

Senator O'BRIEN—Yes.

Mr Early—There are a number of streams available in one sense, in the sense of if there were a Commonwealth assessment, but there is actually only one stream available in this case because there is a bilateral agreement in place between the Commonwealth and Queensland governments for assessment of proposals under the EPBC Act. If Queensland decides to assess the proposal under the bilateral agreement, that turns off the other sections of the act that deal with the other forms of assessment. So essentially the only avenue available for assessment is the Queensland assessment under their legislation, which is accredited under the bilateral agreement.

Senator O'BRIEN—But what happens after that process concludes?

Mr Early—When that concludes, the assessment report is provided to the Commonwealth minister and the Commonwealth minister then must decide whether or not to approve it. The minister then, if he does not believe that there is enough information to make an informed decision, can make other inquiries. He can ask the Queensland government for more information. He can ask the proponent for more information et cetera. So, basically, once the assessment report is received by the Commonwealth, it is the standard EPBC process whereby the minister then really has to take into account economic and social considerations and is able to make whatever inquiries he thinks are required in order to make the proper decision.

Senator O'BRIEN—What time line applies to that process? Is there a finite time line in which the minister has to make a decision?

Mr Early—There is a 40-day time frame, but the minister does, as I mentioned, have the capacity to stop that time frame and seek additional information if he believes it is required.

Senator SIEWERT—The 40-day time frame—that is once you receive the EIS?

Mr Early—That is right, yes.

Senator IAN MACDONALD—I have three streams of questions. First of all, we had a lot of evidence that the Commonwealth imposed conditions on the Paradise Dam, but the evidence given to us suggests that very few of them have ever been met by the Queensland government, or whichever Queensland government agency was dealing with it, and there has also been a suggestion that, because of resource issues, your department has not been able to follow up on enforcing those conditions. Could you give me some comment on that? If you do not have the information readily available, perhaps you could look into that and get back to us.

Mr Early—In general terms, you are right: we have been constrained in terms of our audit and compliance activities in the past. That was remedied in this budget with additional resources being provided. In any event, we have had a small audit team and an audit program in the past. We have a proposed audit of the Paradise Dam coming up in the next few months and we will be establishing a compliance and enforcement branch within the department.

Senator IAN MACDONALD—You will be establishing that?

Mr Early—Yes. That is one of the areas in which we are making significantly expanded capacity.

Senator IAN MACDONALD—I have not given you notice of this and I suspect you will not have the detail, but could you, on notice, find out for us how many complaints you have received about the Paradise Dam? As I recall the evidence, a number of groups have complained that the Queensland government has not been following your conditions and nothing has been done about it.

Mr Early—I will take that on notice.

Senator IAN MACDONALD—You were saying to Senator O'Brien that you are really confined to one stream. But there is a provision in the act—and I have forgotten the detail now—about the minister being able to establish, even over the bilateral agreement, a 'royal commission', almost, to assess these things. Could you elaborate on that?

Mr Early—That is not quite correct. The minister, when going through a Commonwealth assessment process, has the capacity to establish an inquiry. Even if he had determined an environmental impact statement, if some issue comes up that the minister thinks is necessary he can then establish an inquiry on top of it. That assessing by the Commonwealth is in part 8 of the act, but the bilateral agreement turns off part 8 so that is not an option if the assessment is being done under an accredited bilateral agreement.

Senator IAN MACDONALD—I have not brought my copy of the act with me, but it was in the last section of the—

Mr Early—Yes, it is in part 8 of the act.

Senator IAN MACDONALD—The bilateral agreement cuts out part 8 completely?

Mr Early—Yes. Section 83 of the act says that part 8 does not apply when there is a bilateral agreement in place. So, to the extent that that option is in part 8, it does not exist in this case.

Senator IAN MACDONALD—In your submission you said that the minister would consider the economic and social impacts.

Mr Early—Yes.

Senator IAN MACDONALD—I am really asking you to interpret the act, which perhaps I should not be, but I am still going to. I thought the Commonwealth's only involvement was on the environmental aspects—the Ramsar wetlands and the endangered species et cetera—so how do the social and economic impacts become part of the Commonwealth assessment?

Mr Early—Those matters of national environmental significance are the subject of the assessment but, when it comes to the approval stage of the process, the minister may—in fact, he is required to—take into account economic and social matters in reaching his decision. He is also required to consult other Commonwealth ministers who may have administrative responsibility.

Senator IAN MACDONALD—Those are not economic and social matters arising out of the environmental matters; those are just economic and social matters per se.

Mr Early—Exactly.

Senator IAN MACDONALD—That is interesting.

Senator SIEWERT—I have a couple of questions, some of which follow on from questions that were just asked. The 40-day time line kicks in although, essentially, there is capacity for the minister to extend that?

Mr Early—That is right.

Senator SIEWERT—When the department considers the EIS, it can seek input from the community?

Mr Early—There will be a draft EIS, which goes out for public comment, and then the proponents have to respond to that public comment when they finalise the EIS. So, when the final report is provided to the minister, the minister may choose to have another round of public comments but he is not required to.

Senator SIEWERT—Yes, but the minister can. I remember from wayback. The minister has in the past sought comment.

Mr Early—Yes, he could do that if he wished but he is not required to.

Senator SIEWERT—Will the northern connector, which I understand has just been announced, be subject to an EPBC assessment?

Ms Rankin—We have just done an assessment of that through the referrals process and it was declared a non-controlled action. That means that it is not subject to the EPBC process.

Senator SIEWERT—Why is that?

Ms Rankin—I think the evidence in relation to the construction of the northern interconnector itself indicated that there was no likelihood of a significant impact on any matters of national environmental significance from that pipeline itself. Obviously, there is an issue to be dealt with through the Traveston dam EIS of the connection of any waters flowing from the Traveston dam into that interconnector pipeline, which will be considered as part of the Traveston EIS.

Senator SIEWERT—That takes me to my next question, and I think you just touched on it a little then. Who does the assessment to see whether the whole of the Mary catchment area is sustainable—that the water extraction from that catchment, of which Traveston dam is a part, is sustainable?

Mr Early—We would not be considering that specifically under the EPBC Act, except to the extent that it is relevant to the Traveston dam and the other dam proposal.

Senator SIEWERT—We have been presented with a number of proposals, and there are all sorts of extraction going on in the Mary catchment. It seems to me that nobody has actually looked at and done a comprehensive assessment of whether the water is being managed sustainably in that catchment. I think it is essential that, if you are looking at Traveston dam, you look at whether it is being managed sustainably but also at the cumulative impact. Who is doing that? Is it being done?

Ms Rankin—As Mr Early said, currently, it is not being done as part of the EPBC process, presumably because it is not a specific action that is involved, and our capacity to assess things is limited to proposed actions. But, to the extent that we have to look at water extraction and the potential impacts on matters of national environmental significance through the Traveston dam proposal, that would be considered, and there is potential to seek further information on that following the EIS process.

Senator SIEWERT—I appreciate that you have to work within the constraints of the act. I understand that the Murray River cod is in some of the other creeks that flow into the Mary River. With respect to the extraction of water from various creeks, we are not just talking about water supply; we are also talking about for irrigation purposes et cetera. If you are looking at how the Traveston dam is impacting on the cod, for example, or any other threatened species, you need to look at the impact elsewhere in that catchment to be able to assess what impact it will have. It seems obvious to me that you would have to do that.

Mr Early—I guess it is too early in the piece to definitively say yes or no. Certainly, we would be looking at that as an issue that may well be relevant, but I do not think I can say, 'Yes, we will definitely be doing that,' or, 'No, we won't' at this stage. It is a bit early. We have not even had the finalisation of the guidelines for the EIS at this stage, so it is very early on in our process.

Senator SIEWERT—You get input into the EIS guidelines, don't you?

Mr Early—Yes.

Ms Rankin—We do.

Senator SIEWERT—Do you do a big list of the things that you want in there and, if so, would that be in the list of the things you want in there?

Ms Rankin—To the extent that we are trying to get good baseline data about the status of the species in the catchment and what other impacts are likely to have an effect on the status of those species, yes, that would be part of what we would expect the EIS to cover. I think that is slightly different from our doing a separate sustainability assessment of water extractions in the catchment itself.

Senator SIEWERT—But surely you would need to be doing that to look at the status of the species or the future of the species in those creeks?

Ms Rankin—Again, it just comes down to what we are seeking from the EIS is information, in whatever form it is provided, to be able to establish the current status of the species and impacts on them so that you can then overlay the potential impacts of the additional effects of the Traveston dam and ask whether that is likely to have an acceptable or unacceptable impact on those species.

Senator SIEWERT—When you do that, do you look at any other proposals for taking water out of the catchment?

Mr Early—We have to look at the context so, yes, we do. But, once again, it is a bit difficult to get into this level of detail when, as I said, we do not have information before us. A lot will depend on what comes out through the EIS and whether the minister thinks, 'That's not sufficient; I need to get more information'—of the kind you are asking. It is a bit difficult to answer precisely at this stage.

CHAIR—One of the great phenomena that Australia is generally in denial over is the connection between the rivers and the aquifers and the double accounting of water, which was pointed out the other day. When we put the caps on, the cockies all went over to the extraction from the aquifer, which is really the river—well, for 40 per cent of the flow. When you do an EIS study or an EPBC assessment, where you have set out to do it, do you connect what is happening to the aquifer to what is being extracted from the river?

Mr Early—We certainly do sometimes.

Ms Rankin—Again, to the extent that, potentially, it might have an impact on matters of national and environmental significance.

CHAIR—Not potentially—it does. It might be one year or it might be 50 years, and most of western USA is locked up with lawyers. And, as you know, I would shoot two out of three lawyers—not literally but metaphorically—if I had the opportunity.

Senator JOYCE—Do you think you would be able to cover them under the EPBC Act?

CHAIR—But it is a fair proposal. There is no question that if you are going to pump another 1½ million people into South-East Queensland, we have to find some new water as well as recycle and do all the other things. But there seems to be a lack of understanding of even what

sleepers and dozers are in the Mary River system. I do not know what the bore licence set-up is or whether they are licensed. Will you blokes look at the bore side, the groundwater side as well? We will be appealing to you to do that because there is no question that if you extract enough water out of the bore fields you will seriously damage the river flow. No-one seeks to hook that up.

Ms Rankin—I do not think that issue of the relationship with the bore fields has been raised as a concern with us to date.

CHAIR—We are raising it right here and now.

Senator SIEWERT—The EIS is doing stage 1 of the assessment?

Mr Early—Yes.

Senator SIEWERT—Will the Commonwealth be looking at stage 2 as well?

Mr Early—In the original proposal, the referral was stage 1, as you know, with a commitment to refer stage 2 at some later time. We have since been provided with a lot of information about what is happening and what commitments the Queensland government have made and so forth. Our minister has recently written to the Queensland Deputy Premier to get some clarification about what is happening with stage 2. So there is a possibility, depending on what sort of answers are given, that we might be seeking to roll them up into the one assessment.

Senator SIEWERT—It would seem to me to be logical that, if you are considering a proposal like this, you would be considering stage 2 as well.

Mr Early—Yes. That is something that the minister is considering.

Senator SIEWERT—On Paradise Dam, you just said that, now you have the funding, you will be starting to beef up your auditing process.

Mr Early—Yes.

Senator SIEWERT—What is the time frame for the Paradise Dam audit?

Ms Rankin—It is expected to start in June.

Senator SIEWERT—How long do you think it will take and will it then be released publicly?

Ms Rankin—They tend to take different periods of time, depending on the complexity of the issues that have to be resolved, but it usually is a matter of a couple of months.

Senator SIEWERT—Will it be publicly available?

Mr Early—I am not sure. I might take that on notice. I am not quite sure what we have done with our previous audits.

Ms Rankin—It is all very new.

CHAIR—So will you be thinking about the aquifers there as well, now that we have alerted you?

Mr Early—Yes, we will—

CHAIR—I was up at Kununurra the other day. The absolutely flawed document is the Ord stage 2 document. There is absolutely not one price signal on water in the document.

Senator JOYCE—What was the last project that was stopped under the EPBC Act?

Mr Early—Christmas Island mining proposal.

Senator JOYCE—What was the premise of stopping that project?

Mr Early—Essentially the minister felt that it would have an unacceptable impact on the environment, on the matters protected; therefore, he rejected the proposal.

Senator JOYCE—What issues were they looking at? I am drawing a comparative analysis. What were the specific areas?

Mr Early—Christmas Island is a very biodiversity rich area. The minister felt, on the basis of advice, that if the proposal had gone ahead there would be a significantly increased possibility of extinctions of threatened species.

Senator JOYCE—A significantly increased risk of extinction of species.

Mr Early—Yes.

Senator JOYCE—Significant as in there was an animal with a population of 600 or something and it looked like you might be going to knock it down by a couple of hundred?

Mr Early—It might be best if I provide you with the actual report on notice. Obviously I do not have it in my head coming to this inquiry. But my recollection is that the—

Senator IAN MACDONALD—That was about four years ago, wasn't it?

Mr Early—No, it was quite recent. I think we were saying that if it went ahead a number of species would probably be extinct within 20 years.

Senator JOYCE—Within 20 years?

Mr Early—Yes.

Senator JOYCE—So that is a pretty good premise for determination.

Mr Early—Each case will be different.

Senator JOYCE—Was any stage of the Paradise Dam subject to the EPBC Act?

Mr Early—Yes.

Senator JOYCE—What was the outcome of that specifically with regard to the lungfish?

Mr Early—The proposal was approved subject to conditions, and the conditions included a condition in relation to the lungfish.

Senator JOYCE—The condition in relation to the lungfish was the ladder?

Mr Early—That is right.

Senator JOYCE—Have your fears been allayed by that ladder? Did it do what it was supposed to do or do you now have another opinion on it?

Mr Early—We will be able to answer that question better after we have done the audit, which will begin in June.

Senator JOYCE—An audit of how many lungfish have gone across the weir?

Mr Early—Of how successful the conditions have been in ameliorating any environmental impacts.

Senator JOYCE—That would be a crucial piece of evidence, wouldn't it—a comparative analysis of the success of those conditions and their possible mitigating effects on the proposed Traveston dam?

Mr Early—Certainly. One of the things that we aim to do with the audit program—and, as I said, we have had a relatively small one running for a little while—is to examine how successful conditions have been, which will be a learning experience for future EPBC Act proposals.

Senator JOYCE—Would the determinant factor therefore be how many actually cross that barrier?

Mr Early—I would not want to say what the determinant factor is until we have done the—

Senator JOYCE—It may be a determinant factor?

Mr Early—Yes.

Senator JOYCE—It has been brought to our attention that this is a crossover zone between different climatic and environmental conditions. Are you aware of anything specific to the Mary River area that is not the case for the tropics or for the more temperate areas down south?

Ms Rankin—I think every area is unique to the extent that we have to take into account the unique circumstances of particular environments and catchments in which projects have been proposed. Certainly some of the community groups we have met and had discussions with have raised their concerns about issues such as the different climatic zones, the interconnectedness of some of the small tributaries and the off-stream impacts that this proposal might have.

Senator JOYCE—I agree with Senator Heffernan that the biggest environmental impact is by reason of the people that are continually pouring into the area. Unless we come up with a policy to get them pouring into somewhere else, we will continue to have problems; there is no doubt about that. Has the state government suggested to you that you look at stage 2?

Mr Early—That we look at stage 2? No; on the contrary.

Senator JOYCE—Have you suggested to them that they suggest to you that you look at stage 2?

Mr Early—To the extent that our minister has written to the Queensland government and to the proponent seeking clarification of what is happening with stage 2. I suppose we will wait and see what the answer is.

CHAIR—Are you suggesting that they should suggest?

Senator JOYCE—I am suggesting that you suggest to them that you look at stage 2. One thing that is absolutely, categorically clear is that they are going to build stage 2. Therefore, since it is going to happen, it would make sense that you look at both of them. That leads me to another question. Would a convenient way to mitigate the environmental threats be to get the full problem and then cut it in half by calling it stage 1 and stage 2?

CHAIR—You do not have to have him put the words in your mouth.

Senator JOYCE—Well, okay; do you think that the most honest approach is to look at the possible ramifications of any possible dam, the strong possibility being that it will go to stage 2?

CHAIR—Senator Joyce, I remind you that departmental officers do not have to answer questions on policy. We want to come to the Clarence question shortly, so we have to keep moving.

Senator BARTLETT—I want firstly to put on record positive recognition of the government's putting extra resources into your area, as called for by Senate committees not too long back.

CHAIR—Hear, hear.

Senator BARTLETT—With the auditing that you have talked about, on the Paradise Dam, and regardless of whether it is going to be public or not, does the knowledge you get from that inform decision-making about this sort of thing?

Mr Early—Yes. Some of our previous audits have thrown up conditions that we have put in there that really have not been very effective, so it is a learning experience for us. And we are trying to make sure that, when we do an audit, we involve the people who do the assessments as well so that we learn how better to have conditions in place.

Senator BARTLETT—Given Senator Joyce's question about Christmas Island, would you be able to give us, on notice—and I know you have provided this information in the past to some committee—the collated statistics of the number of referrals and the number of rejections, just so that we have that up-to-date?

Mr Early—Yes, certainly.

Senator BARTLETT—One of the issues that has come forward in the evidence is that, in effect, people are sceptical about how accurate—or how honest, whatever you want to say—the information is that the Queensland government is providing. I am not asking you to express an opinion on that. But, leaving Traveston to one side for a minute and moving to the dam in the Wyaralong area, my understanding is that Wyaralong has been triggered and is going to be assessed.

Mr Early—That is right.

Senator BARTLETT—The issue was raised about the Cedar Grove Weir. My understanding was that that was referred to federal level and it was decided that it did not trigger the act and the state government on that occasion said that that was a stand-alone project. My understanding of how the EPBC is meant to work is that you are meant to look at all the cumulative impacts and connected consequences. When we had the state government before us in Brisbane and we tried to get from them how much water they were expecting to come out of Wyaralong each year, they said, 'It doesn't work like that; it's a system yield and it is a whole system, and it is all interconnected,' and all that sort of thing. How can they say that about one project in that context, and yet, when they are putting it forward to federal level, say, 'This is just a stand-alone project with nothing else related to it'?

Mr Early—Sometimes it is a difficult issue for us—and I'm talking in generalities now because, for example, it can apply to roads and all sorts of things—but I suppose the test we apply is: if nothing else happens in this whatever, if the proposal were to go ahead, would it go ahead on its own? And if we make the conclusion that it would, then we accept it as a single referral, even though it may be part of a broader context. It is when it could not go ahead without the other things that we start to think that it is part of the broader action. So it is often a difficult call for us, but we just have to make the best judgement we can.

Senator BARTLETT—The way these projects are presented to us in South-East Queensland, quite frequently in large newspaper ads, is that they are all one big interconnected, 'You can't touch anything or we're all going to die of thirst' type of grand plan. Surely, then, each of these things is not a stand-alone project? Even when the Cedar Grove Weir was put forward, which

was before the shift was made to Wyaralong, we still had the Rathdowney one instead. When they are interconnected that directly, how is it at your level? Would you just make an administrative decision about whether or not there is sufficient interconnectedness to try and call them all in together and if someone disagrees they can go to court?

Mr Early—I suppose the issue really is whether or not they could be stand-alone, and I go back to the road example. We had an issue with the Scoresby Freeway in Melbourne about whether or not it was part of the broader urban freeway system. The Victorian government said, and the minister accepted, that even if other parts of the Scoresby Freeway were never built, they would still want to build this one. That is the sort of criterion that, if it were to go ahead anyway, it would not matter so much if it were part of a broader system. It would only go ahead if the whole system went ahead and you look at it as being part of the broader action.

Senator BARTLETT—The Melbourne northern pipeline interconnector we talked about before is not a stand-alone thing. It is not going to work unless it has water coming down it, and it is pretty clearly going to be used to extract water from Traveston—and not just from Traveston. In putting that to you, did they talk about the potential impacts of the water extraction that is going to feed into that pipeline, and whether it is from Traveston or other water sources?

Ms Rankin—The proposal was referred to us on the basis that it was initially linking water from the Baroon Pocket Dam, so there was a supply of water already there to justify building that northern interconnector, even without Traveston.

Senator JOYCE—Is it lawful to alter stage 2 without EPBC approval?

Ms Rankin—They certainly could not operate at stage 2 without EPBC approval. That is assuming that we would call stage 2 a controlled action and say that it requires EPBC approval.

Senator JOYCE—So you would have to keep the dam half full.

Ms Rankin—If that is all that they referred and all our approval covered, they would only be able to operate it at the stage 1 level to stay within the terms of their approval.

Senator JOYCE—That is an interesting concept.

CHAIR—I think it would be fair to say that Senator Joyce's point, which is what you would call a common-sense point, is that you could have a joint study where you did stage 1 and stage 2—two separate studies. That way if stage 2 said that it was a bugger of an idea for all sorts of reasons, you could save a lot of money.

Ms Rankin—As Mr Early said, we are currently considering that issue.

CHAIR—You do not have to comment, but this committee may comment on that in its report.

Senator JOYCE—The basic thing is that it is illegal to operate stage 2.

CHAIR—Senator Bartlett, I know we have hijacked you. We have to cover the Clarence as well.

Senator BARTLETT—That pipeline is coming from one water source but it is clearly being built to extract water from more than one source—in fact, more than two sources—and once it is in place it is surely a flow-on effect of having built a pipeline that has the capacity to take water from Traveston and a few other places as well. It just seems it is a very narrow interpretation—where you get death by a thousand cuts—where they do one bit at a time. If people plan it well enough to give you one little drop at a time you are never looking at the cumulative impact.

CHAIR—We know what you are getting at.

Senator BARTLETT—It does not seem to make sense in linking it to the Nathan Dam principle from the court. The only other question I would ask that links to that is: I know in the recent amendments to the EPBC there was a prospect to set up some sort of regional assessment and that sort of thing. Is that scope something that could be used in this context or is the time line not appropriate?

Mr Early—It is a possibility, Senator, but I think, in terms of the proposals, it has probably gone too far to start again. That is something for our minister to consider when he gets a reply from Queensland.

Senator BARTLETT—In theory, wasn't this the sort of thing that it was meant to address by looking at the whole, cumulative thing rather than at a lot of stand-alone projects?

Mr Early—Yes, and the regional context and so forth.

Senator TROOD—Could you help me with a point in the secretary's letter, which has been provided to the committee? In paragraph 3 it says:

… that jurisdiction is limited to the relevant matters of environmental significance—

which is clear enough, and then the last two lines of paragraph 4 say:

The department will also advise the Minister on economic and social matters which are a mandatory part of its consideration.

Those two propositions may or may not be consistent. The letter seems to highlight the importance of the environmental matters but it also seems to say that economic and social questions are a mandatory part of the consideration. I am not quite clear on how these two aspects of the assessment relate to each other and I would be grateful if you could clarify that for me.

Mr Early—I will break the process into two parts. There is the assessment and then the approval process. The assessment is in relation only to the environmental impacts, so we look at the impacts on the matters of national environmental significance. But when the minister comes to making the decision whether or not to approve the project he is required to take into account the economic and social considerations as well. Obviously, the economic and social considerations may be quite important in his overall decision. For argument's sake, the minister may decide for a particular project that there are environmental impacts but that the economic and social benefits to the project are such that he should still approve it. Alternatively, he may

decide that there are impacts on the environment and that economically it does not stack up, and therefore he would say no. It is an overlay on the environmental considerations.

CHAIR—To put that into something you can touch and feel, in a little town called Kandanga the water is going to go up the main street and take out the servo and something else but leave the bait shop—

Senator IAN MACDONALD—Be careful about putting it specifically.

CHAIR—I know, but metaphorically speaking you could make an assessment on whether or not that was a worthwhile cost?

Mr Early—Certainly, the economic and social considerations of the dam will need to involve what happens to the community.

Senator IAN MACDONALD—Could you find that there is no impact on the environment but that there is a huge social impact—not in this specific case but, under the act, somewhere else—and therefore the minister could legally reject it?

Mr Early—In the context of economically sustainable development, which is economic, environmental and social, if on balance he felt it was not acceptable from an ESD point of view he could say no.

Senator TROOD—Are these different elements weighted in any way or is it a matter of how they—

Mr Early—Not in any numerical way; it is a judgement call.

Senator TROOD—In relation to these environmental considerations and the social and economic matters, do those criteria pertain to the local region, or in this case would they be criteria that apply to the whole of South-East Queensland? The argument here obviously is that the dam is needed for South-East Queensland's water security. Is that the criterion for—

Mr Early—Really, it is any economic and social matters that are relevant to the proposal. It could be Australia-wide or very local.

Senator MOORE—Thank you for the information about the process, because that is something I am coming to grips with. But some of the people who have come before us and a number of the people who have written to us have questioned a process in which the decision on the environmental processes and the things you have just discussed with Senator Trood are with the federal government but the information that is gathered as part of the EIS is to be referred back to the state government. The application to have the dam has come from the state government, the decision is with the federal government but it has actually gone back to the state government to do the work on the case, which is to be the objective. People have difficulty understanding how the organisation that wants it can also be assessing it. I want to clarify the process for the people who have come before the committee and asked those questions.

Mr Early—Essentially the process is that proponents have the responsibility for doing the environmental impact assessment. That has been the regime for 35 years.

Senator MOORE—Have questions been asked about that?

Mr Early—From time to time. There is a criticism of EIA generally—this is worldwide—that government agencies ought to be doing this, but I guess that is not best practice because government agencies do not actually have the capacity. If the proponents cannot address the issues and make the case, then that is a more telling observation, I suppose, than if we did something from scratch. It is putting the accountability and the responsibility back on the proponent to demonstrate to the government and to the community that that particular proposal is environmentally acceptable. They are the ones that are developing the proposal, they are the ones that have got know-how—I am talking in general terms now—they are the ones that have got the capacity to vary the project and so forth. I think it would be a very bureaucratic and inefficient process for the government to be effectively going to a private company or something and telling them how to run their business.

Senator MOORE—Isn't the group that is going to be doing the EIS a government agency?

Mr Early—Sure, but that is no different from any proponent. If the proponent is a mining company and they want to mine, it is the mining company that develops the environmental impact statement.

Senator JOYCE—Can you buy properties that would be covered by stage 2 if it has not passed the EPBC Act? Can you have the compulsory acquisition of properties that would be covered under stage 2 of the Traveston dam project if that stage has not been approved by the EPBC Act?

Senator IAN MACDONALD—Stage 1 has not been approved either.

CHAIR—Anyhow, there might be some rethinking of that. It is a very intrusive question Senator, thank you.

Senator O'BRIEN—What work has been done on the recently announced concept of the damming of the Clarence and the diversion of water to Brisbane?

Mr Costello—Thank you for the question. The work that has been done is the report that has been released by the Minister for Environment and Water Resources. To put it into context, it is at a very preliminary stage. That was a desktop study, really, pre feasibility, to say, 'Is there potentially a viable resource here. Is it worth spending considerable time, money and effort to go through the detailed investigation of that'. So it was just that preliminary step: is there something worth looking at here.

Senator O'BRIEN—When did that work start?

Mr Costello—Early December 2006.

Senator O'BRIEN—What resources have been applied to that?

Mr Costello—We have a preapproved panel of consultants. We ran a tender for that and we developed a brief.

CHAIR—Is that where SMEC came in?

Mr Costello—Yes, and SMEC were on our panel.

CHAIR—But you did not have access to information from the New South Wales government?

Mr Costello—No, we wrote to both the New South Wales government and the Queensland government asking them to participate. The Queensland government agreed to do so and the New South Wales government declined.

CHAIR—I am hopeful that under the new regime in New South Wales we might get a higher level of cooperation.

Senator O'BRIEN—So essentially a decision was taken to explore the concept and the work was tendered to SMEC.

Mr Costello—That is right, and it was done at the request of the parliamentary secretary. The National Water Commission commissions reports and publishes reports on a range of matters to contribute to the debate about water management, and it is one of those. Certainly further work would be required before you could say there was a project-ready scheme there.

Senator O'BRIEN—That, as has been indicated, is something that has been done against the wishes of the New South Wales government?

Mr Costello—They did not actively participate in it, but they did not ask us not to proceed with it.

Senator O'BRIEN—Were they asked?

Mr Costello—To participate? Yes, they were.

Senator O'BRIEN—And they declined?

Mr Costello—Yes, they did.

CHAIR—It would be fair to say that there was an election on. The election is over now.

Senator O'BRIEN—It was about a different election, I think.

Mr Costello—The terms of reference for the report—and this is important—are looking at the water needs of north-east New South Wales as well as South-East Queensland. It is not simply about South-East Queensland.

CHAIR—Can I get you to put this on the record. Just roughly, the proposal is to take somewhere from five per cent to 15 per cent of stream flow?

Mr Costello—The New South Wales rules for water-sharing plans—this is for their coastal rivers—say that a maximum of 15 per cent could be extracted. That is at the point where the dam is now. The proposed sites are all in the upper catchment, so it would be 15 per cent at that point. Down at the sea it would be much less than 15 per cent. So up to 100,000 megalitres was identified as potential yield. But, as I say, the environmental impacts and other social and economic issues have to be assessed.

CHAIR—If you do away with the Queensland border, it is a fair thing to say that stage 2 of the Traveston is 115 net gigs and this is 100 gigs, so it is somewhere near the same thing.

Mr Costello—It is in that order of magnitude.

CHAIR—It would be a good comparison environmentally. On a price regime I understand that the Clarence water would be cheaper.

Mr Costello—One of the purposes of the report was to say that just having a border there should not be a barrier to effective examination of all available options.

Senator O'BRIEN—How much has the desktop prefeasibility study cost to date?

CHAIR—It is up to about $270,000, isn't it?

Mr Costello—No, it is in the order of $156,000. There may be some extra bills still to come—for example, for their appearance today and so on, and we will meet their travel costs. It is in that order.

Senator O'BRIEN—I am glad that someone pays for witnesses!

CHAIR—But in that study you did identify a preliminary water pricing?

Mr Costello—SMEC did.

CHAIR—We will come to that. Do you have that information?

Mr Costello—I have the report, yes. There were originally over 40 options examined and they were short-listed down to five. A dam on the Clarence River upstream of Duck Creek with a pipeline to the Logan River to provide up to 100,000 megalitres per annum at about $1.73 per kilolitre had the lowest cost of the large 100,000 megalitre options. There is a 20,000-megalitre option on the Tweed which is cheaper, at about $1.42 per kilolitre, but these are preliminary cost estimates which would need to be further refined as detailed work is done. They should be treated with some caution.

CHAIR—That is about half the cost of some of the piped water schemes in Queensland, by the way.

Senator SIEWERT—Can you explain to me how this fits in with the functions of the commission?

Mr Costello—The commission has a number of functions. One is to advance the objectives of the National Water Initiative and another is to administer some of the funds under the Australian government water fund. The commission itself also produces reports and think pieces as part of the debate about water management.

Senator SIEWERT—So part of the Water Commission's function is to actually find new water sources? Is that a correct interpretation of what you are doing on that particular project?

Mr Costello—We can undertake duties as requested by the minister. This was one of those.

Senator SIEWERT—So it is in fact not normally something that you would do?

Mr Costello—No, it is a state government responsibility to secure reliable water supplies for their communities. That is right—it is not our normal role.

Senator SIEWERT—So the minister, when he was parliamentary secretary, as I understand it, asked you to do this?

Mr Costello—Yes.

Senator SIEWERT—What was the reason for doing it if it is normally a state function?

Mr Costello—It was a concern that not all of the options were being put on the table in South-East Queensland and there may be other alternatives.

Senator SIEWERT—Is that considered a normal function of the commission?

Mr Costello—One of the requirements of the National Water Initiative is, first, that states secure reliable and secure supplies for their communities but they should also look at all reasonable options. The view of the commission is that options should not be ruled out out of hand but should all be assessed on their merits.

Senator SIEWERT—Can you explain what the next step is from here, now that you have the report?

Mr Costello—Yes. We will be developing terms of reference for further studies.

CHAIR—Hear, hear!

Mr Costello—But we will be writing to the Queensland and New South Wales governments seeking their cooperation and involvement in that.

Senator SIEWERT—What are the further studies you will be undertaking?

Mr Costello—They will be as recommended in the SMEC report. We will be developing the terms of reference jointly with the states, we would hope, but they would look at just the next stage of detailed economic engineering and environmental assessments.

CHAIR—You do not have to answer this—only one person has given an answer other than yes. They are going to pump another million and a half people into South-East Queensland over the next 15 to 20 years. Do you have a view on whether they need a new primary source of water beyond what they have?

Mr Costello—The Queensland government have identified what they believe to be a range of projects to meet their future demand of 750 gigalitres.

CHAIR—So they have to find some new water?

Mr Costello—They would acknowledge that. They have a program of a large number of augmentations and creating their grid, so there is a very large investment required in South-East Queensland.

CHAIR—So it would be fair to say if they do not do that we might as well pack up South-East Queensland and go somewhere else.

Senator IAN MACDONALD—I remind the committee they do not have to give opinion evidence!

CHAIR—This is what you could call 'shoving it down your neck'.

Senator SIEWERT—Can I get back to a more scientific approach. Have you read the submission that Stuart White wrote for the mayors? Have you done any assessment of the Queensland government's options?

Mr Costello—We do not have a formal role in approving their options, but obviously SMEC have looked at the other options in their report; they are detailed in there.

Senator SIEWERT—If you are looking at northern New South Wales because you were asked to and because you did not think the Queensland government—

CHAIR—They are not recommending it.

Mr Costello—We are not recommending it. We are just saying that it is an option that could be further investigated.

Senator SIEWERT—It seems illogical to me to put that on the table without doing an assessment of the other options.

CHAIR—Hear, hear!

Senator SIEWERT—If we are not doing a critique of what Queensland is proposing we do not even know if that one is needed.

Mr Costello—Queensland officials were invited to participate. They attended some meetings and had access to this data so that it could inform their debate and their decision making on their options.

Senator SIEWERT—Have you had a look at their demand scenarios et cetera?

Mr Costello—Yes.

Senator SIEWERT—Have you had a look at UTS Professor Stuart White's submission?

Mr Costello—No, I have not personally read his submission. I understand that SMEC spoke to Stuart White.

Senator SIEWERT—They spoke to him but have not assessed the report.

CHAIR—We will come to that, because we are coming to SMEC. Can I just move this along because our time is up and Senator Bartlett is busting to ask one last question.

Senator BARTLETT—It goes to that broader question. One of the issues that this committee has to wrestle with a bit is how much is it the Commonwealth's role and how much is it for the state to decide, except for the EPBC. It seems that we have two bob each way. We have the National Water Initiative, which includes a requirement for state governments to put forward cost-effective options. We have certainly had a lot of evidence, not just from Stuart White but also from others, saying this is one of the least cost-effective options. What happens if, in your view—I am not asking you to express a view—a key plank in the state government's water policy is seriously cost effective? Is that a breach of the National Water Initiative, and if so, what do you do about it?

Mr Costello—The only recourse we have is that we do biennial assessments of the progress of the National Water Initiative and in that we could make comment upon which states have met their obligations, and that would be a report to COAG. But we do not have a penalty or a sanction or an enforcement mechanism; it would be a comment to COAG.

Senator BARTLETT—The decision is the federal government's eventually, but do you have a role in that decision making? For example, the federal government has just announced it is going to give Queensland $400 million or something for a pipeline—

Mr Costello—For the Western Corridor Recycled Water Project—that is right.

Senator BARTLETT—In my view, it is all part of the whole thing—that is the way it is presented to me; perhaps I have been affected by all the propaganda being pumped into my head every day, living in Brisbane, that it is all part of one big thing. If you are giving $400 million to this pipeline you are freeing up $400 million for them to spend on this other thing which, possibly, is seriously economically dubious or not cost effective. So you are really playing a role therefore. How do you fit in the middle of all that? Do you compartmentalise everything as well?

Mr Costello—We assessed the Western Corridor Recycled Water Project against criteria, and it met those criteria.

Senator BARTLETT—Well, I think it did, but as part of the system—

Mr Costello—As for Traveston, we have had no funding request, so we have no involvement in funding that. But I understand your argument that, if you fund one thing, that would free up some money somewhere else.

CHAIR—Could I just ask one final drop-dead question? Does the National Water Initiative separate, or treat as separate resources, groundwater and river water?

Mr Costello—No, it does not. In fact it emphasises the importance of statutory water plans that consider the interconnections.

CHAIR—So would it be fair to say that a lot of the early work done in water planning by the various agencies and governments over a period of years has been seriously flawed because it did not do that?

Mr Costello—Yes. The purpose of the National Water Initiative is to improve water management and that is one of the issues which, as a nation, all jurisdictions have agreed needs to be further considered. But of course the level of interconnection is unique to each circumstance and has to be investigated. You cannot generalise.

CHAIR—Yes, I understand all that. Thank you very much.

[9.07 am]

COLLIGNON, Professor Peter John, Private capacity

CHAIR—Welcome, Professor Collignon. I am sure you are going to explain to us why you cannot make a good cup of tea out of recycled water!

Prof. Collignon—Thanks for the invitation.

CHAIR—Do you have anything to add about your background or the capacity in which you appear today?

Prof. Collignon—I am an infectious diseases physician and clinical microbiologist based at the Canberra Hospital. I am also a professor at the ANU Medical School.

CHAIR—If you would like to, you can make an opening statement, and after that we will move to questions.

Prof. Collignon—Why I have got involved in this is that, as probably most of you would have seen recently, there is a proposal to recycle water from sewage into the water supply of Canberra. Having looked into this, I have major concerns. I guess that comes from a primary viewpoint I have and have had for a number of years. Doctors such as me who treat patients get a lot of credit for making people better—we give antibiotics and such. But, if I look at what the major benefits for people's health have been, they are the things that have been done from a public health point of view. One of those is vaccinations; that has saved lots of lives. But the other major thing is what engineers have done with water and water supply. That has really made a difference, a huge difference, to the health of nations. I think we do need doctors and that sort of stuff as well, but I think that public health stuff is really important.

CHAIR—We need more doctors than lawyers.

Prof. Collignon—We probably do need more doctors than lawyers; I fully agree—and probably a lot more nurses too. But one of the fundamental developments over the last 150 years was to keep faecal matter, particularly human sewage, out of the water supply and preferably, as much as you can, animal faecal matter as well, because they are the main vehicles for disease. And when, fundamentally, that is breached—as we are going to do now, where, instead of separating it, we are going to physically put it back in—that is a major step. It really requires a lot of thought before we start doing that.

Another reason is this. We have got good systems in lots of Western countries where they have got chlorination and all those systems that are supposed to work all the time. Yet, despite this, there are frequent documented outbreaks of disease in the US, Canada and Europe that occur principally because of either human error—somebody switches a thing the wrong way, does not look at the right tubes at the right time and all of that sort of stuff—or some mechanical breakdown as, as often happens, sensor mechanisms have not worked. I do not think there is any doubt that things go wrong even in developed countries.

Another argument, and I speak as to Canberra, is that we should do this because this is being done all over the world. I think that is a misleading and false statement. That is appearing in a lot of advertisements. When I really look at it, I ask: who takes water from their sewage and puts it directly back into their potable water or their dams? There is a place in south-west Africa, Windhoek, that does that. I might say I am not against recycling; I think we should recycle as much as possible. My viewpoint is that our last option should be putting it into our drinking water. We should find all other ways of using it for irrigation, for watering our ovals and for all those things so we have as pristine as possible the water we are using for drinking. If I look at which places in fact breach that, there is this place in south-west Africa, Windhoek, which almost has no choice—so if I were there I would say, 'Okay; fine.' But the problem is they are not using the same system that we have. They have only 300 millimetres of rainfall a year and they have a population not too dissimilar to that of Canberra. The other problem is that their plant frequently has not worked. So I do not actually think that is a very good example.

The other place that is put up is Singapore: 'Everybody drinks recycled water there.' That is not true.

CHAIR—It is five per cent.

Prof. Collignon—No, I do not think it is five per cent. It is less than one per cent—if it is even one per cent. In fact, if you want to get recycled water from Singapore, I have an application form, which I will leave as evidence, as to what you need to do. It makes it quite clear—this is what it says—that:

NEWater is cleaner than potable water. However, it is currently supplied for direct non-potable use.

It adds another thing:

As NEWater is non-potable use, customers will have to provide separate pipework for potable and non-potable water supply within their premises.

I think what Singapore have is a very sensible use of recycled water. They have taken their sewage and they are recycling it to a quality that their industry likes, because it does not have salts and everything else in it. But what they are not doing is putting it in their water supply. So I think that statement that comes out is misleading. I think they sell it in bottles for tourists to drink. I guess if I were travelling around South-East Asia I would probably still drink it because it would probably have better quality control over it than other bottled water has.

CHAIR—We have Chinese bottled water here.

Prof. Collignon—I think it would be a mistake to drink that, personally; I would not drink Chinese bottled water. So I have no qualms about that. Take all the other examples that are put up of London and everybody else in Europe doing it. They do not do this on purpose. What they have is a lousy water supply, because everybody upstream has been putting their sewage in, and, quite rightly, they want to make it safer for themselves before they drink it. If I were there, that would be exactly what I would be saying.

Let us look at the Canberra proposal in particular. We are going to take 20 gigalitres of water from sewage and put it directly into the smallest of the dams we have, one that overflows all the time. It is going to be taken almost directly out into our reticulated water system so it goes over to Googong, which means 40 per cent of our potable water will be recycled sewage. Nobody else in the world does that, and we are doing it without all the normal safety factors that are there to protect us. Germs actually die with time, so if you have a long time before the sewage gets into the river and comes down they die off. They die off probably by one log every 10 to 12 weeks. There are big variations in this because of biofilms and a whole lot of other things. The other thing is that having a big storage capacity helps because these organisms settle down to the bottom and it is only after rain that in fact they get stirred up and you get turbidity problems. All of those safety factors are removed from this proposal, and we are completely relying on what they are going to do with the processing from all these great technologies.

I fully admit it will probably work for the vast majority of the time. But the trouble is nobody can guarantee it will work all the time. The problem with that is that if something goes wrong and you have not got a safety mechanism in there by which you can keep the water separate—which in the Canberra proposal I think is going to be the case—that can have major consequences for your population. When I look at the risk analysis in the Australian drinking water guidelines, I see they have on one side of one column how likely it is that something will go wrong. It has 'common' and it goes down to 'very rare'. I fully admit that it is very uncommon that something will go wrong with this process if it is all working properly and you have got all the right systems. But along the other column they have got the consequences of something going wrong. It goes from 'inconvenient', because a few people might get mildly sick, to 'catastrophic', because you get people dying.

Senator IAN MACDONALD—I very much appreciate your concern about the Canberra proposal. I agree with what you have said as well, but we are looking at the water supply in South-East Queensland.

CHAIR—Traveston dam.

Prof. Collignon—Okay.

CHAIR—What he is trying to tell you politely is that you should now shut up and we will ask you some questions.

Senator IAN MACDONALD—Do you have a view on any of the proposals for South-East Queensland?

Prof. Collignon—The point I am making is that, if you look at the Australian drinking water standards, that same matrix holds for Queensland if you are going to put it into your drinking water supply. There is a low probability that anything will go wrong, but the consequences may be fairly major. From my reading of this, it comes out as either a moderate or a high risk proposal.

CHAIR—So what you are directing us to is that, if the plant is working and they do not flick the switch the wrong way or forget to clean it, the water is okay, but when it goes wrong, it can go badly wrong.

Prof. Collignon—The other thing that worries me—and even when the plant is working I worry about it—is that I was under the impression that the use of reverse osmosis removes everything from the water but, when I looked at the performance of the plants in the US, I saw that they remove 98 to 99 per cent of salt. My question is: why does it not remove 100 per cent of salt?

CHAIR—I think the community would like to ask you whether they are going to get HIV or Hepatitis C. Is the water contaminated when it comes out even if the process is in full working order?

Prof. Collignon—I cannot particularly answer the question of whether viruses come through because I was originally under the impression that 100 per cent of materials were removed by osmosis if it is working properly. But it does not remove all salt. If you only remove 99 per cent of salt, that is only a log 2 reduction. The number of viruses in sewage water is in the order of 10^8 or 10^9. You need a significantly better performance than that. There are other issues, such as virus size, but it is very difficult to find any data on these reverse osmosis membranes working with large volumes of sewage in real life where there has been a lot of viral testing done. Viruses are the things that you are really worried about. The data may exist, but I have not been able to find them.

Senator JOYCE—What you are saying, and I think you understand it perfectly—in fact, you are way above everybody else's level—is that, if it leaves behind two per cent salt, it has no chance of removing viral material.

Prof. Collignon—My worry is that if it leaves one or two per cent of salt, why can't it leave one or two per cent of viruses?

CHAIR—How long have you been in Canberra?

Prof. Collignon—20 years.

CHAIR—We poor buggers in Junee and Wagga for all of my life bar the last 10 years have been drinking Canberra's pee. That might explain what has happened to me! Is that because it goes into Burrinjuck or somewhere and it settles?

Prof. Collignon—Yes. I have been looking at that. I worry about it.

Senator JOYCE—Lately?

Prof. Collignon—What is interesting is that the water from Canberra does not hit those consumers very quickly. All the water from Canberra gets captured in the Burrinjuck Dam. Yass is not allowed to access that dam. Yass has a separate water supply. My understanding is that Wagga do not take the water from the river; they take it from an aquifer.

CHAIR—We used to.

Prof. Collignon—Obviously Wagga thought it was safer not to do that.

CHAIR—No, I will tell you why they did it. It is because at Junee we used to filter the water and, to avoid the cost of a filter, we would take it out of a bore next to the river, which is really river water anyhow.

Prof. Collignon—If you asked me, 'If I have a problem water supply that I need to make safer, is this a good idea?' I would say that I think it is. If the water quality at Junee and Wagga is of such poor quality then I have no objection to this type of admittedly very expensive energy processing. My point is that we should be striving to lower the risk for people, not increasing it. If you have poor water and you use this, it will lower your risk.

CHAIR—You say that Sydney's water supply goes into the dam and settles at the bottom and it is quaint that the New South Wales government has put up the proposition that they have bored into the bottom of the dam and that it is a complete furphy that it has added whatever per cent to the storage because it is a once-off and you do not fill the dam. It would be pretty touchy water in the bottom of the dam system given all the cattle and kangaroos.

Prof. Collignon—One of the problems in terms of risks is that a lot of outbreaks occur after rain for two reasons: you get more turbidity so your chlorination does not work and it moves pathogens into the water and stirs them up. One wants to preserve these natural processes as much as possible. So I actually think, from what I understand, that you get much greater preservation of organisms deep down—they take a lot longer to die because they are in a cold area away from ultraviolet light and sunshine and that preserves them for longer. So instead of taking 20 weeks to die it may take 50 weeks. That is why people, as much as possible, allow as long a time as possible for the natural processes to kill the organisms.

CHAIR—So would a better proposition with recycled water be to put it into the aquifer and let that come back into the system?

Prof. Collignon—If you need the water, I think that would be much better. That is my understanding of what happens in the US. They put it in an aquifer where it may take up to 10 years before it actually arrives at the point. So you have this added safety factor. The other thing is that, with your monitoring, if something should go wrong then you have more time to realise it. I think that a lot more monitoring needs to be done than is the current practice. We need to have better tests to look for viruses and to be able to detect more quickly if they are in the water that is being released, because currently that sort of technology does not seem to exist.

CHAIR—So you have no objection to secondary treated water being used for industrial purposes?

Prof. Collignon—My view is that we need to protect our drinking water and that we should find as many uses as possible for water that is currently coming out of our dams. For example, in Singapore they use this water to feed industry.

CHAIR—And like Junee.

Senator JOYCE—Going back to Senator Heffernan's example, are there any examples in the world of where being in close proximity to where the recycled water goes into the river or the dam has affected other life such as fish life or had any other effects?

Prof. Collignon—I am not an expert on chemicals, but my understanding is that there are areas where obviously sewage and the drugs it contains, particularly drugs that do not break down, have actually had an effect on fish. I also know that in Queensland there has been some data produced about antibiotics, which I have got an interest in, particularly one called ciprofloxacin, having an effect on environmental bacteria and causing resistance. So there is data showing that the drugs that are released into the local environment can have an effect.

Senator JOYCE—The problem in Brisbane is that this recycled water could go into a dam that is only five per cent full. That would increase the time period before it is used again. Also it would mean a far greater concentration than you would otherwise anticipate.

Prof. Collignon—I think there are safety factors to do with water: the dilution, the storage and the time. Whenever you compromise that, for whatever reason, that presents an increased risk. Occasionally you may have no choice. But when I look at the water use here locally, I find that there are lots of ways that you could use cheaper and safer water than this proposal. This proposal uses 1,000 kilowatts of electricity for every 1,000 litres as well so it is a huge energy expenditure.

Senator IAN MACDONALD—Have you seen the proposal for the western Brisbane pipeline?

Prof. Collignon—My understanding of it is that the main proposal is to use it principally for non-potable uses. Again my view is that if we can actually save our drinking water for drinking purposes and use, if you like, riskier water or other sources of water—

Senator IAN MACDONALD—So you are quite happy with that proposal as you understand it?

Prof. Collignon—My view is that we should keep drinking water as safe as possible and not put it at risk if we have other options that are reasonable. The trouble is that it should not be one of our first options to put treated water from sewage into our drinking water if we can find uses for the water other than that.

CHAIR—I would like to test you on tank water. It is pretty sexy to say, 'We've been drinking tank water.' It makes the best cup of tea. But is there a risk, given the microbiology and all of that, from a roof in a city where there are all sorts of bugs and rubbish in the air?

Prof. Collignon—I think there is. We have just put in a tank ourselves.

CHAIR—What is that growing on your shoulder there?

Prof. Collignon—I am not sure actually; another head, I think! With any source of water, you want to keep faecal material out of it. The trouble with roofs is that birds land on them. One disease that people get from birds is something called psittacosis. People get it from mowing the lawn and aerosolising up the droppings—mainly from parrots but also from possums. The risk from that is much lower than if it was human waste, but there are still risks.

CHAIR—How would you filter that out? Obviously, it is a good idea to try and capture rain. Is it possible? I know of a company in Sydney that makes filters for water tanks. What technology would you use to filter out all the rubbish?

Prof. Collignon—One of the first things they do is use a first-flush tube so that all of the gungy water gets wasted. I think that is a really good idea. We have done it on ours. We use ours for the garden rather than for drinking. I think taking precautions to make sure that you remove the first part of the water that contains a bigger concentration of organisms would be a good idea—so a big first flush. Then I think there is an argument for having some sort of internal filtering system for the drinking water you are going to use from it. If you boil it, it is not an issue. But, personally, if I had a lot of animals on my roof, I would not drink the water without treating it in some way.

CHAIR—Drink more tea.

Prof. Collignon—You have boiled water for tea, so that gets over that problem. It is drinking it without processing it in some way that is potentially a risk. There are some situations where you have no choice. However, if you have choices and other options, you are better off making the water as safe as possible.

CHAIR—Does it hurt to have a few frogs in the tank?

Prof. Collignon—It depends on what they do in the tank, I guess. Again, it is a question of what you do with water when it comes out. If you are using it on the garden, obviously it does not matter. The reality is that the majority of water that is used is not used for drinking or bathing purposes. That is a very small percentage of the water used.

Senator JOYCE—Professor, you brought up Veolia Water—the company that is putting in the recycled water pipeline. Does the French CEO of that company, which is putting in the western corridor, have any views on drinking recycled water?

Prof. Collignon—What is very interesting is that, when I was doing my internet search for material, an article in the London *Financial Times* pointed out that there are only two places in the world that do what was proposed for the ACT and for Brisbane should it go to potable water. How I read the article was that this should be one of your last options, not one of your first options. I thought the *Financial Times* article was very interesting because it quoted those people as well.

Senator JOYCE—The CEO of Veolia said that there were only two places in the world where people drink recycled water—one is a town in Namibia where the river water is of a lower quality than the recycled water and another is in Singapore, which you have just gone through, where they use recycled water all right, but it is for batching concrete and for other industrial uses. A maximum of one per cent recycled water is used. The person putting in the western corridor does not recommend that we drink recycled water.

Prof. Collignon—If the quote in the *Financial Times* article is true—

Senator O'BRIEN—Can I ask you about ultraviolet light and its effect on viruses and bacteria in water and the relevance of water being exposed to it?

Prof. Collignon—The more you can treat water the better. Ultraviolet light is not something we use in hospitals very much because it is not one of the better disinfectants. But if you need to do large quantities, there is data on how many log reductions of the viruses you get. The more safety barriers you put in, the better, providing they are cost-effective. The natural processes are the best protection for us. If we come to rely on our clever engineering and our clever things, things will go wrong every now and then. It is not that we should not use them as backup, but our primary way of protecting ourselves should be by doing the fundamental things that we have been doing for a hundred years.

Senator O'BRIEN—I have been made aware of a proposal in aquaculture to use a new ultraviolet light technology, which was developed in Israel, for a closed system. It is an aquaculture venture which will use ultraviolet light to purify a sixth of the water used every hour. What effect would that have on viruses?

Prof. Collignon—The trouble is that none of these solutions are perfect. It is to do with the number of organisms, the turbidity and other factors. Something works very well for one hour with this bit of water, but if that water changes then the performance of the sterilising agent may rapidly change. So there is no one solution. The complexity of water with the number of organisms and all those other things greatly affect the performance of a sterilising agent. No disinfectant instantly kills bugs. They give you log reductions with time. I will just talk about this in the context of a hospital and why cleaning is so important when we sterilise instruments. If you do not clean properly, you will not kill all the bugs. So cleaning is more important than disinfectant. Again, a fundamental first principle is: make sure you clean up your environment and the things in it as much as possible before you use them.

Senator SIEWERT—One point I would make is that I do not think it is a very good idea to use a newspaper as a source of your information. If my being misquoted is any example, I would say a whole lot of other people are.

Senator JOYCE—I do not think that.

CHAIR—That is an editorial comment; come on!

Senator SIEWERT—No, I am sorry; it is a serious point. I think that we need more than a newspaper article as evidence of some of these issues, and we have just been given evidence from a newspaper article.

My understanding of the way reverse osmosis works is that water molecules are small and viruses are big. So I would have thought that reverse osmosis was a pretty effective way of doing water recycling. Are you saying that the issue is not that it is ineffective but that it fails?

Prof. Collignon—My impression was the same as yours when I first looked at this. I was told that the membrane size is so small that the only thing that goes through it is water. So all salts are removed; that is how desalination plants work. When I looked at their performance, I found that that was not the case. Much to my surprise, I found one or two per cent of salt is left. And I

said, 'Well, if it leaves one or two per cent of salt why can't it leave one or two per cent of viruses?' There are issues with the electrical charge on it and all those things, but I tried again to find the performance of these membranes with viruses, and there are few studies that I have been able to find that show that. Singapore has done some, but in their expert report I can only find that they did 20 tests for an enterovirus. I do not think that is enough before you subject a large population to this potential risk. You need to be looking for lots of viruses over long periods of time to actually do this.

The other thing that they say is: 'The pressure monitoring will tell us if there is a problem.' But, again, when I looked at the Californian data, the pressure goes up with time as the membranes foul a bit, and there are a lot of variations. My own view is: if you had a one per cent diversion of your water flow that did not go through the membranes, I cannot quite see how the pressure monitoring would pick that up because it is within the variations from hour to hour. If you had one per cent of the membrane go then yes you would, because there would be a big leak through it and your pressure would go. But if we have minor imperfections of one or two per cent in the membranes, I really worry about how good we are at picking that up straightaway. We could pick it up if we did good testing at the end for all these viruses, but that would mean somehow quarantining the water before we let it into the drinking water. And, again, I have not seen how the proposal works. Where are you going to quarantine the water until you are sure it is safe? It may take three or four days to get a result back on these tests.

Senator SIEWERT—We heard evidence in another inquiry that treated water is going back into river systems and is then being taken out by other towns to use as their drinking water. If that is in fact the case, surely recycling is better than that occurring?

Prof. Collignon—Some of this is to do with cost. And if you were to ask me, 'Would it be a good idea for everybody to put sewage through this before they put it into a river?' I would probably say yes. But that would be a crippling cost. It would be more sensible for smaller towns to think about using that process not in their outflow but in their inflow, because that is what you are worried about.

CHAIR—I think you are starting to dig a hole for yourself.

Prof. Collignon—Why is that?

CHAIR—Because you are offending some people that have to do that now.

Prof. Collignon—'That do that now'?

CHAIR—Yes—we drink the bloody stuff straight out of the river, mate.

Prof. Collignon—I guess what I am saying is: I think we should look at what the risks are for various people along the river and, if we can decrease their risk, we should see if we can make their water better.

CHAIR—If you are going to recycle and put it back into the drinking system, what is the safe period that you need—a year or two years or 10 years?

Prof. Collignon—I think the longer the better, but you at least want probably a number of months before you do that.

Senator JOYCE—They drink it straight out of the river in Africa, but it kills a fair few of them.

Senator BARTLETT—I do not think we are hitting at the core point here. You are right to raise these concerns and you obviously have a lot of expertise in terms of health related issues. But even what you have just talked about is really about balancing risk. There is never zero risk. There is not zero risk from tank water. You cannot guarantee to me that the water in front of us here is not going to be unhealthy—although I notice you have not poured yourself a glass!

Taking the example you used of inland towns, it is a matter of cost versus risk. Have you got any sort of quantifiable risk here? One of the arguments I have heard about recycling is that there might be things in there that we do not know are in there and we do not know they are in there because we cannot measure for them, and how do we know if we do not know, and all of that sort of thing. You cannot prove a negative. Where is the level of acceptable risk? And can you quantify it in any way?

Prof. Collignon—Groups will accept a different level of risk in different societies. In our society, people want a very low risk. You can do mathematical modelling—and 99.9 per cent sounds pretty safe, but that means that on one day in three years something will go wrong.

Senator BARTLETT—Is that 99.9 per cent a quantifiable risk that somebody has analysed and attached to recycling versus water tanks, versus what we do now, versus Junee and what they have copped for however long? Where does it sit in the mix of quantifiable risk?

Prof. Collignon—Again, I have not been able to find that data. I have only found the Australian drinking water standards that have a qualitative risk. On a qualitative risk scale, this is a moderate-to-high risk proposal. What that translates into as a number such as one in 1,000 or one in one million, I cannot tell you, because somebody has to do that.

Senator JOYCE—Does anybody in the world drink 100 per cent recycled sewage?

Prof. Collignon—Not that I am aware of.

Senator JOYCE—Would that be an unacceptable risk?

Senator BARTLETT—Brisbane is not planning to, either.

CHAIR—I thank you for your evidence. I point out to everyone that we will hear from another learned person next. Twenty-five hundred learned people in London the other day said that, in 50 years time, 50 per cent of the world's population is going to be water-poor, so obviously we have to do something about it. Thank you very much for your evidence and your passion.

Senator IAN MACDONALD—Good luck with your Canberra campaign.

[9.36 am]

JOSS, Professor Jean, Private capacity

CHAIR—Welcome. Do you have any comment to make on the capacity in which you appear?

Prof. Joss—I am a professor of biological sciences at Macquarie University.

CHAIR—Would you like to make an opening statement?

Prof. Joss—In my capacity as a professor I have been studying the Australian lungfish for the last 20-odd years. I have written my submission about the Australian lungfish because I believe that a dam on the Mary River would be a disastrous thing for the lungfish. I want to make the committee aware of the significance and importance of the Australian lungfish. I am aware that every species is important and, if they are listed in the EPBC Act, they are at least considered to be endangered to some degree—and they should all be considered endangered. There are other species besides the lungfish in the Mary River that are listed in this way, but I want to highlight the lungfish in particular. Should you decide that the water needs for South-East Queensland are more important than the risk to these endangered species—that we can do without the endangered species to meet the water needs of South-East Queensland—I want you to be really aware of the significance of this particular species. I assume that you have read the submission so I will not take it any further than that.

CHAIR—We are delighted to have you here because we have been told around the place that, as they say in the bush, you are the duck's guts on lungfish.

Prof. Joss—I wish I was.

Senator O'BRIEN—Did you make a submission in relation to the assessment of the Paradise Dam in Queensland?

Prof. Joss—I was involved in fighting against the Paradise Dam. I am glad you mentioned that because it ties in with the lungfish being listed. I became aware that the Queensland government were considering putting in a large dam not long after they had put in the small Walla Weir. I applied to the then federal minister for the environment to have the lungfish listed. It was quite interesting because it took about three years from when I put in that application to when they were actually listed, and it is my understanding that that listing was on the minister's desk for at least a year and that approval was given for the dam just prior to the listing of the lungfish. That meant that it did not have to be considered in the approval. That makes something of a difference to this particular dam proposal where they are definitely listed.

Senator O'BRIEN—But I presume the concerns in relation to that dam were the same as for this dam?

Prof. Joss—Yes, they are interesting. The fish were listed because it was estimated by the committee at the time that 26 per cent of the lungfish-spawning habitat had already been lost to

water impoundments across their very small habitat range, which was just those two little rivers, the Mary and the Burnett. They were listed as vulnerable with that 26 per cent loss. But the Paradise Dam has been listed as taking an extra 13 per cent off that, which raises it to almost 40 per cent with Paradise Dam. So to put another dam in there that is quite a large dam—maybe not quite as large as Paradise—and on the only other river, which is their normal habitat, you are running a huge risk of pushing them from vulnerable to at least endangered if not critically endangered, and I find that a bizarre use of the act.

Senator O'BRIEN—I understand from your submission that you are breeding lungfish.

Prof. Joss—I am.

Senator O'BRIEN—Is it a successful exercise?

Prof. Joss—It is successful, but it is only successful because I studied them for a long time before I set up the ponds that I have at Macquarie University. They are not just any old dam; they are specially designed ponds and I have also chosen the lungfish that I put in there with some scientific evidence as to why these lungfish would work for me, and they do. In this way, I can supply all of the lungfish needs for the scientific community. But, as you can see, I am not getting any younger, so I cannot go on supplying lungfish for scientific purposes for as long as they are required. I would like to be sure that there is an adequate population of them still in their natural habitat.

Senator O'BRIEN—Is it possible to breed them in captivity and return to habitat?

Prof. Joss—I do not believe that is wise unless they really were lost from their natural habitat because where this has been done with other endangered species you often introduce parasites or diseases and things. Here in Sydney we are a long way from the rivers just north of Brisbane—

Senator O'BRIEN—Sure, but that is because you are breeding here—

Prof. Joss—and you might reintroduce something into the natural population that is even worse for them.

Senator O'BRIEN—But presumably you could breed much closer to the habitat that you wanted to introduce a species to.

Prof. Joss—I agree, and I have made this suggestion to the Queensland government.

Senator O'BRIEN—Do you think that, if a dam went ahead, one of the conditions should be that there be a breeding program?

Prof. Joss—Absolutely. If the dam must go ahead, then you must have a breeding program. But, even then, that is not absolutely ensuring that they do not become extinct.

Senator O'BRIEN—But we cannot ensure that anyway, can we?

Prof. Joss—No.

CHAIR—Could your little pilot scheme in Sydney be transferred to wherever it needs to be?

Prof. Joss—That is what I would like to happen.

Senator JOYCE—But isn't the purpose to try to keep these animals prevalent in their natural state—

Prof. Joss—In their natural habitat, absolutely. It really is Queensland's opportunity to have these very unique animals for the whole world and not to destroy them—to have them there.

Senator O'BRIEN—Were these animals in other rivers in Queensland originally, do you know?

Prof. Joss—There is some dispute over that. Long before man, yes, we can find fossils of them pretty much all over Australia. They are a very long lived species and are probably the oldest living vertebrate species—at least 100 million years old—and you can find fossils of them across Australia. But, as long as man has known, they have been restricted to the Mary and the Burnett rivers; however, they were at the turn of last century, distributed into a number of other river systems, both northern New South Wales and South-East Queensland, and the only river system in which they have reliably survived was in the Brisbane River and that has been severely reduced by the Wivenhoe Dam of course.

Senator JOYCE—There are lungfish in the Brisbane River.

Prof. Joss—There are lungfish in the Brisbane River and they do spawn there, but it has been very much reduced by the Wivenhoe Dam—but that is the only other river, so you could combine those three.

Senator O'BRIEN—There are three rivers then.

Prof. Joss—Yes.

Senator SIEWERT—Can I ask your opinion? I like this idea of the fish lift. We were told when we were in Queensland that it has been successful in Paradise Dam, but subsequent to that I found out that the Paradise Dam does not have much water in it and in fact the lift is not working. So, as I understand it, the only way they can say it has been successful is by trialling it.

Prof. Joss—This is my understanding too. Obviously, I am not in Queensland and I do not have direct evidence. I think to get direct evidence you must get it from SunWater and SunWater are very close about that sort of information but they should release it to your committee, if you request it. But it is certainly my understanding that there has been insufficient water in the Paradise Dam for that lift to work.

Senator SIEWERT—To prove whether it has been successful or not.

Prof. Joss—To prove whether it is successful for lungfish or not.

Senator SIEWERT—I realise now that I am asking your opinion rather than for direct evidence, but what is your opinion about the usefulness of such a lift? I understand that a similar lift is proposed for the Traveston.

Prof. Joss—Absolutely. It is a lift not dissimilar to that that was put on the little weir, the Walla Weir, which was the last impoundment done before the Paradise Dam and they are now looking at putting similar lifts on a number of other impoundments on the Burnett. I was talking to a colleague of mine in DPI only a few days ago and he said that the lungfish that are immediately below the weir associated with Gayndah are beautiful big fish but they are really skinny because they are just waiting to be able to get past that impoundment. They need to get up river and they are just hanging around and not feeding. This is the sort of thing that happens with impoundments. If you put in a dam wall like that, obviously you have to get something that works to be able to transfer the fish, but that is not the be-all and end-all.

Senator SIEWERT—So you have lift going one way.

Prof. Joss—Yes.

Senator SIEWERT—They need to come back.

Prof. Joss—Yes. The coming back is a sort of a drop. They have a channel in the wall that has a little gate on it. They open the gate and the fish can swim into that channel and then they will close the gate, drop the water and carry the fish through to the other side to go down.

Senator SIEWERT—How successful is that and do the fish survive it?

Prof. Joss—That has not worked at all because there has not been any water in the dam to be able to get that to work, so we do not know.

Senator SIEWERT—So, because there is not enough water there, you have fish on one side and fish on the other—

Prof. Joss—Yes. At the moment it is absolutely separating the fish—absolutely.

Senator SIEWERT—Have there been any studies now on the impact that has had on them?

Prof. Joss—I believe that they have just begun.

Senator SIEWERT—Who is doing that?

Prof. Joss—The Department of Primary Industry and Fisheries.

Senator SIEWERT—So we would need to ask them.

Prof. Joss—Yes.

Senator JOYCE—I am fascinated about the Brisbane River one. Historically, was any study done or even anecdotal evidence given about the proliferation of lungfish in the Brisbane River prior to Wivenhoe Dam and post-Wivenhoe Dam?

Prof. Joss—Yes. Studies were done on the lungfish in the Brisbane River prior to the Wivenhoe Dam because I understand the Wivenhoe Dam was completed in 1985 or somewhere around that, and the Kemp studies on the lungfish are in the earlier 1980s. She looked at them in the Brisbane River and compared them with those in the Enoggera Reservoir. It is really interesting: the ones in Enoggera Reservoir were still spawning at that time because it was infested with water hyacinth—and they will spawn on the roots of water hyacinths. But when the water hyacinth was removed, she says that they are no longer breeding there. That is I think a bit of a lesson for all of us: that in an impoundment like that, unless you provide the sorts of things—and I am not suggesting water hyacinth for a moment—that they will spawn on, they survive all right as adults but they will not spawn, so there is no recruitment.

Senator JOYCE—Is there any example anywhere else in the world of the effect of dams on fish populations, even in a specific area where you can say, 'There was a certain fish in this area and then they put a dam in and then the fish population got below a critical mass and collapsed'?

Prof. Joss—I am sure there probably is, but I am not aware of any.

Senator JOYCE—If you get a barrier and all the lungfish go up against the barrier, wouldn't that be an attraction to predators? Wouldn't they just be able to turn up there and eat them?

Prof. Joss—I suppose it would be, but adult lungfish are very large. I believe that that is what confines them to the little corner of South-East Queensland where they are and they have not progressed further north because of there being big predators, like crocodiles, further north, which would be about the only thing that would affect them. They are big fish.

CHAIR—How large are they?

Prof. Joss—They have to be at least six kilograms before they are adults, at about the age of 20 to 25. They get up to about a metre or a metre and a half in length, but they are very fat so they can get up to 20 or even 30 kilos.

Senator JOYCE—Just for the *Hansard*—I am not being ridiculous—they cannot have been born big; they must have been born small.

Prof. Joss—No. They are born very small and they are extremely vulnerable. They really need to be very vulnerable. When I am talking about recruitment, fairly obviously for such big fish they are not geared to having a big recruitment even when they are all spawning; otherwise you would have wall-to-wall lungfish in the rivers. They are big fish.

Senator IAN MACDONALD—Why these three rivers and not rivers elsewhere in Australia?

Prof. Joss—We do not know because the studies have not been done, but I believe, as I say, that they are too vulnerable to predation by big predators if they go any further north. I think it is

that their young that are too vulnerable to predation if they go any further south, because you have so many voracious freshwater fishes in the cooler river systems.

CHAIR—So that means they are the boss of the system where they are.

Prof. Joss—They are because they have a lung and they can breathe. In the warmer months, the summer months when the oxygen tension is very low, they can breathe the air, so they have an edge over the fish that would be wiping them out.

CHAIR—So, given that we breed thousands of murray cod and chuck them in the river—

Prof. Joss—Yes, I know about that.

CHAIR—If the very worst came to the very worst, would it be possible to put the right amount of money into somewhere in that area and breed the fish, preserve them and keep putting them back into the system?

Prof. Joss—You would have to keep putting them back.

CHAIR—We do that with the murray cod.

Prof. Joss—Yes. My understanding is that the fish that were introduced into other river systems—admittedly a long time ago—no longer survive there, so they do not necessarily spawn. The whole thing about those little river systems is that they have the ideal spawning grounds for lungfish and they are quite unusual conditions. There are no other rivers to my knowledge that have those unusual conditions for spawning. So you can put the fish in and, as adults, they will survive there. But, if they do not spawn and they are long -lived adults, that is all you have.

Senator IAN MACDONALD—Can I just go back to the Paradise Dam? Have you or anyone else done research on the lungfish since the Paradise Dam went in? Do you have an opinion on that?

Prof. Joss—You mean the fish in that river associated with the Paradise Dam. No, those studies have just begun. The money was allocated for them late last year and they are being carried out by the department of primary industries.

CHAIR—Should that work have been done before they built the dam?

Prof. Joss—It was done, but then it was stopped. It was done in association with the Walla Weir. They were the first population studies that were done and they were excellent population studies. I went up there myself and worked a bit with the boys when they were doing those. They were wonderful studies that they did before, during and after the construction of that weir. They very clearly showed that, once that weir was in there, recruitment absolutely dropped to zero within the impounded area of Walla Weir.

Senator IAN MACDONALD—But that was a weir.

Prof. Joss—That was a weir. That is a small weir; that is not even a big dam.

Senator IAN MACDONALD—So, from your professional knowledge, you would extrapolate that to say that the dam would have a greater impact.

Prof. Joss—Absolutely, yes.

Senator TROOD—What is the population of the fish in that area? Can you tell us?

Prof. Joss—I wish I could tell you. That is what those boys started doing in the Burnett River. They are actually quite clever fish. The usual way of estimating a population is do the capture, mark, release, recapture thing. They have something in the order of several thousand fish tagged, I think, but their tagging returns are almost zero, which would indicate that it is a vast population. But they believe that is not true and I would absolutely agree with them that, once captured, you do not capture the fish again. They do it with electrofishing and they will not be captured by electrofishing a second time.

Senator TROOD—That is in the Burnett system, is it?

Prof. Joss—In the Burnett system, yes.

Senator TROOD—Do we have any figures for—

Prof. Joss—For the Mary? No. Equivalent studies have not been done on the Mary or on the Brisbane.

Senator TROOD—I see. So we have absolutely no idea of where—

Prof. Joss—No.

Senator TROOD—Does it follow from that that we do not have any idea of where they are breeding within the Mary system?

Prof. Joss—That is a little different. We do have some information on that because Dr Peter Kind did his PhD thesis on the fish in the Mary River. He is now working for the department of primary industries. I examined that thesis. It was not the entire river, but he did have some evidence of the type of spawning conditions that were required.

Senator TROOD—Do you recall what his findings were in relation to breeding? Was it all the way up the river?

Prof. Joss—No. There were specific areas where these conditions apply. This is what they call riffles. You have the main flow of the river and in some areas you will get a little backwater that extends out. That can become very heavily vegetated and it is quite shallow. There is a small amount of water movement there. That water gets much warmer than the main body of the river. That is where the lungfish want to put their eggs. It is fantastic to watch, because they are big fish and they go into this very shallow water and their backs will come right out of the water while they are actually spawning. It is really a very moving thing to see these enormous fish

spawning like that. But they do that because that will reduce the time for the eggs to go from spawning to hatching. But, even so, it is three weeks, so they are quite vulnerable.

Senator JOYCE—The dam property, the actual dam area where the water is, could actually be destroying spawning areas.

Prof. Joss—Absolutely. It is probably the most prime spawning area. That is what happened with the Paradise Dam too.

Senator JOYCE—So this alluvial flat is a prime spawning area, but you are going to change the dynamics. It is just going to be 'boomf' and go to the—

Prof. Joss—Absolutely.

Senator TROOD—That is what I wanted to clarify, actually—Senator Joyce's proposition that the spawning areas that this study was examining include part of the area of the proposed catchment of the dam. Is that right?

Prof. Joss—Yes, they will be flooded—probably the best spawning areas. They exist in a number of the little creeks that run down into the Mary River too, but mostly they use those for feeding. I did most of my early work on Tinana Creek, which runs down into the Mary River, and I never saw any spawning in there, nor even any sites where they might have spawned in all the 10 years or so that I was studying them there—because there are not the appropriate spawning sites there, but they feed.

Senator BARTLETT—You say about the lungfish in your submission:

... the completion of the Mary River dam—

or Traveston dam—

would almost certainly push it to "critically endangered", and in the long term will lead to its extinction in the wild.

We all make hyperbolic statements. In your scientific opinion—

Prof. Joss—I never make radical statements.

Senator BARTLETT—Is that your scientifically based opinion?

Prof. Joss—It is, and I base that on the amount of spawning area that is to be lost and also on the fact that the fish are very long lived. So you might do studies and say, 'Look, the lungfish are still fine; we still have plenty of lungfish around,' but they are not spawning. Eventually—we will all be pushing up daisies by then—it will be our grandchildren who will discover that those fish are all senile now, you can no longer get them to spawn, and that is the end of it.

Senator TROOD—Do they spawn throughout their lives?

Prof. Joss—That we do not know. We do know that they take quite a long time to get old enough to spawn; it is around 20 years before they start spawning. Because they live for such a long time too, they are quite laid back about spawning. So, unless conditions are absolutely right each year, they may not spawn at all. I have done the physiological studies that show that they can yolk up a whole lot of eggs—and, with males, the sperm—and they will just resorb them. They do that over the summer months anyway. They will only spawn quite a small proportion of their gametes each year anyway in the spring. Then, over the summer, when the water temperatures are higher, oxygen is very low and there is not so much food around, they will resorb their unused gametes anyway as a sort of food source to tide them over that period.

Senator JOYCE—This is crucial information for an EPBC Act. You are saying you do not know. I am not condescending that you do not know. You are saying this information is not out there, and we are about to do an EPBC Act on the prevalence or the veracity of whether this species will exist, but no-one really knows very much about them.

Prof. Joss—No. That was the thing with the Walla Weir. There was a group then that was fighting for having the Walla Weir stopped. They looked down their noses at me because I wanted to take the pragmatic approach: 'We do not know whether this species is endangered because the studies have never been done.' I said 'Go ahead with the Walla Weir but do the studies so that we can start to get that sort of information.' It is crazy. Here we have this amazing fish and no-one knows about it.

CHAIR—Can I just restrain everybody. I would like to give Senator Bartlett another question and then we will go to Senator Macdonald.

Senator BARTLETT—I recall the Walla Weir and also the Paradise Dam, which I think was enthusiastically foisted on the state by coalition and Labor parties together in Queensland.

Prof. Joss—Yes.

Senator BARTLETT—If nothing else, it has made them even more endangered with regard to the Traveston dam.

Prof. Joss—Yes.

Senator IAN MACDONALD—Politics—

Senator BARTLETT—No politics on this committee at all; you are right, Senator.

Prof. Joss—The interesting thing about that is that they were listed prior to the Paradise Dam. So with the Paradise Dam the vulnerable status probably needs to be changed anyway, but we need to do the studies.

Senator BARTLETT—Going back to the statement you made, your scientifically based opinion is that this will almost certainly lead long term to their extinction in the wild.

Prof. Joss—Yes.

Senator BARTLETT—Every indication I get shares the chair's assessment that you are the duck's guts in this stuff; nonetheless, there are other experts around. Are you aware of any other people with expertise in this area who would have a differing opinion, who would think that we can probably find a way through?

Prof. Joss—There are some amateurs who have a different opinion.

Senator BARTLETT—I was asking about people with—

Prof. Joss—No, absolutely not. In fact, I think I mentioned in there that there was an editorial in *Nature* alerting the world—the scientific international community—that the fish were endangered by this dam.

Senator BARTLETT—Can I just go to that point. You say that the lung fish, particularly the Queensland lung fish, is scientifically invaluable.

Prof. Joss—Yes.

Senator BARTLETT—That would be an understatement, to use your words. Similar statements have been made by other scientists. Gordon Grigg from UQ also studied this for decades. For the layperson, obviously all endangered species are a concern. We do not want any extinctions, and there are also other endangered species at risk here. But it would seem it would be a bigger problem if this species was more extinct than others.

Prof. Joss—I think so, because the Mary River turtle is a very special sort of turtle, but it is a turtle and there are lots of other turtles. It is the same for the Mary cod. But this lung fish is the only one. The only other species of lung fish that is alive today is in Africa and South America, and these are much more highly-derived fish. For the sorts of studies that the scientists like to use the lung fish for, as our closest fish ancestor, if you like, the Australian lung fish is the only animal available for that sort of research.

Senator BARTLETT—I thought it was the Queensland lung fish.

Prof. Joss—I am perfectly happy to call it the Queensland lung fish for evermore if you save them for me.

Senator BARTLETT—That can be Queensland's contribution. Finally, why is this a global issue? Why is the world or the scientific community in the world watching? The layperson can say all these things: it is older than the dinosaur, and people go, 'Wow, that is really fascinating.' What is the value of the science to the general community beyond somebody—

Prof. Joss—You can even say that it can be of enormous value to ourselves as a species because it has the beginnings of a number of features that have evolved in what we have today, such as the lung, for instance. I provide material to a group in California and also a group here who are interested in diseases of the lung. They feel that studying the development of the lung in the lung fish will give them really important insights into how they might control those diseases. If you want to make it very 'us' oriented, that is the sort of information that you can get from the lung fish that you cannot get from anything else.

Senator BARTLETT—I guess that is that sort of thing—without being too cynical—because people naturally relate to something more when it is a case of, 'What's in it for me; how does it affect my world?' rather than just making a bunch of scientists—

Prof. Joss—Yes. At the moment they are the main studies, because they are really only just becoming aware in places around the world, other than my little evolutionary group, not only are the fish available because I can make them available but how important they will be for those sorts of studies. That awareness is just coming and it would be such a shame to lose them.

Senator IAN MACDONALD—Has anyone from the Queensland government or any of the Queensland government agencies approached you—the EPA perhaps—about the Traveston dam proposal?

Prof. Joss—Yes—well, I have made submissions to them. Premier Beattie's department seemed to ignore them. I am not saying he did—his minders certainly did—but that has not been the case with Anna Bligh.

Senator IAN MACDONALD—What about the EPA?

Prof. Joss—The EPA—no. The group that are going to build the dam have certainly approached me.

Senator IAN MACDONALD—And you have given them similar advice to what you have given us?

Prof. Joss—I have.

Senator IAN MACDONALD—Have you had any response from them?

Prof. Joss—The people who are building the dam, yes, they have. Graeme Newton, together with Anna Bligh, has been giving me some favourable information. They are interested in setting up a lungfish conservation and research centre that would keep the studies going.

Senator IAN MACDONALD—That doesn't sound like you are being bought off, does it—I am not asking you that.

Prof. Joss—They know that I am absolutely anti the dam, but they also know that, as a pragmatist, if the dam does go ahead, I want to save the lungfish. That was how I put my submission to them; when I wrote to Premier Beattie, I said, 'I can see that you are absolutely dedicated to this dam, but I am absolutely dedicated to saving the lungfish, one way or another.'

CHAIR—Did these old buggers, millions of years ago, knock about on the land or were they always in the water?

Prof. Joss—No. They have always been in the water. That is what makes them really interesting. They are the relic. All of the others that knocked about in the water have now come out on land—that is where they are. All its relatives, all its cousins, have ended up being land vertebrates. That is why there are so few of them left. But they are still in the water. Working out

what it is about them that has kept them in the water gives us a lot of information on what had to change in order to get them out on land. So they are a fantastic resource for basic research into and understanding of the mechanisms of this evolution.

Senator MOORE—Professor Joss, thank you for your evidence. The work you have done is extraordinary. You said earlier in your evidence that you have been doing this work. In terms of the other people who are involved, do you have a number of people working with you on these projects? It does seem that it is one of many. I am genuinely concerned that knowledge is very specialised. Do you have many people working on the projects you have identified?

Prof. Joss—It is vast.

Senator MOORE—Any in Australia?

Prof. Joss—I have some in Australia. Only yesterday I was out at the airport delivering fish to the University of Adelaide. So, yes, I supply fish and I work in collaboration with many, many groups—internationally and nationally.

Senator IAN MACDONALD—What about the universities in Queensland?

Prof. Joss—Yes, I have sent fish, interestingly enough, to UQ. I have never worked with Gordon Grigg, but we have talked to each other for years and years. Mike Bennett—definitely, we research together. I have examined theses from Gordon Grigg's students and also from Mike Bennett, and Shaun Colin, too, who works in the eye research centre—I have had his students down in my lab working too.

Senator MOORE—But at this stage the only place where there have been successful breeding programs is in the work you have done with these fish?

Prof. Joss—Yes, this is the only program where it is associated with scientific research. There is an amateur breeder in Queensland who claims to be breeding lungfish.

Senator MOORE—Who is that?

Prof. Joss—Gordon Hides.

Senator MOORE—I do not recognise the name, but we have had a lot of submissions.

Prof. Joss—He is an amateur breeder. He certainly sells them. He has permits as an amateur breeder and he was given a licence in return for a large sum of money to be able to do this. I think three of those licences were given out to amateur fish breeders. Gordon is the only one who is now selling lungfish.

Senator MOORE—And seemingly successfully, being able to have them breed.

Prof. Joss—That is what he says, yes.

CHAIR—Thank you. You have given us very valuable evidence. We are very grateful.

Proceedings suspended from 10.10 am to 10.30 am

CURRIE, Mr Roger Michael, Water Resources Policy Officer, Wide Bay-Burnett Conservation Council Inc.

CHAIR—Welcome. Would you like to make an opening statement?

Mr Currie—For the last four years I have been the regional environmental coordinator for the Wide Bay-Burnett Conservation Council, which is a regional wing of the Queensland Conservation Council. We have been particularly focused on the Paradise Dam, right from the initial statement about the dam, and that gives us quite a unique view of what is occurring in respect of both of those dams.

I have an undergraduate degree in protected area management—national parks management—and my specialty is biodiversity mapping and property vegetation mapping. I also run my own GIS consultancy business. I am attempting to instigate the Queensland Vegetation Management Act in our region. I did work for Wide Bay-Burnett for two to three days a week, depending on funding, and I collated all of their environmental issues. I am also a Queensland cabinet appointed conservation delegate on the Wide Bay-Burnett Coastal Management Plan. I was also a conservation delegate on the Mary River Water Resource Plan. So I have a reasonably good background in respect of the issues we will look at today. I did not participate in the Burnett Water Resource Plan—Pam Soper, our president, did.

CHAIR—Before we go to questions, what size boots do you wear? Bloody hell—they are big boots!

Mr Currie—They are size 10½; there are a lot of snakes up our way!

Senator O'BRIEN—Would I be correct in presuming that you, indeed your organisation, will make a submission to the process being conducted by the Queensland government to do the environmental impact assessment of the Traveston Crossing dam?

Mr Currie—We have made a submission to the draft terms of reference, basically saying that the Queensland government must seriously focus on the Great Sandy Strait Ramsar, under section 8, article 2 of the Ramsar agreement—that, where a project is considered to have potential significant impacts on a Ramsar area, the proponent must do a full cost-benefit analysis and a full ecological cost-benefit analysis of the impacts on the Great Sandy Ramsar. I have a copy of a letter here, which I sent to Senator Campbell, to give him the background on the link-up between Paradise Dam and Traveston and a serious breach by the Queensland government of the environmental duty of care in respect of Paradise Dam and the matter of national environmental significance. We asked Senator Campbell to seriously consider whether these proponents would be capable of assessing Traveston and looking after the species, based on the fact that their previous environmental record for Paradise was very questionable.

Senator O'BRIEN—So presumably that letter and those comments are with the current minister?

Mr Currie—Those comments were put in under the public notices. When Senator Campbell asked about whether it should be a controlled action and about the process that should be used to make the assessment, we strongly recommended that the bilateral agreement not be used. We wanted to see the federal government assess this one totally independently.

Senator O'BRIEN—Obviously that has not happened.

Mr Currie—No. Unfortunately Senator Campbell decided it should be a bilateral agreement. I presume that is the reason why there has been such a huge response—because the community realises there are questions about Paradise that must be answered in respect of the bilateral process.

Senator O'BRIEN—You are making submissions to the Queensland government about the current assessment. Do you understand that the bilateral process assessment of Traveston needs to address the matters you raise and to detail how they will assess that in their material, which will go to the Minister for the Environment and Water Resources, currently Minister Turnbull?

Mr Currie—Yes.

Senator O'BRIEN—So you would accept that, as it stands to day, it will be Mr Turnbull who makes the final determination of the matters you raise?

Mr Currie—Yes, we do.

Senator O'BRIEN—Is that something you are happy with?

Mr Currie—We would be quite happy if Minister Turnbull had a very thorough look at the proposed audit of the Paradise Dam and the issues. If the decision is not made until after that paperwork is in, and it can be clearly demonstrated that there are serious issues, we would be happy that at least the minister would have had the capacity to consider whether the proponents are actually capable of delivering a better outcome.

Senator IAN MACDONALD—Were you here when the department gave evidence and said that they would be setting up a new branch and they would look at that shortly?

Mr Currie—Yes. That is really pleasing to hear.

Senator IAN MACDONALD—The best news you have heard for three days!

Mr Currie—Yes. It is interesting to note aspects coming out of it. QWIPL believe they have rushed Paradise, and they wish they could have revisited it. If that is coming out of the senior management of that organisation, that reinforces the fact that they realise they were pushed, that it was rushed and that they have problems. Therefore, the conservation sector would be asking that no decision be made until after the paperwork on Paradise about protecting the matters of national environmental significance adequately. A fair bit has been discussed. We know with lungfish it is not working, and we know that the Ned Churchwood Weir is not working. The reason for that is the fish lock is inadequate—the lungfish do not like it and will not use it—but, more importantly, the water levels in the Ned Churchwood Weir, which should be used to

stabilise riparian habitat for those species, are not being achieved because SunWater refuses to believe that it must adjust its water levels to protect those species. That is because it is operating on the previous service operations management plan. The first service operations management plan, which is this one here, for Walla Weir—

Senator IAN MACDONALD—You mentioned this in an email to me. You say they are actually refusing to do what was agreed to be done?

Mr Currie—In the Ned Churchwood monitoring report, which was compiled by Mr Robert Zigterman, of the Queensland EPA, he said that SunWater is failing to stabilise habitat for lungfish and *Elseya* species in the Ned Churchwood Weir, the Walla Weir. Therefore, we argue, that is a failure of protecting adequately for MNESs.

Senator IAN MACDONALD—Have you raised this with SunWater?

Mr Currie—Yes.

Senator IAN MACDONALD—What have they said to you?

Mr Currie—No reply. They will not reply. I suppose they are just too busy trying to keep the lid on Traveston to worry about whether this angle needs to be looked at. That is a report by the Queensland EPA. I believe DEH does have a copy of this report, but this report shows quite clearly that SunWater would not stabilise the levels in Ned Churchwood.

Senator IAN MACDONALD—Are the EPA doing anything about it?

Mr Currie—The EPA and the DPI&F have requested that SunWater now look at stabilising the water levels so the lungfish and the turtles can have habitat created.

Senator IAN MACDONALD—Do either the EPA or the DPI have any power to compel SunWater to do this?

Mr Currie—No. The water management of the storages, including Paradise Dam, is a SunWater-Burnett Water-QWIPL jurisdiction. The only jurisdiction that EPA and DPI&F have is to come up with decent plans for mitigation for lungfish and *Elseya*. They have done that in this report. This report shows quite clearly that they have committed themselves to environmental protection but they cannot encourage SunWater to protect the species, based on the fact it is an irrigation system and the system cannot stabilise itself.

Senator IAN MACDONALD—The EPA, the DPI and SunWater are all branches of the same government. Is that your understanding?

Mr Currie—My understanding is that the EPA and DPI&F are both state government agencies., and they are not semicorporatised, whereas SunWater is a semicorporatised institution.

Senator IAN MACDONALD—But it is a government corporation, the appointments are made by the government.

Mr Currie—Yes—as opposed to QWIPL, which is a $2 corporation.

Senator SIEWERT—Before we move on, can we get that report tabled?

Mr Currie—I have a brief overview of it, but I believe it is available—DEH does have a copy of it. I can quite easily get a copy to the Senate. I think it is pretty essential that this is put in, because that is the evidence that shows that SunWater is actually dragging its boots whereas the other two agencies charged with environmental protection are trying to do the right thing for Paradise.

Senator IAN MACDONALD—You have spoken about the lungfish, which is something that everyone is very concerned about, but what about the Ramsar wetlands? In your position at the Wide Bay-Burnett Conservation Council I am sure you would have some review or some research on the impact this dam might have on the downstream wetlands and the Great Sandy Strait.

Mr Currie—The conjecture is over whether the environmental flows will be adequate for the Ramsar. You have had plenty of information in the previous inquiries that show quite clearly that the Queensland government's modelling is very questionable, and the modelling that says an 85 per cent mean annual flow at the mouth of the river which feeds the Great Sandy is false. You cannot measure fresh water there because it is salt. It is fresh if it is a big flood; otherwise it is salt.

Dr Joachim Ribbe has just done an assessment of hypersalinity issues in Hervey Bay, which is only around the corner, and he has shown elevated salinity levels. He believe that that is based on a combination of infrastructure, fresh water extraction and seasonal conditions. So we have indications that the Ramsar is under stress. Ramsar apparently creates commercial fisheries of around $100 million for the economy, and we believe recreational fishing could be $100 million too. So a 10 per cent impact will happen as a result. We are really worried that the Ramsar values will be affected.

CHAIR—Are you just as worried about the Narran Lakes as you are about the Sandy strait?

Mr Currie—We are worried about all of them. It is not just extraction; it is climate change as well. The argument is that the Beattie government says there is 150,000 extra megalitres a year available, and there is not. We know that, and I know that because I sat on the WRP process. We know that, when the water resource plan came back, they had simply decided there was 150,000 of strategic reserve—aka Traveston dam. That will mean that there will probably be very little flow below Traveston to the rest of the system.

CHAIR—Is it just that it is too far west that nobody bothers to march on behalf of the Narran Lakes?

Senator IAN MACDONALD—Our inquiry is in relation to South-East Queensland, so ignore the chairman in that regard.

CHAIR—Unbiased mischief!

Senator SIEWERT—Can I follow up on that last point. My understanding, from the evidence we had previously, is that the community was pretty happy with the original WRP, the draft.

Mr Currie—I would say the community was satisfied that 150 stakeholders were involved and we created a draft plan that tried to balance agricultural, urban and commercial and ecological use of the river. I think we could say as a community we are very happy with the plan.

Senator SIEWERT—My understanding from reading and from previous evidence is that it went off and, between the draft and the final, it came back with the strategic reserve in it for 150,000 megalitres.

Mr Currie—Yes.

Senator SIEWERT—How did it change? What was the process that it changed by? Was there any further community consultation? Did you know about it?

Mr Currie—No.

Senator SIEWERT—You were a committee member, weren't you?

Mr Currie—Yes.

Senator SIEWERT—Did you know about it?

Mr Currie—No. That community reference panel has lodged a letter, I believe, with DEH and probably the Senate unanimously disavowing themselves of that draft plan simply because that had occurred and there had been no consultation process whatsoever. The Queensland government failed to get back to the people who had been asked to prepare the plan to see whether they would want to argue the point over the 150,000 megalitres.

CHAIR—Have you any idea of what licences are out there already on the river?

Mr Currie—We believe that the mayor has already over-allocated.

CHAIR—But do you know what licences are out there, including the sleepers?

Mr Currie—We have asked for that information several times. DNR&M will probably have that information.

CHAIR—They did not appear to know themselves in Brisbane.

Mr Currie—They did not know and that does not surprise me. They have no idea what the true water situation of the Mary is. If they sit back with the model that has knocked seven years off no-rainfall data and assume that that is going to properly reflect a decent model, they are very misguided. There has been a lot of information.

CHAIR—Do you blokes have any knowledge of the connectivity between the aquifer and the river?

Mr Currie—Which aquifer do you mean?

CHAIR—If there is an aquifer there, does it hook in?

Mr Currie—There would be sedimentary aquifers under the river, there is no doubt about that. Based on the Mary River's geology, a lot of them would be salt as it was all seabed, and salt water is a significant issue in the Mary. It is also a significant issue at Traveston and in the Paradise at the Burnett Dam. I think you will find that there is enough evidence around that indicates that the Queensland government has not successfully implemented the Paradise Dam, so there has to be a question mark over Traveston. Primarily, and you guys would know, the EPBC Act focuses on the species. We can argue about the social aspects of Traveston dam, and we can also argue about the money and economic aspects—I have done my cost benefits analysis and know how much it is going to cost the Mary region catchment if this dam goes ahead—but we cannot argue over the ecological problems. Paradise Dam is showing that, firstly, they have not successfully mitigated for lungfish. Secondly, they have not successfully mitigated for *Elseya* turtles—EPA has just released an *Elseya* turtle management plan.

Thirdly, the claims by the deputy premier that the hatchery is working are false because the turtles that she showed as hatchlings that, theoretically, hatched in the hatchery were not hatched there. They were caught elsewhere and were not hatchlings that were released. That shows clearly that the hatchling nursery is not working and has not been capable of producing hatchlings. The Queensland government was very keen about releasing so-called hatchlings from the hatchery and they were not—they were wild stock. There is a big question mark over the hatchling system—is the hatchery going to be a successful mitigation? It will not be successful in the dam if we do not have habitat for those turtles, and that is the argument about the dam.

There will be no habitat for turtles and lungfish in the dam. There is not now because of unseasonal conditions, which is shown clearly in the Walla Weir when water does not adhere to its environmental requirements. I take you back to David Kemp's decision about Paradise Dam. Article 4 says, 'Burnett Water Pty Ltd must adhere to the environmental flow requirements specified in the *Water Resource Plan*' and they must also adhere to 'the Burnett River Dam Flow Strategy for Lungfish.' The strategy for lungfish was to make sure that the water levels were stabilised so that the lungfish could breed and have a habitat to live in. Our argument is that they are in breach of section 4, for a start. Section 3 says, 'Burnett Water Pty Ltd must install a fish transfer device on the Burnett River Dam suitable for the lungfish. The fishway will commence when the dam becomes operational.' They are in breach of that section because we know it is ineffective. There is data and evidence that the fishway does not work.

Senator IAN MACDONALD—Have you made complaints to the Federal Department of Environment and Heritage about those conditions not being suitable?

Mr Currie—Yes.

CHAIR—How can you have a water resource plan for a river system if you have not got a history of the licences that are on it? What is in the water resource plan for the river system on

plantation forestry? How can you do that? How can you have a water resource plan that is fair dinkum if you cannot identify what licences there are and whether, under the resource operating plan, you are going to be able to trade those licences?

Mr Currie—That is right.

CHAIR—Isn't this all kindergarten stuff?

Mr Currie—Yes. The design of the resource operations plan is about to commence. Once again, you are working from the hamstrung perspective of the fact that they have already allocated 150,000 of the strategic reserve. So that is not there; that means 150,000 will be extracted from current water usage. Agricultural users, people with sleeper licences, will find that that water is not there any more.

CHAIR—It depends on how they set up the title for the water and whether it is going to be tradable, which is what has happened everywhere else, and that has absolutely doubled the problem on most river systems.

Mr Currie—If Minister Turnbull withholds his decision until the runs are in on Paradise Dam, we will not have to worry about that. I think we have enough evidence to show Minister Turnbull that there is a bloody big question mark over Traveston dam and it would be remiss of him not to use the precautionary principle, which we talk about, to hold the Queensland government up to make sure it does its job.

CHAIR—As a passionate soldier, what would you do if you were the government to find a new primary source of water?

Mr Currie—It is cheaper for Beattie to buy tanks for everyone in Brisbane; it is cheaper for Beattie to recycle; it is cheaper for Beattie to desalinate. They are all cheaper than Traveston.

CHAIR—With respect, if we are going to pump another 1.5 million people into the area in the next 15 to 20 years, we have to find a new primary source of water, except on the opinion of one person—

Senator SIEWERT—One person who has used scientific evidence; the other evidence we have had has not been scientific.

CHAIR—Are you saying that we do not need to find a new primary source of water?

Mr Currie—You have not got any primary sources of water in South-East Queensland. Until South-East Queensland, from Bundaberg right through to the border, receives its seasonal episodes—

CHAIR—Forget about the seasonal rain because of climate change. If the doctor says I have a mole on here I believe him. The scientists tell us that the weather is going to go anticlockwise and there is going to be less rain; it is going to get worse, not better. And they are going to pump another 1.5 million people in there. You say that we do not have to find a primary source of water. How is it going to work?

Mr Currie—Primary sources do not work. Haven't you seen the photos of the dams in South-East Queensland?

CHAIR—Should we then say, 'No more white shoe brigade, no more development—go somewhere else,' which is what they are saying, by the way, in Perth? Is that the answer?

Mr Currie—We are saying that tanks, desalination and recycling are the key to the future.

CHAIR—You are saying that we can put another 1.5 million people in there and do it on tanks?

Mr Currie—Yes, providing that we can get Australians to come to their senses and stop wasting water.

CHAIR—Are you also saying that we should not take five per cent out of the Clarence?

Mr Currie—I do not think you will be able to do that.

CHAIR—You say we would not be able to; would you if you could?

Mr Currie—No. I do not want to see any of our eastern rivers overextracted. The Queensland government modelled the Mary River flows on dodgy data to get what they wanted and the New South Wales government could model the Clarence on dodgy data to show that there are 150,000 megalitres a year—it is easily done. It would be a very brave public servant who sticks their neck out and says, 'I am sorry, Mr Premier, I am going to have to tell the people that that data is flawed and wrong.' That is what we are up against.

CHAIR—What does the 'flow of the Clarence' mean?

Mr Currie—Good point.

CHAIR—Does it mean 5,000 gigs?

Mr Currie—We were talking about the mean annual flow of the Mary and the argument is that if we take it down to only 85 per cent we are not going to have significant impact on the streams, but we are. It is already overallocated.

CHAIR—You are making out my case for the lower Balonne, you realise.

Mr Currie—The point is, I am here to argue the case that you have evidence to pull the Queensland government back into the EPBC process by doing an audit on what they have not done properly so that you can come to a justified conclusion.

CHAIR—We are listening. One of our terms of reference is to look at other sources. You are saying that there are no other sources and we do not need primary water. We are looking at the proposition of the Clarence. I think it is about 5,000 gigs; I stand to be corrected. They are talking about taking about 100 out of 5,000. You are saying that you would not do it.

Mr Currie—I am saying that you have the same issues. You have downstream impacts and a threatened species—the eastern cod—so we get back to the same old drama.

CHAIR—If the science stacked up, you would agree with it?

Mr Currie—I do not agree with the science that has stacked up against the Mary and the Traveston dam so I am not going to—

CHAIR—I am not saying that I do either, but if the science stacked up on the Clarence?

Mr Currie—I do not see how it can. The key argument in the science of rivers is over mean annual flow—

CHAIR—Or median?

Mr Currie—Mean or median, they always use—

CHAIR—There is a lot of difference.

Mr Currie—That is exactly right. Eighty-five per cent of the Mary flow is based on a computer model that is flawed. It does not mean that the Mary is going to remain healthy, productive and capable of supporting the regional economy if they extract the 150,000 for Brisbane. The main issue that needs to be focused on is whether these institutions, corporatised agencies or whatever we want to call them, can be trusted to do the proper job on Traveston because they are the same people who built Paradise and they are admitting off the record that they screwed up, and they also know that we have almost got them over this issue. Two species and the EPBC Act will stop the drama of Traveston.

CHAIR—That is why we are here patiently listening to all this evidence.

Mr Currie—I am very pleased that you people are capable of doing that.

Senator BARTLETT—We are focusing on the Traveston dam but we are also looking at South-East Queensland water supplies, as you know. You have talked about Paradise and the like. As you may know, in Gympie we had some evidence from people downstream from the proposed Traveston site about the debacle that is already there, including costs to landholders of fixing up the damage caused by a barrage, for example. How much of a role does the Commonwealth have to play in that? In a legislative sense, we obviously have to deal with EPBC and Traveston and Wyaralong. What other wider roles do you see that the Commonwealth should play in this? One of the key questions for this committee is how much of it is a federal issue and how much of it is a state decision—however incompetent the decisions may be.

Mr Currie—You would know, Senator, that basically the only framework for dealing with it is the EPBC. There are matters ranging from species through to the Ramsar wetlands. The federal government is a signatory to the Ramsar convention, so it would be pretty politically damaging if the federal government refused to pick up the ball for its designated protection of the Ramsar. The state government has to look really closely because they are the proponents but

the federal government and particularly Minister Turnbull must scrutinise the Ramsar issue with a fine-tooth comb.

Senator BARTLETT—The evidence from the downstream users, who tend to get forgotten a little, is that things are already pretty severe. There are already a number of impoundments causing major damage.

Mr Currie—That is correct.

Senator BARTLETT—They are not suggesting that it is so screwed up that we may as well just complete the job. There are impacts relating to Ramsar wetlands, World Heritage site Fraser Island, the Great Sandy Strait and all of those. I presume in your role you have been trying to draw to the attention of the federal government their responsibilities under Ramsar and World Heritage?

Mr Currie—Yes.

Senator BARTLETT—How have they been responding to that broader continuing responsibility, regardless of whether the dam happens or not?

Mr Currie—I have not seen any huge amount of funding being poured into protecting Ramsars, particularly the Great Sandy Strait Ramsar.

Senator BARTLETT—Is it even a matter of funding? What if we are doing things that are buggering it up and then trying to put in money to stick bandaids over the top of it?

Mr Currie—That is right; it is a waste of time. The purpose of the federal government should be to look at these types of projects and assess what type of impact is likely to occur on the Ramsar sites, which they are duty bound to protect. That is why we are saying that is a serious issue for the minister to look at. We cannot just say that simply because the Traveston dam is at Gympie there will not be impacts on the Ramsar site. There will be. There already are, because the fish stocks are showing declines. We have done research on the fish stocks which shows declines. That is based on the fact that we have got major fish passage problems on the Mary River itself.

Senator BARTLETT—This goes back to my broader point that there is already that problem with the Ramsars and the federal government does actually have a direct responsibility for addressing that. I am sure we concur with the chair's repeated reminders about Narran Lakes and elsewhere and the federal government's responsibility there.

Mr Currie—Exactly.

Senator BARTLETT—What more should the federal government be doing? Is it a matter of funding to try to do remediation or is more action than that needed?

Mr Currie—I think the first process that the federal government should look at is a complete environmental audit of the Great Sandy Strait Ramsar values under its duty of care to the convention. The paperwork is in. It means that the federal government needs to look at what is in

the Great Sandy Strait that may be affected by this type of project, not just the fisheries. You have also got migratory species. You have got a huge whale-watching industry that generates hundreds of millions of dollars in the Great Sandy Strait Ramsar. If we have got hypersalinity issues, as Dr Joachim Ribbe has also already indicated, where does that leave the whale-watching industry in the future apart from the Japanese factor?

Senator BARTLETT—Maybe if the Traveston dam does not go ahead, without overstating the evidence that we got in Gympie, it is pretty serious already. On top of that what continues to perhaps not surprise but generate despair is that nobody seems to have a great deal of an idea of what is going on. It is often the local landholders that are doing all that data collection and then trying to get that information recognised. That seems to be a problem as well. So those audits, to use that word, are not even being done so we do not even know what damage has already happened.

Mr Currie—That is correct. If the Traveston dam is approved and goes ahead, you will not need the Mary barrage because the Maryborough cane industry will collapse because there will not be any water for the Maryborough cane industry. The Traveston dam has the potential to undermine the Maryborough cane industry, and they should be looking very seriously at this process.

CHAIR—Do you mean the sugarcane mob?

Mr Currie—Yes, the sugarcane growers in Maryborough.

CHAIR—With great respect, isn't this like one of those great arguments that we have to get beyond denial on? It is also with the interconnection between rivers and aquifers. Isn't one of the great questions food versus energy—for instance, the ethanol question? Isn't it all going to come down to this in this region if we are going to pump all these people into it: water for farming versus water for toilets?

Mr Currie—That is one view, yes.

CHAIR—Well, there you go.

Senator IAN MACDONALD—But I do not think we have had any submission from the sugar industry in Maryborough .

Mr Currie—I do not think that you have.

Senator IAN MACDONALD—You are suggesting that they are not aware of the impact that this dam might have on them.

Mr Currie—John Power, the Maryborough mill manager, was well aware of it. He has actually moved to another job. I spoke to John Power straightaway, as soon as the dam was actually proposed, about the process and he said, 'Yes, we believe—

Senator IAN MACDONALD—What about the cane growers organisation in Maryborough? Why haven't they done so?

Mr Currie—I think they are living in the Dark Ages. They think they will have water regardless. They are ignoring the fact that Premier Peter Beattie would specifically like to see some of that water taken out.

CHAIR—But, with great respect, I do not see too many price signals in the water management of the Mary River system. Do you see any?

Mr Currie—Any price signals?

CHAIR—Yes, any price signals. What would encourage you to put water to a better use in the Mary River system of licensing?

Mr Currie—If you were profitable.

CHAIR—No, I mean this. What encouragement will you get? In 1980 when I first bought property in Hervey Bay, there was sugarcane right up to two blocks from the esplanade which now have houses on them? The whole place has developed. Everyone says there are now 28 caravan parks and tens of thousands more people. Let us get real about this. The sugarcane has gone and the people have come, so you need price signals. You can pay more as an urban water user than you can as a sugarcane farmer. You can pay more as a stone-fruit grower or a marijuana grower than someone else does. Let us get some price signals into the market, because it could well be that the time has come. Time is limited for dairy farmers in the Murray-Darling Basin because the price of water has got out of their reach and it is worth more than the milk. Isn't the same going to apply there? Isn't it an absolute bullshit operation that there are no price signals in the water management of this system?

Mr Currie—I believe that the Queensland government system should be charging median returns on water usage.

CHAIR—With great respect, you have got no idea of what they should be charging, because the market will determine that. If you go to tape irrigation and, instead of what the Ord is proposing, there is 17 megalitres per hectare just as a standard thing and some bloke might want to come along and do cropping that will only take four megalitres per hectare there is no encouragement. This comes back to what I talked about earlier. We have got to get some price signals and some fair dinkum debate into this. I am a farmer. We have had to go to zero bloody tillage. It is not necessarily the case—and I am sorry to do this—that what you did when your grandfather was alive you should be able to do in the future. Let us get real! As a conservationist, why aren't you talking about price signals in the water market?

Mr Currie—If you want to get real about water, you have to take control of the water off governments because it is a bloody monopoly, and you know it. Who are you going to give control of it to—the biggest corporations that can afford to buy it?

CHAIR—You will not get an argument from me. I am on your side on the water side of it.

Mr Currie—Okay. What I would like to bring to your attention—and you might find this interesting—is this. On *The 7.30 Report* last year the Premier made claims that the fish ladder at Bundaberg was working effectively as far as he was concerned, blah, blah, blah. After he did that

we FOIed his office. We asked if we could please have copies of the documentation and the data that allowed the Premier to make that statement publicly. We FOIed his office and his department, and the response we received initially was that they had made a thorough search of all the pertinent areas of the Premier's office and certain documents were located pertaining to our request. They were initially considered to fall within the scope of our application. But they said that those documents potentially involved a third party. Under the act they required the third party to peruse those documents. The third party perused those documents and claimed that they were irrelevant to our request about the effectiveness of the fish ladder. So what that proves is that there is no documentation and that the Premier has no documentation that shows that the fish ladder is working effectively at all. Copies of that material are all here, should inquiry members like to see them just to justify that truth. We asked to have a look at copies to see the relevance or irrelevance of our request, so obviously it admits that SunWater does not have any documentation to back up that fish ladder statement; it just does not work.

Senator IAN MACDONALD—I think you have made that point fairly well. There have been other points made about similar comments by the Deputy Premier as well.

Mr Currie—Chair, I have a couple of pictures that I think you would like to see. One shows the fish ladder on the Burnett River. It does not work. The rails are rusty because it has not been used.

Senator IAN MACDONALD—Using that picture for a demonstration, can you explain to me—and this is a bit hard for Hansard, I am sorry—what is supposed to happen?

Mr Currie—What is supposed to happen is this. There is supposed to be an adequate water flow at the bottom of the ladder in the fish lock. The lungfish are naturally attracted to the water flow and they will go in there. Once a certain number of them have actually been identified or sensed, the thing is closed up and they are towed up the ramp and they are taken over the top and down the other side. The problem at this stage is that when they get let out the other side there is a 25-metre drop to the water.

Senator JOYCE—It is the ladder of opportunity!

Mr Currie—It is. It is the ladder to paradise—that is what we call it. However, in essence, if some poor lungfish actually manages to get stuck in there and gets thrown up the side and over the top, they would be dead when they hit the water anyway or severely brain damaged.

Senator JOYCE—It sounds like it.

Mr Currie—That red circle you can see shows the leaks. The dam is actually leaking there, though I would not say it is a torrential leak. You can see that it is next to the fishway. A patch job has been done there to make out that it is not really a leak. They have sprayed tonnes of concrete over there to cover up the issue. Mr Messenger attempted to deal with that situation, and of course they just denied it.

Senator IAN MACDONALD—If the water level was higher on the other side, would that fish ladder system work?

Mr Currie—I would say the ladder works but, as Jean Joss pointed out, nobody has actually found a lungfish going up there. It appears as if it does not work down the bottom because lungfish just do not like it, and that was that issue with the Ned Churchwood Weir. Andrew Burgess's paper—and Andrew is the officer who has been working on it—quite clearly proved that of the 2,000 lungfish that went in there, only seven of them managed to get trapped. That one is ineffective just in getting them up to the top of Walla, and if they can get to Paradise they cannot get over the top. If they do get over the top and are dropped, they are dead when they hit the water. You do not need rocket science to show that the Beattie government is bloody useless at designing something that works and then they claim that it does work with nothing to back it up. As Jean said, the decision on Traveston must be withheld and postponed until such time as we know that we have an effective fish ladder and an effective turtle protection system, instead of just catching turtles somewhere else and chucking them in and using cameras to make out that they are scientifically—

Senator IAN MACDONALD—Did you have any response to your accusation that that was a fraudulent claim about the turtles?

Mr Currie—No, because they can say whatever they like, can't they. Beattie said, 'It is an effective fish ladder.' We said, 'Show us the documentation. Show us the data.' It is not there. They are full of it!

Senator IAN MACDONALD—You made that point. Thank you.

Senator SIEWERT—When was the Paradise Dam completed?

Mr Currie—In 2001, and it has never caught any rain. The water that was in there was released from Wuruma to make it look like it had water in it. As a result, all the lungfish habitat upstream is now kaput because there is no water and they are dying, and that led to a fish kill in, I think, late December.

Senator SIEWERT—In the dam?

Mr Currie—In Paradise Dam there was a huge fish kill and there was one in Ned Churchwood Weir as well. The situation is that the water is so de-oxygenated at this stage because of the lack of flows and stuff that the fish are just automatically getting nobbled. Even if we catch lungfish and put them in the dam, it is bloody useless. They are not going to survive because of the seasonal conditions and the way they are manipulating the flows.

CHAIR—Do you think they should pump another million and a half people into the area?

Mr Currie—I think they should bring them here!

CHAIR—No, let's be serious. Will the area sustain another million and a half people or not?

Mr Currie—Not without rain it will not.

CHAIR—You know the forecasts. I know the long-term predictions. It is going to get worse not better.

Mr Currie—Exactly.

CHAIR—What is the answer?

Mr Currie—The answer is can you convince the Premier—

CHAIR—No, I am asking what you would do.

Mr Currie—I will give you an example. I live in the bush. I have been on tanks for 16 years. I have 21,000 gallons of water. I lay out the money to buy all the tanks so I had water, and there is enough water for my wife and me for 15 years.

CHAIR—Why did you not put in a well?

Mr Currie—Salt.

CHAIR—No, a concrete well.

Mr Currie—Salt.

CHAIR—No, I am talking about the water off the roof. Why did you not put it into a well?

Mr Currie—Tanks are easier and need less digging.

CHAIR—I have a 40,000 well, and we dug it.

Mr Currie—There you go. But you know that those million people are going to have to get used to using a 100 to 150 litres a day.

CHAIR—All right, so you cannot pump a million and a half people into the area. But what about continuing to surmise that you can use water for all other purposes, including agriculture?

Mr Currie—I think we could get into the debate of whether our irrigation systems are sustainable, based on how poorly—

CHAIR—I am taking the argument, which is sensitive in a way, that four years ago I told the irrigators of the Murray-Darling Basin that I thought any 50-year plan for the Murray-Darling Basin would exclude furrow cotton and paddy rice. Would you be brave enough to make a prediction for your neck of the woods?

Mr Currie—I can see that there is going to be agricultural adjustment in the Mary, if this dam goes ahead.

CHAIR—No, I am not worrying about the dam—without the dam?

Mr Currie—Do you mean just for seasonal conditions?

CHAIR—Yes. I am amazed that no-one has even done the sums on the water that is being used now. I know them by heart in the other catchments, but there is no information available so it is time for you to get busy.

Mr Currie—It is overallocated.

CHAIR—By the way, would you like to take a little contract for me on the Narran Lakes?

Mr Currie—It depends on your hourly rate, Senator.

CHAIR—Thank you very much.

Mr Currie—I can give you mine!

Senator IAN MACDONALD—Thank you for your information. We did call others but they did not have your local knowledge.

CHAIR—We had a lot of passion but no information from others.

Mr Currie—My pleasure. I am employed as a professional and I attempt to make sure that I have the paperwork right.

CHAIR—Thank you very much for appearing today.

[11.16 am]

DEEN, Mr Amir Rahim, Manager, Water Services, Snowy Mountains Engineering Corporation

CHAIR—Welcome. We are very grateful to SMEC for making you available today to appear before the committee. We invite you to make an opening statement, after which we will be delighted to ask you a few questions.

Mr Deen—Thank you very much for inviting me. It is not very often that a consulting engineer has an opportunity to appear before a parliamentary committee, and I am very pleased to have been given that opportunity. I would like to introduce my organisation. SMEC has been in the forefront of water resources development over the last 60 years, starting with the Snowy Mountains. We believe we are the leading consulting engineers in this field.

In November last year, SMEC was engaged by the National Water Commission through a process of competitive bidding to undertake an investigation on a number of issues associated with urbanisation and water requirements for urbanisation in South-East Queensland and north-east New South Wales. The study was undertaken at a desktop level—that is, basically on information already available and not undertaking more detailed studies on the ground, and by using and synthesising and collecting and synthesising available information to develop our requirements.

In its broadest terms, the questions that were raised in this investigation were: what were the urban water requirements of north-east New South Wales and South-East Queensland currently and to about 2050; what were the water utilities in north-east New South Wales and South-East Queensland doing about meeting these requirements; and was there any water available in the rivers of north-east New South Wales that could be utilised for urban water supplies and how much would it cost to get that waster across to South-East Queensland and north-east New South Wales. We were also asked to comment on any issues in relation to economic, environmental and social issues that could arise from our proposals.

We arrived at five options in our report that we believe could form the basis for further investigations on this issue. Four of the five options were based on flows using water from the Clarence River or one of its tributaries and the fifth was using the Tweed River. Our options basically were: a dam on the Clarence river upstream of Duck Creek, upstream of Tabulam; a dam on the Mann River and pipeline to the Logan River; a weir on the Mann River near Jackadgery; a dam on Rocky Creek on the Tweed catchment; and a dam on Tooloom Creek and a pipeline from the Clarence.

We did a number of investigations into the environmental and economic issues, and I thought I would mention some of the environmental issues that we considered. We insisted that there be no more than 15 per cent of the water extracted. By and large, for most options we were looking at about three to five per cent. We decided that for the options we investigated we should pipe the water into the dam rather than releasing the water downstream in creeks. We tried to minimise any land requirements that may be necessitated by the structures required. Ultimately,

the objective of most of our dam options was to hold the flood flows and keep the low flows going so that there was no real stress on the rivers under low-flow conditions. So, broadly, those are the five options we put up. There has obviously been considerable discussion on the issues, and I presume that is the reason you have brought me down here. Thank you.

CHAIR—Thank you very much for that and, again, thank you to SMEC for their cooperation. I am confident we will get the cooperation of the New South Wales government at a future hearing. To get beyond a desktop study, obviously you would expect to have the cooperation of the New South Wales government officials.

Mr Deen—Yes, we would.

CHAIR—We would like to think that will happen in the future and that you would be quite happy to undertake further work if you are given access to further information.

Mr Deen—We would, yes.

Senator O'BRIEN—How do you assess the cost of projects in a desktop study?

Mr Deen—It is based on our experience in designing dams, building pipelines, pump stations et cetera. We have used the most recent information that we have available. We very recently developed a number of pipeline projects, and that information is also brought in.

Senator O'BRIEN—You make an assumption about the construction methods and the size of the construction et cetera?

Mr Deen—That is right; we have to make some assumptions, yes. And, by and large, we try to use corridors—State Rail, RTA corridors—across the ranges to take the pipelines across. We are fairly confident of the numbers that we have produced.

Senator O'BRIEN—An associated question is: why do so many infrastructure projects run over costs? I do not think we need a political answer.

Mr Deen—I think the main issue is that overrunning of costs is due to changes. The contract is awarded on a specific structure and people change things as they go by, for various reasons.

Senator O'BRIEN—Yes, sometimes people change things; sometimes circumstances necessitate change.

Mr Deen—I agree, yes.

Senator O'BRIEN—So the only way we can make an assessment is if there is an on-the-ground proposal which is fully costed, given the geological and hydrological circumstances. Is that fair comment?

Mr Deen—I agree. The final cost is not the cost that I have given here, but I do not think it will be very different under most circumstances.

Senator O'BRIEN—What sort of range should we expect? I will put you on the spot.

Mr Deen—We costed this on a very conservative basis. We had a 35 per cent contingency cost built into the equation. It depends a lot on how long the infrastructure boom will go on. We believe that it should ease up in about two or three years to become cheaper, and pricing might even go the other way. At the moment, in Queensland, if you are a pipe manufacturer you are doing well, but I cannot see that going on forever. We would expect changes.

Senator O'BRIEN—They might be shipping their pipes down to the channels in the Murray-Darling basin. Would the information on dam construction include information on likely evaporation? What site factors are relevant?

Mr Deen—Evaporation has been considered—evaporation and evapotranspiration around that reduction in inflows. At the desktop level it was very broadly conducted. We tried to use, as far as possible, studies that had been done in the past. The Clarence dam proposal is 50 years old, and there is information on that area, but we used the most recent information available.

Senator O'BRIEN—What would you normally do if you got to the on-the-ground assessment in terms of making an assessment of the likely evaporation of the dam?

Mr Deen—The calculation of evaporation from dams was studied about 20 or 25 years ago. The predecessor to SMEC, the Snowy Mountains Authority, carried out some very extensive investigations. You have an evaporation pan on the side and you compare the actual loss of water from the evaporation against that pan, and then you come up with a pan factor that is used. Once the investigations are further developed, we would use these pan factors and adjust them: bring a pan into the proposed site and start measuring the evaporation and change the factors. Evaporation is significant but it is not a very large component of the losses in the system.

CHAIR—In your calculations you talked about population. Could you give us an indication of population numbers you studied?

Mr Deen—We used the information that was given to us by the Queensland government. The Queensland government produced this document—

CHAIR—Did they include the projection of another million-and-a-half people?

Mr Deen—That is right. The figures that we used were 50,000 a year for South-East Queensland and roughly 10 per cent of that for north-east New South Wales.

CHAIR—That is a new city of Wagga every year.

Senator O'BRIEN—You have used existing geological and hydrological information from the Clarence basin and the Tweed, I take it?

Mr Deen—That is right—the information that was readily available to us. The New South Wales government releases a CD with flow data. They have more information, but we were not able to access the internal information. We were able to use all the publicly-available stuff.

Senator O'BRIEN—Presumably a project like this would not be possible without the cooperation of the New South Wales government.

Mr Deen—If you want to take it to the next stage, yes, we would certainly need government cooperation.

Senator O'BRIEN—In terms of piping the water to the Logan River, what distance is it being piped over, in your proposal?

Mr Deen—The longest for the Clarence from the Mann would be in the order of 250 kilometres. It is in that order. I could give you the precise numbers.

Senator O'BRIEN—Yes. What about upstream of the Duck Creek pipeline?

Mr Deen—It will probably be 170 to 180, roughly. I can give you the precise figures later.

Senator O'BRIEN—That would be good. What sort of power requirements are there to transfer the water, on your calculations?

Mr Deen—I cannot tell you off the top of my head, but we calculated that you could get about 40 per cent of the energy back. You send it over the hill and then you collect the energy as it comes down. So we have a recovery factor. We have not built that recovery factor into the calculations, but—

Senator IAN MACDONALD—Do you mean you would have a little hydro power as it comes down the hill?

Mr Deen—That is right. You need some way of dissipating the energy as it comes down. One way would be to use a mini hydro plant on the pipeline. That gives back energy as well as dissipating the pressure in the system.

Senator O'BRIEN—We should have expected that from your corporation—the Snowy Mountains has a bit of a role in those sorts of things, after all. Is there an assessment of the greenhouse consequence anywhere in your document?

Mr Deen—No. That was outside our terms of reference.

Senator JOYCE—How detailed is the desktop survey on the Clarence? How many pages, roughly?

Mr Deen—The document itself?

Senator JOYCE—Yes, it is quite substantial—it is about 200 or 300 pages.

Mr Deen—It is about 150 to 200 pages.

Senator JOYCE—It goes through evaporation and geotechnical. Do you think you have enough information there already to build a dam on the Clarence?

Mr Deen—No, not to build a dam. We need to locate the dam site and to undertake geological studies. I think we will need another year or two at least to do detailed investigations.

Senator JOYCE—Another year or two of detailed investigations before you got into it and start building a dam?

Mr Deen—Yes.

Senator JOYCE—If I were to do a desktop survey and come up with 30 pages of information—nine of maps and six blank—do you think that would be enough of a detailed desktop investigation to build a dam on it?

Mr Deen—Unless I see it, I cannot comment.

CHAIR—I will give you some guidance: you do not have to answer these questions. What he is trying to say is that there has not been enough work done on Traveston. He is putting it into the Clarence context. Isn't that right, Senator!

Senator JOYCE—What are the geotechnical issues that you need to look at regarding the construction of any dam on the Clarence?

Mr Deen—What you would need to look at is the seismicity factors. You would be looking at the material of the foundations for the dam structure.

Senator JOYCE—Subduction zones, and things like that.

Mr Deen—That is right. You would also need to be looking at the material that would be used to build the dam—for an earth core, rock-fill dam you would need to find those sources for rock et cetera.

Senator JOYCE—That would have an immense effect on the costings.

Mr Deen—Yes, it would.

Senator JOYCE—What is the preferred site that you look for.

Mr Deen—Ideally you would look for a gorge on a solid rock foundation.

Senator JOYCE—I will suggest some other sites, and you can tell me what you think of them. How about an alluvial flood plain? How about chucking one in on there?

Mr Deen—It would be difficult to build a dam on an alluvial flood plain.

Senator JOYCE—I think you are right on that one. Seepage would change with the type of foundation that you have, wouldn't it?

Mr Deen—In any dam, seepage is a big issue. You need to put in grout curtains to prevent water going under.

Senator JOYCE—What do you have to go down to to prevent those curtains going under? Do you have to go down the rock base to stop it going under?

Mr Deen—You would have to go down to an impermeable layer.

Senator JOYCE—So you would need to be secure on the sides as well—secure along the dam wall—otherwise it seeps out?

Mr Deen—Exactly.

Senator JOYCE—That is pretty basic stuff, isn't it?

Mr Deen—Yes, but I can tell you that there have been dams built in various parts of the world that have had that problem.

Senator JOYCE—I think they are about to build one right now with one of those problems.

CHAIR—Yes, I know, mate!

Senator JOYCE—It is a very important question. So your yield from the one on the Clarence is about 100,000 megalitres a year. That is pretty substantial yield, from your desktop survey. What sort of storage capacity would yield 100,000 megalitres?

Mr Deen—We have given two or three options. One is Tooloom Creek. I will give you the figures that we used: on the Clarence River upstream at Tabulam the capacity is 250,000 megalitres and the one upstream on the Mann River has about a 70,000-megalitre capacity.

Senator JOYCE—Two hundred and fifty thousand megalitres gives it a 100,000-megalitre capacity.

Mr Deen—They both give 100,000 megalitres.

CHAIR—They are in broad—

Mr Deen—From what we can see in the materials, that is reasonable.

Senator JOYCE—Two hundred and fifty thousand megalitres for a yield of 100,000 megalitres would be a fair breakdown. What is the rainfall pattern in the catchment?

Mr Deen—The Tweed is one of the wettest catchments in New South Wales—it has about 1,400 millimetres a year. To the west of the Tweed are the headwaters of the Clarence. That

catchment too has about 1,400 millimetres a year, and then it drops down to about 1,000 to 1,200 as it comes further south.

Senator JOYCE—You are from a respected organisation. No doubt the federal government selected you because—without being bashful—you are at the top of your field, aren't you?

Mr Deen—Yes, we would like to think so—but it was a competitive bid.

Senator JOYCE—I think it is good. Have you done any work for any other governments in any other areas? Have you done any critical analysis of proposed dam sites lately?

CHAIR—They have worked all over the world.

Mr Deen—Yes, we have worked all over the world and all over Australia as well.

Senator JOYCE—Have you done any work on any proposed sites in the Mary River?

Mr Deen—No, we have not done anything on the Mary River.

Senator JOYCE—Were you ever contacted by anybody out of the blue to see if you might be interested in putting in a tender to do some work here?

Mr Deen—No, there is nothing that I am aware of.

CHAIR—Senator Joyce, there is a limit on advertising breaks.

Senator JOYCE—It is curious that the most prominent engineering firm has not been contacted for one of the major water projects being proposed. You have been very helpful—thank you very much for that.

Senator TROOD—Did you do any calculations for these five options about the approximate time that each would take if one of them were to be proceeded with?

Mr Deen—Yes. We believe the Tweed option probably could be activated very quickly. There are a number of reasons why. Although the Tweed gives you only about 20,000 megalitres a year, it is an option that could be actioned upon more or less within a year or two.

Senator TROOD—Do you mean that it could be completed—or begun?

Mr Deen—I mean that it could be begun—the studies could be carried out and approval gained. The approval process takes time. It will take about a year or two for the approval to get through, and then within a couple of years we think we could build the Tweed. It will only take a couple of years to do that because, in the scheme of things, it is a fairly short pipeline and a fairly small dam. If you are talking about an option on the Clarence, you are probably talking about four or five years to undertake the analysis and then construct the dam and put in the pipelines et cetera.

Senator TROOD—Is that true in relation to each of the Clarence options?

Mr Deen—That is right. Under further investigation some of them might take less time than others, but at this point in time we are talking about four or five years for assessment, environmental approval and design.

Senator TROOD—I realise that further environmental assessments would be required and that they would have to be detailed, but are there any particular or unique environmental problems which might be a severe impediment to progress? I can imagine the general kinds of environmental considerations, but do these studies identify anything specific that might be a particular impediment?

Mr Deen—A number of issues very specific to the North Coast rivers will have to be investigated. There is a large amount of National Park in that area. Obviously you will have to minimise the impact on it. There are issues such as prawn fisheries et cetera which depend on large flood flows which will have to be taken into account. But broadly speaking, we did not find any show stoppers as such at our desktop level.

Senator TROOD—I acknowledge that the problems you identified require further investigation, but at this stage would they prevent the proposal going ahead, or could they be mitigated in some way?

Mr Deen—Yes, we believe so.

Senator IAN MACDONALD—Senator Trood, I think, made my point. Your report says that you have to go into those social and environmental considerations. In your desktop study, did you look at the downstream impacts at all, particularly for the prawn fishermen?

Mr Deen—Yes, we looked at it in a very broad sense. A number of people looked at the reports of the Healthy Rivers Commission on the Clarence and other northern rivers. We identified it as an issue that will have to be considered in the next stage.

Senator IAN MACDONALD—What height level is the site of the dam on the Clarence? Is it right up high? I am not exactly familiar with it.

Mr Deen—The one we proposed on the upstream of Duck River is to the north west of the Clarence. It is fairly high up. The one on the Mann is lower down.

Senator IAN MACDONALD—Is it higher than anything between the dam and the outlet to the pipe? Is there any range or geographical feature that is higher than the height of the dam, between the dam and where it is dropping into the Logan River?

Mr Deen—Yes. They get across the McPherson Range.

Senator IAN MACDONALD—But is the McPherson Range higher than the dam site?

Mr Deen—Yes, it is. It will have to be pumped across.

Senator IAN MACDONALD—Is there any way you could move the dam to a place that is higher than the McPherson Range to get a gravity feed down to Brisbane rather than having to pump it over the mountains?

Mr Deen—The trouble going upstream is you may not get enough flow. The catchment becomes smaller.

CHAIR—To put that into context, and where Senator MacDonald is going, is the majority of the tributary catchment of the Duck River Dam site above or below the dam site?

Mr Deen—We are upstream of the Duck River. We are on the Clarence. Off the top of my head, at that point we have only less than 20 per cent of the catchment. I could give you those figures but it is not a large proportion of the catchment.

CHAIR—Which makes our case a bit for protecting the stream flow in the longer term.

Mr Deen—That is right, yes.

Senator IAN MACDONALD—How far is the dam site to the highest point in the McPherson Range over which your pipe would have to get?

Mr Deen—In terms of the Mann River you are talking about 140 to150 kilometres.

Senator IAN MACDONALD—To the top of the McPherson Range?

Mr Deen—To the top of the McPherson Range, to the crossing point, yes.

Senator IAN MACDONALD—What is the distance from the McPherson Range down to the outlet?

Mr Deen—That is the balance. It will be in the order of 30 to 40 kilometres from the top of the McPherson Range, the headwaters of the Logan into the Cedar Grove Weir, and from there into the proposed Wyaralong dam.

Senator IAN MACDONALD—Is there a correlation between the height of the head of the pipe and how far that would push the water across?

Mr Deen—Yes, there is, but there are limits to what can be done. A normal steel three metre pipe, for example, can take a pressure of 200 metres. Anything more and the pipe would fail due to the pressure. So there is a limit to how much pressure you can pump.

Senator IAN MACDONALD—You get a stronger pipe though, don't you?

Mr Deen—It becomes very difficult to build. That would be a 25-millimetre steel pipe.

CHAIR—Engineers say you can do anything if you have got enough money.

Mr Deen—There are challenges even at very high pressures.

CHAIR—I am pulling your leg!

Senator IAN MACDONALD—I am wondering if from the top of the McPherson Range you could run a pipe, say, up to the Wivenhoe Dam without any pumping.

Mr Deen—You might be able to do that. It is possible. One would have to investigate it.

Senator O'BRIEN—You could build a canal from the Ord.

Senator IAN MACDONALD—But you need height, which the Ord does not have. It does if you look at a map of Australia but that does not really mean it is higher. Apart from the Snowy scheme, are there other instances of this type of scheme anywhere in Australia?

Mr Deen—Do you mean a pumping and storage scheme?

Senator IAN MACDONALD—Pumping, then storage and then travelling quite lengthy distances in pipes to the outlet? There is a lot of that in the Snowy, obviously, but is there anywhere else in Australia that we have done this?

Mr Deen—Tallowa Dam is similar. It is one of the dams—

Senator IAN MACDONALD—Where is Tallowa?

Mr Deen—Tallowa is on the Shoalhaven River and it feeds Sydney's supply. You pump water up from Tallowa into the Wingecarribee and then send it down. There is a long pipeline from Tallowa into Fitzroy Falls Dam and from there it is transferred. The proposal now is to pipe the second part of it as well. That is under investigation at the moment.

Senator IAN MACDONALD—Thank you for that.

CHAIR—There is no scope, obviously, because it is 150 kilometres for a tunnel?

Mr Deen—Did you say 150 kilometres of tunnel?

CHAIR—I was just saying that the distances are too big to cut through with just a simple tunnel?

Mr Deen—There are problems in building tunnels as well.

Senator SIEWERT—I have a number of questions. When you answered the question on greenhouse, were you referring only to the impact of transmitting the water, or did you include the impact of climate change on rainfall in your calculations?

Mr Deen—No, we did not include the effect of climate change in a broad sense. We have factored in the variability that has been recorded in the past into the analysis of flows. No, we did not.

Senator SIEWERT—Can I ask why not?

Mr Deen—With climate change impacts, there is no definitive scientific basis for assessing those changes.

Senator SIEWERT—I am gobsmacked that you come out with a report—with all the IPCC reports and everything else, and the impact on the Murray-Darling—and you have not included climate change.

Mr Deen—None of those reports deals on a day-to-day basis with the impact of changes in flows arising from climate change.

Senator SIEWERT—Even the Queensland government have factored it into their assumptions on Traveston—not that I think it was adequate.

Senator JOYCE—On which page?

Senator SIEWERT—When I asked, that is what they said. At least they acknowledged that they should, even if they did not do it properly.

Senator JOYCE—It can't have been too detailed.

CHAIR—Thank you, Senator; you have made your point.

Senator SIEWERT—I will move on from there. There is no point in pursuing it any further. You say in your report that you have looked at social and environmental impacts. There have been some questions around what you have looked at for environmental impacts. In terms of social impacts, what social studies have you looked at to consider the social impacts?

Mr Deen—Broadly, we looked at the studies that were done by the Healthy Rivers Commission, and other studies on the North Coast of New South Wales, on the impact. We also looked at the discussions that went around the background to those reports.

Senator SIEWERT—What were those social impacts that you identified?

Mr Deen—The major comment that seemed to come out of a lot of these reports was that people in certain valleys seemed to believe that that water belonged to them and it should not be sent to anybody else. That seemed to be the broad issue there. The people upstream were not interested in the impacts on the people downstream. Similarly, the downstream people were not interested in the upstream impacts. So the issues seemed local.

Senator SIEWERT—I have heard that there are fishers who rely on the Clarence River. Would you call those impacts social or environmental?

Mr Deen—If you are talking about fish, we would call it an ecological issue.

Senator SIEWERT—But there are a number of fishers who fish there. I acknowledge that there is an environmental impact, but there is also a community who rely on that. Did you look at that?

Mr Deen—That would be a community or economic issue in our assessment.

Senator SIEWERT—Have you looked at that?

Mr Deen—We looked at the work done by the Healthy Rivers Commission as part of our broad based studies on this job.

Senator SIEWERT—Did they look at that in detail?

Mr Deen—They had a number of sittings and the commissioner looked at that, yes.

Senator SIEWERT—What did you factor in as the cost?

Mr Deen—There was not a cost assessment required in this particular study for that.

Senator SIEWERT—It says in the report that you did environmental and social costs, but it does not seem to have been factored into the decision making. When I say 'decision making' I realise that you were not making a decision per se, but you came up with five key options.

Mr Deen—That is right.

Senator SIEWERT—So how was that factored into the decisions that you made to pick those five?

Mr Deen—What we were looking at, in terms of those costs, were the engineering costs of those structures. What I think you should understand is that the firm was given a brief, and we are obliged to work within that brief. To step out of the brief would be—

CHAIR—What you are really saying is that you were asked to do the engineering and you would then expect someone else to look at the impact of that engineering.

Mr Deen—That is right. It is the next stage that would involve assessment of costs and benefits for these proposals.

Senator SIEWERT—Okay. Before Senator Heffernan jumps in again, the executive summary I have here says, 'It could be repeated that environmental and social assessment of the options was considered in a fairly broad fashion.' Should I interpret that to mean not that they were included when picking those five, it was just that they were considered and that was it?

Mr Deen—When I spoke about this a little while ago I mentioned that we looked at a number of issues in terms of the environmental requirements of the study and all of those issues were

factored in. We have minimised the intake, the abstraction, of water: the Clarence has five million megalitres a year and we are taking 100,000 out. We have ensured that our dams collect only the flood flows and that the low-flow systems are kept intact. We have ensured that the impact of any flooding on national parks is minimal. So we have looked at a number of environmental issues. We have tried to keep the flow through the river and to keep the effect on the prawn fisheries and fisherman et cetera as small as possible—as far as we could glean from the information that was in the public domain.

Senator SIEWERT—Okay, thank you. Earlier you said—as I understand it—that you used the Queensland government's assessment—

Mr Deen—That is right.

Senator SIEWERT—for their water demand figures et cetera. As I understand it, Queensland's water use per capita is still higher—even when it is revised down, and I appreciate that they are bringing it down—than other cities. Did you factor that in? Did you look at it and make an assessment of whether their demand scenarios were realistic?

Mr Deen—Once again, in a very broad sense, yes, we did. Later on, towards the latter part of the study, we had reports from the Queensland government's investigations brought in—in addition to the picture that they presented to us on their website.

Senator SIEWERT—My understanding—and I stand to be corrected—is that there has been no independent analysis of the Queensland government's figures for their inflow. I am seeing some headshaking in the audience, but I do not know if I am correct.

Mr Deen—Our understanding is that two sources of information were available. One was a study undertaken by Montgomery Watson Harza, a copy of which we received later on. There was also a separate study undertaken for the Mary River Council of Mayors by the Institute of Sustainable Futures, which we were not given access to.

Senator SIEWERT—So the information contained in there was not included in any of your decision making?

Mr Deen—That is right. But as an organisation we have considerable experience in urban water. I am confident that the numbers that are in the Queensland government's report are reasonable in that context.

Senator SIEWERT—What makes you confident?

Mr Deen—It is based on my experience in working in urban water supply.

Senator SIEWERT—My understanding of the proposals, at least some of them, is that it will be piped up and put into Wyaralong dam?

Mr Deen—That is right.

Senator SIEWERT—What happens if that dam does not go ahead?

Mr Deen—The water is available. First, we can send it to Cedar Grove Weir and, if needed, we can pipe it from Cedar Grove Weir into the supply system. Ideally it would go into Wyaralong dam, but it is not imperative that it goes there.

Senator SIEWERT—My understanding also is that this is a reserve supply. Is that right?

Mr Deen—That would be one way of operating it. Ideally, once again, if we had access to the models that Queensland are using, we could then operate in such a way that you would only use it during drought periods—something similar to what Sydney Water does or the Sydney Catchment Authority does with the Shoalhaven River: you only use it during drought periods. That would be one way of operating it. But it depends quite a bit on the operational constraints that the Queensland Water Commission would have in operating the system.

Senator SIEWERT—If it is only going to be used for a reserve, does that then have implications for the cost of the water supply?

Mr Deen—The operational cost would be less, but the capital would not be. What you are looking at is creating additional capacity in the system. One should note the distinction between increasing yield and increasing the water per se. You are increasing the yield of the system, but you do not necessarily need to increase the amount of water they are pulling out, unless you come into a drought.

Senator SIEWERT—Yes, but if you have put all that infrastructure in place and you only use it one in four, five or whatever years, surely that puts up the cost per unit of water?

Mr Deen—We are talking about the yield. We are talking about what yield the additional water gives to your system—what security it offers. You do not need to use something all the time to factor the cost of it. If you look at it in terms of yield, for each megalitre of yield that you get out of the system it is going to cost you so much. It is a whole-of-life calculation.

Senator BARTLETT—Following on from those questions about where you are going to pump it, you were suggesting putting it into the Logan River downstream, impounding it in the Cedar Grove Weir and then, if necessary, pumping it back up to Wyaralong?

Mr Deen—That is right.

Senator BARTLETT—Why did you pick Wyaralong, which obviously is not there yet, when there is already the Maroon Dam, which is a bit closer and which is not very full at all, and also, a bit further away, the Moogerah Dam, which has been at very low levels for many years. We have two empty dams sitting in the vicinity anyway and yet we are wanting to create a new one to put water into that. Why?

Mr Deen—Our understanding is firstly that the Wyaralong dam is going to built and, secondly, that if you look at the pipe routing it is best to send it down into Cedar Grove and then into Wyaralong dam. As I said before, that is just one option. We are certainly open to others.

Senator BARTLETT—The study you did was predominantly based on which was the cheapest?

Mr Deen—Yes, it is the cheapest option.

Senator BARTLETT—So a particular part of your terms of reference was not to look at the broader factor of existing infrastructure that has been underutilised way below capacity for many years and first making more use of that?

Mr Deen—We would be thinking of doing that type of work in the second stage. In the initial stage we looked at what would be the easiest and cheapest way of getting water across into the South-East Queensland grid.

Senator BARTLETT—As you said before, it would be going through or over the McPherson Range?

Mr Deen—Yes.

Senator BARTLETT—Through and over, I think. That is through a World Heritage area; is that right?

Mr Deen—We are using the State Rail and RTA corridors to transfer the water across.

Senator BARTLETT—They go through the World Heritage area?

Mr Deen—Yes, some of it may be going through that.

Senator BARTLETT—Can you confirm that? It is the Central Eastern Rainforest Reserves World Heritage area. Do you know that for sure?

Mr Deen—I cannot give you a definitive answer at this stage.

Senator BARTLETT—Perhaps you could take that on notice.

Mr Deen—Yes.

Senator BARTLETT—If you were looking at costs, cheapness et cetera, did you have the ability to look at the wider costs of World Heritage impacts as part of your calculations and the mitigating actions that might be required? As it was a desktop study, I guess that sort of work has not yet been done, has it?

Mr Deen—At the level of study we were doing, no, we would not have done it. But, in impacts, you are talking mostly of a buried pipeline. A buried pipeline on a road corridor, for example, by and large would not be a major issue. You would dig it up on the verges, put the pipeline in and then close it up, with a few points for inspection.

Senator BARTLETT—Questions about what would have a lower environmental impact were not really part of your study, I suppose. You were looking predominantly at costs—cost per water yield at the end of it and that sort of thing—rather than at some of the wider issues of environmental impact such as whether it is going through the World Heritage area and the environmental impacts of water extraction in the Clarence catchment or, at the other end, of that

level of water flow being put into the Logan catchment. Those sorts of things were not really part of what you looked at, were they?

Mr Deen—We looked at it perhaps not in the detail you are suggesting but certainly in terms of transfer systems. We minimised the impact of it by using the existing corridors. In terms of the impact on the Logan, we made sure we did not release it into the river. Where you have a fluctuating flow you do not want a steady 100,000 megalitres a year going through, so we piped it all the way down to a storage from where we could then feed into the grid. When we talk of North Coast rivers, environmental issues are always something to be considered. I believe we looked at it as thoroughly as we could within the context of a desktop study.

Senator BARTLETT—It then comes down to the degree of detail in which you were able to look into it and how much impact those things had on your final decision-making process about recommendations. What was the key criterion for you to reach your conclusion? Was it predominantly price of water unit? How much of a role did some of the environmental factors play?

Mr Deen—It was price as well as environmental and social issues. Our brief was to look, at the desktop level, at all those issues, and we believe we looked at them. We looked at them at a fairly high level of detail for a desktop study.

Senator BARTLETT—What is your role from here in this? You have been given this; you have done your job and explained it to anyone who wants to ask about it. Do you have any anticipation of follow-up activity?

Mr Deen—From our perspective we believe that a second stage is needed, where one would be looking at a full feasibility study of these options.

Senator BARTLETT—But no decision has been made yet to make that happen?

Mr Deen—It is not for us to make that decision.

Senator BARTLETT—I appreciate that, but you are not aware that that is happening—that is just something you are saying needs to happen.

Senator SIEWERT—I want to have another crack at the cost of water.

CHAIR—Is this an argument between two scientists?

Senator SIEWERT—No, I do not think so. If it is going to be treated as reserve, and the water is only going to be used for one in four years but you have spent, say—and I am picking a figure out of the air—$2 billion to build the infrastructure, surely the Queensland government, or whoever pays for the dam, needs to recover the cost of the dam. Surely you would spread the cost across the whole of the operation, so the cost of water would go up. If you only use the water for one in four years, I cannot understand how you can say that that is the only cost when the government has to recoup the cost of the infrastructure.

Mr Deen—It is the yield; it is how much this supply increases the yield of your system that matters. It is not how much water you take from a particular source.

Senator SIEWERT—No, but you have still spent that much money putting the infrastructure in place.

Mr Deen—I agree.

Senator SIEWERT—So they will still need to recover the cost of the infrastructure. Surely they do their calculations on the cost of water over how much they have spent. It does not matter how much is sitting there; it is how much they have paid out for the water infrastructure.

Mr Deen—I agree.

Senator SIEWERT—Did you take that into account when you did your costs?

Mr Deen—Yes, I did. What I am trying to explain to you is the difference between using a source of water and the increase in yield. In our calculation we have increased the yield, the secure supply, by, say, 200 gigalitres a year. So if you have increased the secure supply by 200 gigalitres a year then whatever cost you have is so much divided by 200 gigalitres a year. That is how you increase the yield of the system. It is the capacity to deliver. It is like electricity—you have a wattage; you have a capacity in the system. That is what costs the money; it is not how much electricity has been sold.

Senator SIEWERT—I do not think we are going to see eye to eye on this one. It is sitting there not being used.

CHAIR—I think you are doing all right; he is saying he is agreeing with you, and it sounds good to me.

Senator SIEWERT—No, he is not. I think we have a fundamental disagreement.

CHAIR—I do not think so; I think you are doing wonderfully well. We will call this to a close so everyone can head off home. I thank everyone for their patience and resilience. A special thankyou to all the witnesses today and a cheerio call to Hari down there at SMEC who allowed Amir to come and to the Water Commission for supporting you. We are calling it a day until a day in June.

Committee adjourned at 12.08 pm