THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS MET IN THE AUDITORIUM, DELORAINE COMMUNITY COMPLEX, DELORAINE ON THURSDAY 7 NOVEMBER 2002.

MEANDER DAM PROJECT

DONALD BADCOCK, **NEIL JOHNSON**, **JENNY DORNAUF**, **NED TERRY** AND **MARCEL JANSEN**, MEANDER VALLEY DAM ACTION GROUP WERE CALLED, MADE THE STATUTORY DECLARATION AND WERE EXAMINED.

CHAIR (Mr Harriss) - Thank you for coming along. Who is going to lead this submission? Mrs Dornauf, I presume.

Mrs DORNAUF - You have a copy of our two-page submission?

CHAIR - Yes, we do.

Mrs DORNAUF - I don't know whether you will be pleased, but we think we can probably use our half hour by answering your questions, except that we have some difficulty in perhaps answering some of the questions which I am sure are going to come from Mrs Napier, because of the questions she was asking earlier -

CHAIR - We were hoping you might not encourage her.

Laughter.

Mrs DORNAUF - It is in relation to how much the water can be bought and sold for and so on. We do have a difficulty; we have put in an expression of interest to fund and manage the dam and we have also contributed, with another partner, with construction. We are in a difficult position to answer questions, but I think the fact that we have put in an expression of interest should tell you that we are confident that it is a viable dam and the water will be viable. Nevertheless, we will answer any questions we can.

Mr LAWSON - I beg your leave, Mr Chairman; I believe I need to declare an interest. Sinclair Knight Merz are involved in the assessment of expressions of interests. You may wish to direct that we leave and we will take your guidance on that.

CHAIR - I will seek the views of the committee members. Mrs Dornauf, you mentioned that -

Mrs DORNAUF - I represent the Meander Valley Dam Action Group here and that group has a wider organisation that we belong to that we are calling the Meander Irrigation Group, which has submitted two expressions of interest. As was explained this morning, it is not terribly sensible for us to give away any of the things we have put in our

expression. There will be a lot of questions we can answer but, for example, somebody is going to ask us how many farmers are involved. We could probably give you a rough figure. We don't want to tell you and we don't want to tell you what price people are prepared to commit to buy a megalitre of water, and some of the other details of that expression of interest.

CHAIR - I would defer to other committee members, but if I could just answer Mr Lawson's suggestion. Mrs Dornauf has made it clear that we are quite at liberty to ask questions if they are of a general nature. You will provide the answers but if they are specific to the submission which you have put in which will be assessed at a later time by Mr Lawson's company, then you will not be answering those.

Ms LAWSON - Can I assist, having created the problem? Can I suggest that it might be in everybody's interest that the Sinclair Knight Merz people withdrew. I think it would be a pity if we ended up with a probity order when we do the assessment, disqualifying these people's potential bid simply because we had been inept in not recognising that. So it would be safest if we withdrew and didn't hear this piece of evidence. My suggestion to Treasury is that's the safest way to deal with it.

Mrs NAPIER - Let's err on the side of caution.

CHAIR - Mr Donnelly has just reminded me that the proceedings today are transcribed and they will be on the Internet. It is part of a public record. It has to be your call.

Ms LAWSON - I think we might withdraw. What happens if we might decide to take this in camera in view of those circumstances, that might be another thing that you might want -

Mrs NAPIER - We need to think about whether it would be the preference of the group whether they answer some questions in camera, if there are some issues of commercial-in-confidence?

CHAIR - The requirements for this committee to take evidence are in the act, that will require us to take evidence in public.

Mrs NAPIER - That's right, it is only the public accounts committee -

CHAIR - This committee has no capacity to take evidence in camera.

Mrs NAPIER - That's true, so you may have to defer.

CHAIR - That is fine; we will leave that to your judgement.

Mrs DORNAUF - The main thrust of our vision - taking into account that the advertisement said financing construction and management; it did not mention the environmental side - is that the farmers or the users are very keen to be involved in the ownership, if not totally then certainly partially, for all sorts of reasons which we have put forward in this submission. So we are open to questions.

Mr BEST - I am interested to ask you some questions but I am worried on your behalf if you do continue to participate in this inquiry that what is being said will go on the Internet. Does that bother you at all in anyway?

Mrs DORNAUF - We will just be careful.

Mr BEST - Because you could be challenged.

CHAIR - I suppose where Mr Best is coming from, so that you are really aware of it, is that there could be people right in this audience or on the Internet audience who will seek to challenge your submission, so if you are relaxed about that?

Mr BEST - Okay.

CHAIR - Thanks Mr Best; that's a good question. I appreciate that. Okay, we will proceed then to ask you some questions.

Mrs NAPIER - Well, let me ask you some questions and you may or may not answer. My understanding of the original survey was that we have been advised that 60 per cent of farmers who may be interested in irrigation are those persons who have dairy properties. I know that in the actual submission we received on the issue, is $67 a megalitre is identified as being a figure above which dairy farmers would be less like to pay, even though I hear that 50 to 55 is a figure that dairy farmers in Tasmania would be willing to pay to be able to push the shoulders out and if possible be able to operate both a summer and winter dairy. Can you indicate whether it is your view that if water became more expensive that those farmers would move out of dairy and move into more lucrative cropping.

Mrs DORNAUF - Well, it is correct that a large percentage of the survey results said that a lot of the water would go currently to dairy, and I guess the price thing - all the surveys came up with a whole heap of different figures. The fact is we have got a group of farmers prepared to invest in the dam and therefore the cost of the water does not become an issue, and certainly is not something that we could talk about. But, yes, there will be a lot of movement in and out as the world changes in every way. The fact that water is available, that the markets are changing et cetera; nobody could give you the answers now, but there is the opportunity for diversification.

Mrs NAPIER - In various submissions we have heard today we have heard that this involves 43 farmers, we have heard it involves 55 farmers. Can you give us an indication within a reasonable range of the number of farms involved?

Mrs DORNAUF - I can give you a general answer to that, too. None of those figures is correct, and the amount of hectares or acres that are suitable to irrigate does not change, so those figures in the Davey part of the report are useful and can be taken into account. The number of actual farmers depends on how much land a particular farmer is managing, and one of the things that surprised Davey and Maynard, I think, is how much land is under one management. So I guess it is around a figure of 100, but that will change too.

Mrs NAPIER - About 100 farmers?

Mrs DORNAUF - It will change. It may grow more. In five years' time it may be fewer farmers. It depends on what happens with 101 other things.

Mrs NAPIER - So that would basically double the number of farmers that have been mentioned in previous submissions.

Mrs DORNAUF - Well, the people who want to be involved in being part-owners and managers of the dam is a changing figure because people are buying and selling all the time. They are dying, even. But it is around that figure, and I do not think anyone can give you an accurate figure.

Mr BEST - We have heard some concerns about the hydrology or the need for more research on hydrology. Do you have any thoughts in relation to that?

Mrs DORNAUF - Marcel will answer that.

Mr JANSEN - Can I ask the question; is that specific to the available water or really looking at the hydrology, the leakage, geomorphology -

Mr BEST - Sorry, leakage.

Mr JANSEN - We are a group of farmers who have done five years of work, and on that sort of issue the experts I am afraid are the only ones who can speak. I can't speak for anybody else on the committee, but I don't think we are in a position. Obviously the dam has to be safe, it has to be sustainable, all those things, and built within normal engineering guidelines; we would expect those requirements to be met.

Mr BEST - Can I just say, though, we have heard today that apparently that hasn't happened. There have not been any hydrological studies in relation to it other than leakages on the wall. That is what we have been told by some submissions.

Mrs DORNAUF - But there have been. I am sure Mr Gilmore told you this morning that there have been.

Mr BEST - Right, okay; we need to follow that up.

Mr JANSEN - Our group certainly haven't done it.

Ms HAY - That was more or less my question. For instance, I was going to ask what research have you undertaken as a group for leakage, sustainability, flooding and environmental impacts. So you are saying that you haven't done those and that you are taking the advice of the experts. Have you done any of your own research in this, given that you are willing to put so much money forward?

Mrs DORNAUF - No, but different members have got stronger interests in different areas, so if we are talking about the soil types and salination and the capability and so on, I guess Mr Badcock's our number one expert. Likewise Marcel largely covers the environmental things and so on, so we've all got the amount of expertise; but, no, like Marcel said, we're not experts.

Mr TERRY - Could I just make a comment to follow that question up, Mr Chairman. I was in the Rivers and Water Supply Commission in 1989 and there was a concern about the Huntsman Saddle and my best recollection is that there was extensive drilling done and, in the end, the commission was satisfied that there would be no worries there. That is my recollection of that.

Mr HALL - We've heard a lot of conflicting evidence whether or not quolls can be relocated or not and I know that Mr Terry, not being perhaps a fauna expert, has a very keen interest in native wildlife. Would you care to offer any comment?

Mr TERRY - I find it very interesting to hear the comments about the 12 quolls in that area at a particular given time. They're a bit like brush possums, in my experience; they move around and so to assume that there are 12 there and to see the preparation work that's anticipated to be done to relocate them, I just don't think that's necessary. I think as a bit of land is cleared there and some of their habitat goes they will move on, perhaps in a pair or two at a time, and find somewhere else to feed.

Just for interest, where I live over on the flats at Dairy Plains, we get visits from quolls occasionally - that's the big fellow, what we call a 'tiger cat'; the little fellow is the eastern spotted quoll and we call him a 'native cat'. Two years a lady from the university was doing a thesis for some research work with the wildlife park and she had the permission of National Parks to have some cages to catch devils out on our property at the Needles, which is interesting. It has two or three eucalypt plantations on it and a lot of cleared land - there's 500 acres there in one block cleared - and she put her traps around the edge of that and, apart from catching devils, which were taken and weighed, measured and so forth, she also caught quite a lot of the tiger cats - the big fellow, the spotted quoll - there and they were tagged and let go there. I've been around quite a lot and seen, for instance down at Lake Pedder last year, there were plenty of little fellows, the native cats. They used to jump into the 44 gallon drums at night time and then they couldn't jump out of them. They'd jump up and scrape down the side until you got sick of it and got out of the sleeping bag and tipped the drum over on its side to let them go, but the big fellow would climb up a tree and run along and bore a hole in the tent and take some fish. He was the spotted quoll, the big one. So they are well distributed. Two years ago I came across in the bush on the Blue Tier up in the east of the State an old spotted quoll, a big fellow, in very poor condition. We sat down to have a spell and he came sneaking through the bush with his nose in the air, obviously hungry. He was very poor so we put him out of his misery; he was covered with fern ticks which would have killed him in no time. Another one last year, up in the lake country, I found covered with ticks, which was quite interesting.

They are well distributed and I have no doubt they've never been in the same numbers, in my experience, as the native cats, the little fellow, but there's plenty of them about. I found a nest last year near our place with four little ones in it.

Ms HAY - What are the implications for you as farmers of this district should this project not go ahead?

Mrs DORNAUF - They are very significant. If this disappeared certainly all the noises from the Government are that any of the water that's being taken without a full licence at the

moment will be stopped in order to improve the environmental impact, and that will severely impact on irrigated agriculture and therefore agriculture in general and the State's economy and certainly the district's economy. So instead of creating an upward spiral which we think will happen if the dam is built, it will create a downward spiral and that will flow through to the town and the State, too.

Mr JANSEN - Mr Chairman, may I add to that?

CHAIR - Yes.

Mr JANSEN - The possible alternative that has been suggested is on-farm storage and that is becoming extremely difficult. This is answering Ms Hay if the dam doesn't go ahead. The Hydro at the moment is not in favour of any more on-farm storage. They really want no water down the river system through Trevallyn especially now with Basslink. There have been a number of cases where farmers in the last couple of years have built dams and have not been able to get permission to fill them because the Hydro opposes it.

The system that's now in place is that when Trevallyn is filling some of these dams can be filled. Of course in dry winters there will be no spilling of Trevallyn and that's the alternative if the dam doesn't go ahead. As Jenny says, it has a dramatic effect but also you can't replace that dam with on-farm storage because that has all changed.

Mrs NAPIER - As a follow-up to that, we heard earlier today that the total capacity area for on-farm storage hasn't really been studied. What would be your response to that?

Mr JANSEN - We know of farmers who have had permission from Rivers and Water Supply to built dams. The design of the dam has been approved, they've gone ahead and built it and tried to fill it for a winter take only and it has been opposed by the Hydro. The Hydro controls all unallocated water in the Meander system. They own that water and if the Hydro says you cannot fill it that is the scenario. So whether to date identifying all these sites has happened I can't answer you, but if they are identified you can't fill them.

Mrs NAPIER - What capacity dams are these?

Mr BADOCK - They'd be 100 or less.

Mrs NAPIER - Could I ask a further question? It's been questioned today whether or not this area could double its agricultural output. Both major parties have a view that you want to try to double agricultural output in the State but it's been questioned whether that is reasonable; it's also been questioned whether that necessarily requires access to more water. Could it be done through other means of managing different crop mixes? Different ways of managing soil?

Mr BADOCK - I feel the points that were made this morning by Mr Davey perhaps cover that one. A meeting we had of farmers that are interested in supporting the dam would indicate that it's another perhaps 7 000 hectares or 7 000 megalitres of water that could be used, and if you translate that across to whether it's dairying or growing crops or whatever this is virtually doubling what we have at present.

Mrs NAPIER - So you're confident that you could double agricultural land?

Mr BADOCK - Yes, very confident.

Mrs NAPIER - Could that be achieved without additional water?

Mr BADOCK - Certainly not. And the other scenario is if the environmental flows were implemented throughout the Meander, it's going to impinge tremendously. The year before last we had 65 days where we couldn't irrigate from the river so as to maintain an environmental flow and this, of course, creates uncertainty. You're not prepared to put a crop in or you're not prepared to have extra stock because you're not sure that water's going to be there. If you're sure that water's going to be there then you've got confidence; the young people have confidence, everybody in the community's got confidence to go ahead and progress and grow crops and the rest of it.

Mrs NAPIER - The question was raised about farmers who are not currently using all of the agricultural potential of their land, whether that might be occurring because a percentage of it is lower quality land, the poorer end of category 4, and that it's likely that cropping might only be able to be used maybe once every seven years or once every four years. Does that not limit the potential to reach that doubling of agricultural product?

Mr BADOCK - I think the scenario is the uncertainty of water there now, because crops are very expensive to grow and it's not certain that you can get your water to irrigate the land. Rather than plant them you don't put them in, but if you've got a certainty of water being there then you'll go ahead and put that crop in and grow it. I think this is where a lot of the extra hectares and a lot of the extra water would be used.

Mrs NAPIER - So are you saying that there is agricultural land of the upper end of category 4 and 3? There is not much category 1 around in the State, but there is certainly 3 and 2.

Mr BADCOCK - Yes.

Mrs NAPIER - Do you get much of that around here do you?

Mr HALL - Some 2.

Mr BADCOCK - There is some 2.

Mrs NAPIER - So is there some of that not being used?

Mr BADCOCK - Yes, I am certain of it.

Mrs DORNAUF - And it is not just the farmers who need the confidence to actually plant the crop because of expense and everything else, but the process is contract with the farmer to plant it, likewise even to go out and find the market to sell it. So the availability and security of the water goes to the farmer to the plant to the processor to the markets and it goes the other way if it is not available.

Mr WADLEY - Just a comment on that -

CHAIR - Just before you do, Mr Wadley, if we can have you make the declaration so your evidence can in fact be taken into consideration by the committee because I didn't realise you had joined the group.

ANTHONY WADLEY MADE THE STATUTORY DECLARATION AND WAS EXAMINED.

CHAIR - And now that we have successfully interrupted your train of thought -

Mr WADLEY - I think I have still got it, Mr Chairman. Just referring to what Mrs Sue Napier was saying regarding the lower category of land, there is a process of agricultural farming - a fairly new process - which is now in being here in Tasmania and that is of raised bed farming and that is allowing a lower category of land to be successfully cropped through the raised bed technology. But once again no-one will do that without the assurance of water being available. Another factor regarding the on-farm storage, I think most people here will realise that over the last 30 years the favourable and suitable dam sites that have been on farms have been taken up and utilised and any further on-farm storage would have to take place in sites which are very inefficient and expensive to build when it comes to on-farm storage. So what I am saying is the choice sites have been taken up and that has seen farmers through to this stage but now with bigger areas of cropping needed to sustain an economic farming system, the amount of water that they have is now being limited.

Mrs NAPIER - The other question was: what indication do you have that farmers who are not proximate to the river and would require either extensive pumping and piping or whatever you might need to get the water there I suppose, what indication do you have that they would be willing to not only pay for the water but also invest in that infrastructure over a period of time, given that presumably those same farmers would also be heavily investing in irrigation infrastructure that they would need to be able to distribute it, let alone the power bill to pump it?

Mrs DORNAUF - We have strong indication that people would like to do so. We do not have strong indication that people have found that the sums will justify their doing so. They are still working on that but the group that I was talking about have done their sums without those people being included.

Mrs NAPIER - But that doesn't include those people that are hoping -

Mrs DORNAUF - If they can come on board it makes the whole thing far more viable but of necessity we have had to do our sums without those add-ons.

Mr BADCOCK - I was wanting to add a little bit to the previous question that Mrs Napier asked. With contracts, before we sign a contract with any of the major companies they ask if we have got assurative water - not if we have got water, but assurative water and there is a lot of difference.

Mrs NAPIER - Poppy contracts went last year.

Mr BADCOCK - And potato contracts, then bean contracts.

CHAIR - Mrs Dornauf, your submission talks about the no-dam option and about the temporary water rights, I suppose, and that fact that they will be relinquished regardless.

Mrs DORNAUF - We assume so.

CHAIR - Yes. My understanding is that in fact they will be called back in to ensure the environmental flows in the river. With that being the case, what's the impact on agricultural pursuits in this valley?

Mrs DORNAUF - I've probably answered it earlier. I don't think we can give you figures but there will be severe depression of agriculture and basically I think you are either enthusiastic as a district and things grow, or they go the other way. A lot of the contracts that are grown in this district will either move out of the State or go somewhere else; likewise dairy production will drop and therefore the viability of the factory, and so on. So it snowballs both ways.

CHAIR - So the status quo can be preserved if temporary water rights aren't called in, but there can be no expansion.

Mrs DORNAUF - Exactly, yes. I might add, even though I invited you to ask questions, we need to make the point which we put in the submission, that it is our understanding that the Federal Government will contribute around $2 million; the State Government will contribute some money - I will come back to the State money - and the Hydro about $2 million, as was said earlier. The State Government money is, I think, a slightly flexible figure. Although we're very keen to be involved in the ownership management, we do expect that most of that money we're talking about is required simply for the Hydro to be able to take water from it, but for the other two governments to cover the fact that even though it's a 43 000 megalitre dam and therefore costs a 43 000 megalitre cost, the irrigators will only be allowed to contract for 24 000 megalitres. So it seems perfectly justified to me that there will be some - and I'm not going to talk the exact figure - contribution from the two governments, otherwise theoretically the farmers should be able to take the whole 43 000, or that's the way I argue it.

Again, with the competition policy, all our advice is that in the circumstances that we are proposing, that because the owners would be the users and would be paying the full cost, excluding the part of benefit to the community generally, that there shouldn't be a competition policy problem.

CHAIR - Any further questions, members?

Ms HAY - Only that we've heard today there's been a high level of consultation. Have you yourselves worked in with that, and do you agree that there's been enough of it, not only with yourselves but in the community? And how is the general feeling about the dam?

Mrs DORNAUF - Certainly consultations have been going on for 30 or 40 years and it's been going on with ourselves for the last three years with the group. When we started, there was a lot more concern about environmental matters in particular, about who was going to pay for it. Although I'm hearing different in the room today, I think the general community is very supportive at the moment. I couldn't have said that two years ago and I could have only partly said it a year ago. Now my own feeling - I don't know about the other members of the committee - is that they are very supportive.

Ms HAY - What has changed in the last two years to alter that perception?

Mrs DORNAUF - I think all the work that's been going on with the department, with the Water Development Branch, and all the detailed work that they've been doing, giving people the answers that they've had.

Mr BADCOCK - I feel that we have been quite open. We have had a number of meetings with people who are interested. I think in our first meeting there were nearly 300 people here when the committee was first formed to go ahead with this - and that was virtually unanimous - and there have been a number of meetings held with interested parties and community people over the years. There has been virtually total support for us.

CHAIR - Thank you very much, Mrs Dornauf, and your delegation.

THE WITNESSES WITHDREW.

Mr KEVIN KNOWLES WAS CALLED, MADE THE STATUTORY DECLARATION AND WAS EXAMINED.

Mr KNOWLES - I am Kevin Knowles from the Meander Catchment Land Care group. I see that you have our submissions. I would like to go back to the guidelines for this dam proposal. We have made a number of submissions which you have seen there. Basically, getting back to the original guidelines of the proposal, there was to be a study down on ground water. It states in the guidelines on page 11, section 31.9, river and catchment hydrology and yield:

> 'A description of water sources, surface and ground water, within both a local and a catchment perspective must be given. This discussion should include, in detail, existing flow records for the catchment ...'

There has been no hydrological study done above the dam site. In our original submission to the guidelines we wrote that there should be description of site geology and hydrology. There have been no studies done whatsoever. It is our feeling that there is a pseudo karst system actually in the site of the dam and leakage has already been identified in the Huntsman's Saddle. This leak has been identified that it would be Leith Creek or tributaries of these creeks and would have a full winter flow. There has been no study on the effects this will have on Leith Creek or the effects it will have on Huntsman's Saddle. In the original report that was done GHD Engineering, the gentleman stressed that more studies should be done to quantify the maximum amount of water and where there would be further leakage in the Huntsman's Saddle.

You saw the landslips as you went down this morning, that was caused in 1999. Lots of the studies in the DP and EP, and especially aquatic studies, are based on the 1996 report. Conditions have drastically changed in the catchment since 1996. Approximately half has been converted to plantation, so it is not natural forest there any more. The landslips, as you can see - these are photos of the original landslips and you can peruse these - have approximately doubled in size since 1999 and they are continuing to scour away and put more load bed in there. There have been no studies to quantify how much of the landslips are entering the Meander River, whether the Meander Dam will fill up with this tallis. In that landslip in 1999, eight inches of silt ended up in the Tamar River and Home Basin. The silt was the first thing that goes there, the smaller rocks continue down and the bigger rocks keep coming down. In the back of that photo you actually see Dunning Rivulet change course - it blocked Dunning Rivulet. There was a huge sediment flux in the catchment. Above Dunning Rivulet there is Wild Dog Tiers. That is the worst eroded subalpine area in Australia. Phillip Cullen did a study on that - *A Hundred Years of Degradation on the Central Plateau* - and he is mentioned in our submission. This was completely ignored in that DP and EMP and any other report. Everything upstream of the dam site has not be studied or quantified. I have serious doubts whether the dam will hold water. There are limestone foundations that are linked to the Mole Creek karst system - they finish at Golden Valley. At Stockers Plains there has been limestone found already. In part IV of the appendices on page 45 - this was downstream Meander Dam fluvial geology assessment: 'Due to constraints of time and project scope, no specific assessment of sediment characteristics has been made upstream of the dam site'. This must be done before a dam can be completed, or even started to be built. Also we make recommendations in the DP

and EMP that they will test for leakage in the Huntsman's Saddle when the dam is commissioned. What happens if you find you've got leaks coming out - as they have already predicted it will leak - when the dam is finished? Also the raising of the water level in the Huntsman Valley by 50 metres - there is nothing been done on how this will affect the sandstone ridge which is rich in Aboriginal artefacts. Every overhang has got Aboriginal heritage in there.

Mrs NAPIER - Sorry, what sandstone ridge?

Mr KNOWLES - Where you looked at landslips, that is a sandstone ridge. It might be easier to show you on one of the photographs. By raising that water level - sandstone soil is very porous - they will slump down. There has been no assessment made of whether the sandstone ridge is a high risk for landslip susceptibility. In a report to Forestry Tasmania on landslip susceptibility, this area was missed entirely. There have been no studies done on it whatsoever. Also on Wild Dog Tier there is massive sheet erosion. Basically from uses in the past and from the burning up there - the sphagnum moss bulbs and the other vegetation has disappeared. Every time we have a major rainfall that becomes more eroded.

In our submission we make numerous requests. In the supplementary information, as at lodging of the submissions, our submissions were clearly not answered. I don't know if you have read this report, a condensed version of the submissions. We are number 17. Now, I will go through individual submissions in relation to wedgetail eagles. Now, there is a nest with wedgetail eagles - an active nest - within three kilometres of the dam site which is directly opposite the dam site in a U-shaped valley.

Now, blasting - they just dismiss this saying it is not within one kilometre. I am sure in a U-shaped valley if you are blasting, it is going to directly affect the wedgetail eagles and their breeding.

Our submission to this - the swift parrot and the Australian green parrot were not mentioned in the project description but are not addressed in the DP and EP. There have been sighting of the swift parrot in and around the proposed dam site. The study for the swift parrot was done in the middle of winter. The swift parrot is not present here and this morning I actually came down to meet you at the dam site but I was too early, or you were too late, and I heard two swift parrots calling at the dam site where you would have parked your cars. This has just been fobbed off.

The swift parrot feeds on *ovata viminalis* and basically we don't have any blue gums up here. The DP and EP states there is no *ovata viminalis* on the dam site. Where you parked your cars this morning the trees beside you were *viminalis* and *ovata*. There is *viminalis* on land that is owned by Rivers and Waters. There is also *ovata* and *viminalis* in the tributaries on the dam site.

And when you talked about Wild Dog Tier, the plantation forestry operations, unfortunately they have manploughed up and down the contours which is an erosion magnifier. This process will happen every 15 to 20 years so there will be tremendous silt loads going down to the Meander Dam for two years approximately every 15 years . After the establishment of plantations - two to three years - you have a negative run-off so you have less water yields - between and 30 and 50 per cent reduction in water yield

on those plantations. All these figures on water yield and what the catchment will yield had been done before these plantations were established so the water yield will not be right. The three-run study done was far too short to assess the environmental values of the rivers. It does not take into account the invertebrates - the fish species - and it was done without any flood events. The tip sites have not been identified. In this it states that we agreed that there is no *ovata* present. There has been no communication between the proponents and us and we do not agree that there is no *ovata viminalis* present.

The fish population: there have been no proper studies. Peter Davies did a study four years ago. The Sales River and Dunning Rivulet were poisoned by pesticide spraying and all the fish were killed. He did a study for 18 months on those rivers. That study was not used at all. As an expert had studied those rivers, upstream of the dam site, for 12 to 18 months, I thought that study should have been used to actually assess what fish life was there; what the aquatic life was. I have a copy of Mr Davies' report - he is now in freshwater systems; he is the freshwater expert in Tasmania. He questions the mythology of their freshwater studies. He also seriously questions the effect that it will have on the trout populations. In the DP and EMP it states that there will be a negligible effect on the brown trout populations. But, as the Huntsman is a major spawning area, he considered it is going to have a significant effect on the trout populations, which will have an effect in the local area - as the Meander River is one of the most fished rivers in Tasmania, it will affect the economics of the area. Fewer people will come fishing because there will be not enough fish there.

He also questions the eel populations. There has been no study. There is the question of relocating the silver eel by manual means. There are no studies being done to say how many eels are there. There might not be enough eels to put in there or there might be too many; who knows what the balance is.

There has been no costing of the off-river transports. It seems to me that most of the allocations to the water are up in this end of the catchment. Our area is in very poor soils; we have class 4 or 5 soils. You might have noticed out here on Stockers Plains a very good poppy crop, yet the next paddock down was a terrible one. Because the soils become waterlogged and the poppy crops are on deep bed methods, they have raised bed methods to keep the feet wet. There is no high value cropping in our area. Further on down the river where there is red soil, but you can only put in fodder cropping once every four years. So there is no high-value cropping in our area. Approximately half the raw intake was to go down towards the Rubicon River to be used to irrigate dairy pastures. As you know dairying has had a 29 per cent price drop and things are tough in the dairy industry. So you would not see that as high value. People are already putting off labour. If they employed one or two milkers to milk their cows they are now doing it themselves because they cannot afford to pay people to do it in these economic times.

Another major health problem that we have Seen is the Ross River virus. A mosquito has been identified in Mount Field National Park, which is a transmitter of this virus. With the commissioning of the dam in winter it will look lovely - I don't know if you've seen these photos. But this is summer, when you have extensive mud flats - a perfect area for breeding mosquitoes. It's not going to look real nice. This will affect tourism because it is not nice to live there with mozzies breeding on that. It's going to be stagnant. If you look at the photos closely you will see is a row of trees in the middle

there, so you are going to end up with stagnant pools everywhere. As a visual impact, as you can see, it is not going to be nice.

I turn to the economics. I'm not an economist, but I have seen a few figures catering for what the farmers will pay, not what the cost of the project is. Serious costing defects have been left out. For example, there is talk in the appendices of building a wall at Huntsman Saddle. That's not costed. All the further studies to be done, who is paying for them? That is not costed. Where is land going to come for the quoll to be resettled? It makes a recommendation that the equivalent sized area be identified for the spotted tail quoll. Where is this land going to come from? The only land suitable is owned by Forestry Tasmania. There has been no dialogue between Forestry Tasmania saying whether they will make this land available or not. As the spotted quoll has been listed as rare, it should come under the legislation.

Basically all our points are in our draft of recommendations. A lot of them have been completely ignored and are still being ignore right through to EMPCAs reports. EMPCA want studies done downstream but if the dam is leaking in the dam and upstream there is not information on how the groundwater will affect the people in Meander above the river level. There are natural springs in an area of 370 metres to 300 metres. What's going to happen to those springs when we have a dam full up to 402 metres? Are we going to have water spouts coming up? There's been no studies done whatsoever on the underground water. As they said in the original guidelines, it must be done before the dam is approved. Everybody seemed to have forgotten about that.

The effects on the infrastructure were mentioned - Meander Bridge and Barrett's Bridge. There is no mention of the people who live beside the river or their houses. No mention of farmers' infrastructure - that is, pumps, gates, whatever. The farmers land - the stream bank is going to widen and deepen from Meander from below the dam outfall to Barrett's Bridge which is Cubits Sugarloaf. They have stated that riffles should be put in place up in the upper reaches of the Meander Dam. There is no costing for any of that work whatsoever. There is no costing of what effect it will have on the Meander shop/post office that it right beside the river, if the banks are going to widen. They are predicting that the banks will widen and will fall down. But no studies whatsoever have been done to quantify what is going to happen there. The underground limestone, which is further down the river before Barrett's Bridge, is identified in part 4 of the appendices.

So before we spend millions of dollars on a dam I think we should find if it leaks. That is one of the prerequisites. Before you people make a decision, you'll have to recommend a study be done to find out where the groundwater goes and what effect it's going to have on the sandstone ridge in the upper tiers and what effect the sediment from one of the worst eroded sub-alpine areas in Australia it's going to have on that dam and the lifespan of that dam.

If we have another significant landslip like the Dunning landslip, how many of those would it take to fill up the dam? The geology up there is very unstable, as you would have seen, and by looking through those photos you can see exactly what's happened. There are a couple of photos in there showing where the landslip was and it was a small creek, several metres wide. Now it's 50 metres wide and you couldn't see where Dunning Rivulet was. That landslip was purely caused because of the logging below it. I'm talking about similar possible effects. Forestry is continuing to log the catchment

and establishing plantations in there. So there is going to be a reduced water yield or it will be 157 years before it comes back to what it was before it was logged.

Mr BEST - On the hydrology, we heard earlier that it is possible to concrete areas that leak.

Mr KNOWLES - I haven't seen any reports; I'm just saying that it's possible.

Mr BEST - We were told that it's a practice that's undertaken.

Mr KNOWLES - I've forgot to mention the two major faults below and above the dam sites. Are you aware of those? There are two major fault lines above and below the dam site. They've said they're inactive but there's no reports in any of the appendices of the studies done to determine why they're inactive. That's a worry.

In the Snowy Mountains they had seams of shale which these fault lines are. They lined up concrete trucks and pressed them in until they had filled the hole. I know that groundwater studies have been done in Lobster Rivulet, which is the Mole Creek system. They did radioactive traces there and it came out to be concealed. Half of Lobster Rivulet was going along and half had disappeared. That water was traced to be concealed. So there's a huge underground water flux through that basin. Who knows what effect it's going to have on the Mole Creek karst system, who knows?

Mr BEST - You mentioned there's limestone in that area somewhere, is there?

Mr KNOWLES - Yes, limestone has been identified I would say approximately four kilometres down from the Meander Bridge, the Meander township, downstream. The limestone system comes from Mole Creek and finishes up at Golden Valley. There's one of the Golden Valley sink holes there. There are also sink holes approximately three kilometres from the Meander Bridge in the middle of Stockers Plains. The water comes up and goes down. I'm a hydrologist and this is my local opinion, there's groundwater there. So by building a dam it's going to be 50 metres above, how will that affect the underground system? It's just unknown and there's no documentation to say one way or the other.

Mr BEST - Would you think though, because there has been some substantial flooding over the years that something may have happened with that flooding, that water would appear in places -

Mr KNOWLES - With the Dunning River landslip, a friend of mine has a bore and his is about 300 metres above the Meander township. He is a long way from the Meander River, his bore doesn't go down to the same level as Meander River and he had exactly the same colour water that happened in Dunning landslip. So that water from Dunning somehow got to his place underground. That signifies to me there's a major path.

Actually I took those photos on the Dunning Rivulet the day after the landslips. I was going up the sandstone ridge and there was rock blown out. I stuck my head in the rock hole and there was an underground river about six foot deep down there. I went down there and I couldn't find where it came out - it had just disappeared. So there's a huge underground water flux in there. So who knows where it goes? There are no studies to say where it goes. That was my major concern with the dam - if you are going to build

it, is it going to leak? It seems by laymen's observations there is a lot of water goes down there but when it hits the basin close to the Meander Dam it does not seem the same amount of water going down the river, so all I can think is that a proportion of it is going underground. That will have an effect on the actual yield of the dam, the yield of the catchment and the forests. Are we going to be able to store this water, or is it all, or the majority of it, going to flow underground? Who knows?

Mr HALL - You talked about the sandstone cliffs and their capacity to perhaps fall in. I could not quite understand the relationship between the sandstone cliffs and the high water level mark of the proposed dam.

Mr KNOWLES - You have been to the landslips and had a look where that has slumped. That slump was a drainage line from a forestry road where water was directed into the base of that slump. The sandstone slips into silt, it is very sandy, it gets wet and falls away and that topples the sandstone. By rising your water level 50 metres, what is going to happen to the underground water flux? Which way is it going to go? Who knows? Will it affect the bed the sandstone is sitting on, the sand underneath? Once that becomes saturated and that falls down it will end up like another Dunning Rivulet, the cliffs will fall down.

Those slips can all be put down to human intervention in the upper catchment. They are not a natural thing; they don't happen unless man interferes, removes the vegetation cover, changes the water flow, et cetera. So once we lift the water table 50 metres that is going to come to the base - not right to the base of the sandstone - but it will come to the bottom of the escarpment, so it is just unknown. If you are going to build a dam you make sure it's not going to leak before you build it.

Mrs NAPIER - I thank you for the information. You indicated that you were concerned that the river banks were going to widen and fall down - more than they might already when we get flood conditions. Why is that?

Mr KNOWLES - If you are continually letting water go to power the Hydro as I understand it - it is bought to power the Hydro scheme which releases water for irrigation - the soil banks become saturated so they become weak. There is not much vegetation on the Meander River to hold the soil together so the soil will become saturated and it will stop down. We have had floods that have actually gone over the bridge in Meander, that was the big one, so you can imagine, with the amount of soil over that and the power of that flood, what it would do to the river banks without any protection. This part 4 appendix goes into great detail on different sections of the river that will become eroded.

Mrs NAPIER - Is that the two-generator Hydro proposal that we originally looked at? My understanding is that they have dropped back to the one generator and it is a relatively low water flow that is involved in this, like a constant flow that you would normally be releasing anyhow, normal river flow.

Mr KNOWLES - As the Downstream Meander Dam Fluids Gemot ology Assessment states, the flow rates have not been set so it's an unknown assessment. The zones marked in red are the limestone zones, and section 3 of that report is where they are predicting bank erosion. The only other thing is the fault line. If you are going to build a dam between two fault lines we don't know whether they are going to be inactive or not. Or what

would happen if we had an earthquake and the dam cracked. There have been some ridiculous assessments that the river would rise 1.5 m through Meander township. We have already had floods that are 5 m or 6 m. So, you have a 50 m dam with the wall breaking going down the gully three miles. Meander township is approximately 1.5 km from the end of this gorge but it is not going to have an effect on the Meander township? Nothing has been assessed. There is a school there. There is a timber yard. There are houses with people.

CHAIR - Mr Knowles, if I understand you correctly, the view of your group is that there has been an inadequate engineering assessment of the project.

Mr KNOWLES - Yes. I think that all the way through, the thing has been glossed over, sentences left out, words left out to present a glossy picture instead of actually getting down to the nitty gritty. In our submission - I will read it out to you - we mention the sheet erosion on Wild Dog Tier but in our submission we actually say it is the worst eroded sub-alpine area in Australia. That was left out in our submission so I imagine that flags to somebody that we have severe erosion at Wild Dog Tier but in the responses that was left out, so Wild Dog Tier has not been taken into consideration even though in our original submission we highlighted the severe erosion at Wild Dog Tier.

CHAIR - And where is Wild Dog Tier in relation to this project?

Mr KNOWLES - That is the upper catchment of the dam above the Tiers. I have a satellite image that actually shows it.

Mr HALL - A point of explanation, are we talking about the plateau on top?

Mr KNOWLES - Yes. That is the plateau above. Wild Dog Tier is a set of hills that feed the water back this way. Over on the other side of Wild Dog Tier it goes into the Great Lake.

CHAIR - And just to pursue that question of mine as to the lack of engineering rigorousness, if you like, have you got a comparative study to substantiate your view?

Mr KNOWLES - No, we have been unable to find any study whatsoever on the groundwater issues. There is Phillip Cullen, *A Hundred Years of Degradation on the Central Plateau*, he highlights that that was the worst sub-alpine area in Australia and he spent 12 months study and there is a report on it available from Parks. That is the only thing on the sheet erosion. We have not been able to find any information on groundwater at all.

CHAIR - How many people do you represent with your Upper Meander Catchment Landcare group?

Mr KNOWLES - About 30. I think we just did our membership and I think it was 31 or 32. I cannot remember, the secretary did it.

Mrs NAPIER - Could you just point out to me where it indicates that the consequence of the operation of the generator on the release of the river flow is likely to increase the problem that already exists naturally?

Mr KNOWLES - I will find it. The Meander River is a high rising river and quickly falling. That is the nature of the catchment. Once it rains, bang, it comes down. When you have the release of constant irrigation, you have a constant flow, so the river will be up at certain levels, they might be a week or two weeks or a month at that high level. So the soils become saturated and vegetation becomes saturated and it slumps down.

Mrs NAPIER - It indicates that it's a problem in that area because of the nature of the soil, but it already is a problem.

Mr KNOWLES - There have been remedial works done. A lot of money has been spent - $750 000 - to alleviate those problems. There is a graph in here -

CHAIR - Okay, if you wish to forward that to the committee; once you've forwarded the reference, that would be fine.

Mr Knowles, thank you for your submission and for your presentation.

THE WITNESS WITHDREW.

RON NAGORCKA WAS CALLED, MADE THE STATUTORY DECLARATION AND WAS EXAMINED.

CHAIR (Mr Harriss) - Mr Nagorcka, we have your submission. Would you like to elaborate?

Mr NAGORCKA - I might just run through a few things and get some questions. I would say first of all the submission was reasonably hurried and I would like to have gone into it in a lot more detail. I might do it in a little bit more detail at the moment.

CHAIR - That is fine.

Mr NAGORCKA - I am here to represent the Central North Field Naturalists and I would say that my concern - and their concern - is really, as the proponents say, the fact that the primary focus of this whole project is for increased irrigation and if there is anything that worries me greatly it is this idea that somehow we can double agricultural production safely in Tasmania and that this is going to be sustainable. Already we have considerable degradation of agricultural land in Tasmania. We have spent millions of dollars through Landcare trying to fix it up. No studies have been done in order to figure out whether doubling agricultural production is possible and yet it seems to be accepted government policy and away we go. Most of the arguments today seem to be predicated on the assumption that this is a good idea and I would say that is a very challengeable notion.

It is quite humbling really to be a field naturalist - you very soon get to know how little you know. When you go into the field a lot, you look at things and suddenly you realise you know very little about what is out there. It has been interesting to me to hear people talking about the spotted tail quoll today and some people like Ned Terry have a lot of knowledge about the quoll. This is all just his knowledge that he has picked up over his life time. There have been very few studies about the spotted tail quoll. The fact is we know very little about the spotted tail quoll. The same thing applies generally to the enormous pressure that is being put on our natural systems by agriculture.

This is not just true in Tasmania, it is true on the mainland and in fact very few studies of this sort of thing have been done in Tasmania. Now, some have been done on the mainland and particularly the thing I would like to focus on, and the submission focuses on, is remnant vegetation on agricultural land. The thing that very much worries me about this proposal for a dam is that the increase in irrigation is going to mean the removal of paddock trees and of remnant bush in order to put in huge irrigation systems. One thing that does surprise me is the nature of the irrigation systems in Tasmania - these enormous things that spray water into the air is an enormously wasteful way to use water for a start. It just seems to me to be absurd.

Let us have a look at the studies. I would like to concentrate really on birds because although we know very little about things, one thing about birds in natural systems is they are very good indicators of how healthy natural systems are. Once again when it gets to forest birds, bush birds, birds on farms in Tasmania, there haven't been any studies done at all. It is very, very hard to get any information about them.

Some of the information we have that gives us some clue to what might be going on has come from studies done in the New England area in New South Wales and it indicates that one of the major problems for native birds is the fragmentation of the landscape, not just the removal of the native vegetation but the fact that the bits of vegetation are getting more and more separated from each other so that birds don't have the opportunity to move around.

Now, there is some indication of this in the Meander Valley. There has been some work observing birds and doing bird studies in the Meander Valley on particular farms, including farms right along the river, I might say. While some of these patches were quite large and had reasonable populations of native birds, what was probably more interesting than anything else was the birds that weren't there. The particular species of interest I think are the honeyeaters. One of the things about honeyeaters, first of all, is they eat honey; they eat some nectar but they also eat lots of invertebrates, insects and that sort of thing. They are very important for the health particularly of eucalypts. In some of the areas that were surveyed the strong-billed honeyeater, which is Tasmanian endemic, the black-headed honeyeater, another Tasmanian endemic, and eastern spinebills were totally absent from areas where you would expect them to be. Significantly, these areas, while being reasonably large areas of bush, were also suffering significant die-back in the eucalypts. What was happening there was that even in reasonably large patches of remnant vegetation degradation is occurring because of the drop out of important native species. This is something that is happening regularly all over our agricultural landscapes and something that studies on the mainland show very clearly. One thing that Landcare is genuinely trying to do something about is to protect whatever native vegetation we have. In my submission I particularly mention paddock trees because even a dead tree in the middle of a paddock probably contains more biodiversity than the rest of the paddock put together, mainly because of its invertebrate population. That invertebrate population is very important for a whole series of species of native birds.

Another set of birds that has not been studied in Tasmania - some studies are going on at the moment - is with robins. There is considerable circumstantial evidence, or hearsay evidence, that robins are declining drastically in the farmland in Tasmania. There are probably all sorts of reasons for this, which may include chemical use as well as a loss of native vegetation. It is interesting that robins occupy those sort of edge areas between remnant native vegetation and the paddocks and that they often nest in places like an upturned stump in the middle of a paddock, with very little native vegetation around.

Birds have very different needs and any sort of native vegetation that is left behind is important to the native birds. Native birds and native fauna and flora generally are important for the health of our agricultural landscapes. What the submission really says overall is that this is already being lost all the time and it is being lost more and more through the process of more and more irrigation. Irrigation is not just a problem in other ways; it is really disastrous for the fragmentation of the landscape.

That is really the main point of the submission because we decided not to concentrate on many other things that other people have been talking about. We thought this was something else that really should be brought to the attention of the committee. I would just say that if anybody can tell me of a dam that has improved the health of a river, I would like to know about it.

Ms HAY - We have heard today that there has been no adverse fall-out from the Aboriginal community regarding the five Tasmanian Aboriginal sites which will be inundated by the dam. Can you tell us what you have found to be at these sites and if you have any information or evidence to the contrary?

Mr NAGORCKA - I haven't been to the sites; I don't know anything about them.

Ms HAY - It says here that you are concerned about -

Mr NAGORCKA - I am certainly concerned that they will be inundated. In answer to your question, it just seems to me that sites of this nature are the cultural heritage of us all, not just the Aboriginal community.

Ms HAY - But you're not sure what's there or the size of it or the cultural significance?

Mr NAGORCKA - I really don't know anything about it, I'm sorry.

Mrs NAPIER - The main premise of your argument seems to be that, if the dam is built there will be an increase in the amount of irrigation -

Mr NAGORCKA - That is the idea.

Mrs NAPIER - The intensive nature of the irrigation and that in turn will cause farmers to change the level of bush vegetation that remains on the properties and that that in turn will or may affect bird populations.

Mr NAGORCKA - Well, affect populations of flora and fauna generally of natural systems.

Mrs NAPIER - You seem to be targeting the management issue. Is it not true that if this was identified as a source of concern - and I think in the context of trying to get trees back on the farm that there be some deliberate things to try to do that - could this not be just a question of management rather than an argument against irrigation?

Mr NAGORCKA - It could be, however, particularly with regard to the way irrigation occurs, it seems to require large scale clearing of paddocks unless you decide that you are going to drip irrigate and have a different system of irrigation altogether. It seems to me the fragmentation of the land is inevitable.

Mrs NAPIER - I have watched the size of paddocks change since way back when I was a little girl and basically farmers are going for larger, more agrible plots where you don't need much fencing - in fact, there is actually a move away from fencing nowadays to movable fencing. I can't see why you shouldn't be able to tackle that issue that you are talking about it - maintaining some bush vegetation on properties which would be to the advantage of the farmer anyhow I would have thought in terms of making sure that whatever grubs or otherwise get into the ground can be - I mean, that is the advantage of having birds around when you are on a farm. Why wouldn't that be a management issue rather than an argument against a particular methodology for irrigation?

Mr NAGORCKA - Well, it could be. I can see that that could be an argument. Except that, of course, it is a bit more complicated than that because of the pressure of intense agricultural production. As you say, more and more land is being used for agricultural production and less and less in a natural system. The study that had been done in the mainland for instance, shows that a farm should have at least 30 per cent of the land under natural bush in order to have a sustainable farm. I don't know many farms in this area that have that amount of natural bush now and it seems to me that what's happening with increased irrigation is that more and more of it is going.

Mr HALL - Just following on from what Mrs Napier said, perhaps, Ron, you would care to comment on having the best of both worlds - actually securing water for irrigation on existing cleared land, not clear any more and still retaining or indeed planting native vegetation where it is needed. I take your point that you call them circular irrigators there, they are centre pivots and yes, they do deliver water efficiently, however, they do not like any impediments in their way like trees. You are quite correct in that. But a lot of irrigation systems are by low pressure, small sprinklers or gun irrigators where you can have much vegetation around in the paddocks as you like.

Mr NAGORCKA - Well, it would seem to me that a certain amount of irrigation is fine but problem with this scheme, as with most irrigation schemes, is that it is huge. The idea is big and the answer to our problems of degradation of agricultural land is to think a lot smaller. I mean we need to think about less irrigation and alternative systems of farming. In the long-term irrigation causes problems, as it has been proved in every irrigation system I can think of.

Mrs NAPIER - It can, if it is not properly managed.

Mr NAGORCKA - Well, can you give me an example of an irrigation system anywhere in the world that has been properly managed and that works and hasn't caused long-term degradation of the land that it's operating on. I certainly can't think of any.

Mrs NAPIER - I can give you a few properties down the north-west coast.

Mr NAGORCKA - Well, we will see.

Mrs NAPIER - But that's not the issue.

The committee suspended from 5.35 p.m. to 5.43 p.m.

CHAIR - Excuse me, can we just have some order please, we have reconvened. We will just open the session up for questions because there are some questions which members of the committee have which have arisen consequential to evidence which we have heard during the day and we do require clarification of those issues from your delegations.

Ms HAY - In regard to leakage we have had a few concerns today. Are you going to shoot cement up with force into the holes that you would be drilling if you found areas that were leaking? Will that work? How confident are you? I just wanted to hear that again because we've heard today that possibly it will not work.

Mr GILMORE - Can I just set the scene here first? There's been quite a lot of meshing together of what are separate engineering issues and I think this is a good case in point. Kevin Knowles pointed out that at the place where the dam wall will be built there are a couple of known faults and Hydro Tasmania hired as a sub-consultant a company called Coffey Geosciences Pty Ltd who are well renowned for their geotechnical expertise. They do geotechnical work all over Tasmania and all over the world.

They had a look at those faults - they're there and they're real. But one of the questions that needs to be asked in each of these things is how much money is it going to cost you to fix the problem and how much money is it going to cost you to work out how a big a problem you've got? A lot of these issues are ones where you could spend $0.5 million to determine that you needed to spend another $100 000 to fix the problem. So a lot of the professional judgments that we've hired specialist groups to advise us on are about those sorts of judgments. The judgments about the fault lines at the dam site itself are that they are within the normal engineering bounds of a project like this. Typically - and Ron can explain it a bit more fully - they would use this process called grouting to seal up that area of the dam.

The second issue which is quite a separate one is the issue of leakage at Huntsman Saddle and I think as a recent witness - Terry, late of the Rivers and Water Supply Commission - pointed out there are some issues over there where there are some springs and as you can see from this map there are some creeks and so forth going in both ways split by the Saddle itself. Again, you could spend an awful lot of money determining whether or not the water is going to leak out of there. You may not get the right answer but it may not cost you very much at all to fix the problem.

So the advice from our specialist is that because of the lack of water pressure up here - it's only going to be wet when the dam's full - the issue is unlikely to occur. They had a look at the Rivers and Water Supply Commission work that had been done 10 or so years ago and their judgment is that it's not likely to be a problem.

However, they do recommend that we monitor and if there is a problem then that's the sort of area where they may well just put some clay across that part of the inundation area to stop it leaking through. So it's not a big technical solution per se, it's not necessarily going to require grouting or some of the other engineering solutions. It really might mean just be putting an impermeable layer across the ground where it's flooded there. And, again, you'd probably spend a lot more money finding out how big a problem you had than you will ever spend fixing the problem.

I should also add before I allow Ron to take over on some of the more technical aspects that - and Bill and I have been talking about this over the last few weeks - we would expect the successful consortium to want to undertake some of these tests for themselves. The question that we're asking ourselves is whether we should be doing some of this testing now and handing the results over to all of the consortia or is it more effective for each consortium to choose what work needs to be done as part of their bid. While that's not resolved, I think we would expect that in order to manage the commercial and design risks associated with the dam then the successful consortium is going to need to do some of this work just to understand the bounds of what the risk is. That is where that sort of risk has been deliberately allocated, if you like, up to this point.

Mr WYBURN - That's a pretty good introduction. Seepage is possible out of any reservoir, either under or around the dam or from low points around the perimeter of the reservoir. So essentially the two potential areas of leakage out of this reservoir are the ones that have been identified at the Huntsman Saddle where the ground slopes that way in this direction and that way in the opposite and the very low point roughly here is approximately eight metres to nine metres above the full supply level. And it's also perhaps a couple of hundred metres away from the nearest point of the reservoir at which point the reservoir is very shallow. So the sort of driving energy for getting water out of here and into the down slope towards Meander is very low.

There is no significant pressure driving water out of the reservoir and it is only gravity that really does that so certainly monitoring can be done of the groundwater situation prior to construction. If that is initiated fairly soon that can take account of seasonal variations to see what the benchmark pattern is and then those same sites can be monitored during and after construction. If there is any detectable change in the rate of seepage then there are several possible ways of intercepting and stopping that if it is considered to be detrimental. It may well be that a small amount of leakage that might appear would be not at all detrimental. That is a judgment that could be made when the data was available.

There are several sort of techniques which would be feasible depending, to some extent, on the nature of the soil and the profile of the underlying bedrock, including clay blankets or cut off trenches, as it were, filled with an impermeable barrier. As with any dam project, there are technical issues to be addressed and if there are problems, solutions to be devised, but there is nothing out of the ordinary in relation to this dam.

Similarly, at the dam site itself, on the basis of the surface mapping and the preliminary drilling that has been done in the area of the dam itself - and I think there has been something like 15 or 20 holes drilled down to map the rock structure - it is recognised and known that there are faults which cross the river more or less at right angles and more or less vertically both upstream and downstream of the dam itself. It is normal practice in going from the feasibility stage to the final design stage with any dam to carry out more focussed drilling which is geared to this particular structure in this particular location so, for example, you would want to be sure that there wasn't a significant leakage path from the material in the fault zone upstream to any area downstream.

And so one of the features of any additional investigation would probably be to delineate these particular faults more closely, but because of their orientation it may very well be that they are not significant, that there isn't a direct connection between the reservoir and the river downstream via one or other of those faults. Under the dam itself, as we have said earlier, it is normal to ensure a nearly perfect cut-off by drilling from somewhere near the upstream toe, a series of vertical holes and these holes would typically be about half the height of the dam - 20 to 25-metre deep holes. Initially you would put them in at something like five-metre spacing and you would pump down into them cement and water mix under quite high pressures which would then force that material into any fissures that existed in the rock under the dam. By that means you greatly increase the length of any possible seepage path and by that means you greatly reduce the extent of any seepage under the dam.

It is a very conventional technique universally used under any dam really - certainly any concrete dam - and I should say if you do get any significant quantity of that grout material being absorbed by the rock, then it is normal to go back and re-drill intermediate holes in between the pattern that you first drilled at, say, five-metre centres. You put down another set of holes and you grout those and eventually you get to the point where you cannot literally pump any more material in and at that point you come to the conclusion that you have effectively created a very good extension, I suppose you could say, of the dam into the material on which it stands.

If, however, having done all that and having filled the reservoir you were to find that you could see flows downstream that were obviously coming from behind the dam then what is commonly done and would almost certainly be done in relation to this dam is to incorporate in it what we call a grouting gallery, that is a continuous passage along the base of the dam to which you can, if necessary, return and from which you can, if necessary, drill additional holes to put more grout into any suspect areas.

So in dam engineering terms the issue of potential leakage out of the reservoir from whatever point or in whatever fashion, is something which is not uncommon. Each case is unique in its own way but there are many common characteristics and the methods for solving such problems are long established and almost always successful. Where they are not successful might be in cases where you have material such as karstic limestone where you can have very large literally caverns, underground rivers and the like which are very difficult to completely plug.

As far as we know nowhere in the immediate vicinity of the reservoir is there any such karstic limestone or even limestone at all, so our assessment, which is essentially of work done by others, is that the conclusions they have reached are rational. They have concluded that there aren't any insoluble technical problems and we agree.

Mrs NAPIER - Can I just follow up part of that question because I think there was a statement made today that there had been no hydrology studies done and there should have been. Was that a correct statement?

Mr WYBURN - Well, hydrology to me is the science of measuring and predicting flow in a river and it has two components. One is what we call the yield hydrology - that is how much water is there available on average every year for use. The other aspect of hydrology that has to be investigated is flood hydrology - that is, what is the biggest flood that can ever occur and what is the return period of smaller floods. So can this dam and its associated works cope with the flood that you will get every 100 years on average, the one you will get every 10 000 years on average up until the maximum possible flood that could ever occur due to the worst possible meteorological conditions. To me, that is hydrology. There is another arm of hydrology which could be called hydro-geology.

Mrs NAPIER - That is what I was meaning. Where I am getting to - what evidence do we have or do we have evidence one way or another that there are no underground rivers and that there is no underground cave system?

Mr WYBURN - Essentially it is from the geological information. The regional or local geology s a dolerite rock and that is not one that dissolves in the way limestone can dissolve to allow the formation of underground openings of any size.

Mrs NAPIER - So in that area in which the dam is going to be held, there is no evidence of limestone? There is no evidence that there could be underground rivers, caves or otherwise?

Mr WYBURN - Not that I have ever seen.

Mrs NAPIER - Has anyone looked though?

Mr WYBURN - Oh yes.

Mrs NAPIER - So the studies have been done?

Mr GILMORE - Absolutely. That is what the Coffey Geotechnical Report was all about, what the underlying rock formations were going to be able to do.

Mrs NAPIER - So you can assure the committee that this has been studied and there are no underground rivers, cave systems or otherwise that could cause some of the concerns that have come from the surrounding communities?

Mr GILMORE - Mr Lawson has just referred me to a comment in our DP and EMP - 'There are no known areas of karstic topography in the vicinity of the dam site or the storage area. Calcareous interbeds have been described in the Huntsman Saddle area'.

Mrs NAPIER - That is just the Huntsman Saddle area which is where most of the focus has been?

Mr GILMORE - But I think that it is - I should not go on because I do not know.

Mr LAWSON - Can I add that Coffey is one of Australia's best geotechnical consulting groups that spend their time on rocks and soils. Their input to this has been well studied. It is, though, not the last stop of the train, as we have said before, in the means of procurement. Design and construct, responsibility for that is going to be with the designer and the constructor and they are going to drill down, pardon the pun, into those sorts of issues even more thoroughly. What we can say to the committee is that the subject that you mentioned, the terras underground have certainly been looked to. We are not that far from Mole Creek and everybody is mindful of that. What we have is massive dolerite which is jointed, yes, and has a fault, yes, along the lines that we have been talking about but it is not as if it has not been looked into.

Mrs NAPIER - I think that is what I am getting at. I can understand that you can punch stuff in to be able to close up cracks and all that kind of thing but I cannot see how you can, without huge costs, close off an underground river. Then you ask yourself what flow on and what impact that would have anyhow. I just want to be reassured that there are not any underground creeks and rivers underneath where the water is going to be that might be causing some of the concerns that seem to be coming from some quarters.

Mr LAWSON - Can I suggest that we give you an assurance that it has been looked at and it might be, Jeff, that we just drill into that a bit further.

Mr GILMORE - And provide some more information to the committee.

Mr LAWSON - And in that sense take it on notice to give you that extra bit of comfort.

Mrs NAPIER - That would be good. I just want to be confident and know that structurally these issues have been looked at. I do not want to be trying to plug gaps afterwards.

Mr LAWSON - Pun again.

Mrs NAPIER - You would not be approving the project if you thought it was going to blow out.

Mr GILMORE - I think there are two issues here. From a karst point of view, which is the concern you have, we specifically wrote into the contract that we had with Hydro that they were to go back and look at those issues specifically. It was not just check out the geology.

Mrs NAPIER - Because it is bigger than just the dam, isn't it?

Mr GILMORE - That is right. Not just go and check out the geology but go and have a look at karst in the area. So they talked to some specialists and they went back and had another look at it. That is why I am confident that that issue has been covered enough to say that the project is feasible.

The issue of whether or not there is a risk that there is an unknown down there is a separate issue from my point of view. That is one of those risk allocation issues that we spent some time on this morning. In a sense, the risk associated with that is going to be specifically allocated to the project consortium that ends up being the project proponent.

They will have to determine whether or not their commercial enterprise is going to be successful, based on the information that they will have in front of them that we've already provided, but also any further work that they deem necessary to be able to manage their risks. In a sense, that is where they will choose their own experts to advise them about whether or not there is a risk and, if so, what level that risk might be. Do we spend $1 million drilling all the way back up the catchment for 10 kilometres or do we accept that knowing what we know and knowing what the specialists who have already looked at it are saying and knowing what the previous groups of specialists have done and all the drilling and digging that's been done in the area, what that message is that we're getting. I think at some point there is always going to be some residual risk left over and you can't, in a sense, manage that out of the way but you can determine just how big a risk you are taking. I think, from our point of view, it's not a risk of the dam falling over, it's not a risk of people being killed, it's a risk that the deliverable from the irrigation dam will somehow disappear from where it's being held and that's really a commercial risk.

There are some potential environmental risks associated with that -

Mrs NAPIER - That's right, it's an environmental issue.

Mr GILMORE - and we're not running away from that, but currently the water is all running down there somewhere and I think that's one of the other issues. The water is there, whether it's running down the stream bed or running in underground streams or running through the karst system. However, I can also say that we've had our deeper metal geomorphologists have been part of the environmental assessment and they haven't raised this issue. They've acknowledged the karst issue at Mole Creek, they've acknowledged the nature of the river that we're talking about but they've looked at it. We've had Coffeys look at it and we've also had two other geomorphological studies done on the river and they've not identified this as a risk at all.

We're left with a degree of comfort that the project is feasible and the only issue up for debate, I suppose, is how much the successful tenderer is going to want to spend to feel comfortable themselves. I'm doing more investigations.

Ms HAY - We heard earlier about the mud flats and how there's going to be a considerable amount of area so affected. We actually had some sort of digitally enhanced view of what it might look like - how often would it be like that? How much area are we talking?

Mr GILMORE - There will be a visual impact, just like there will be an environmental impact. You can drive past Great Lake now and you can see the visual impact of low water levels; you can see the shoreline; you can see the rubble and all the rest of it and I suppose, at some point, you're making a judgment about the importance of that visual impact against the economic benefit associated with the dam. You can do some calculations which will show you that there is a mud view - I have forgotten what the number is so you can't quote me - over a kilometre. If you consider the water level being down all around here then, yes, you can look at a line of sight down there that is quite a long mud flat but it will be in association with an active irrigation dam.

So, yes, there is an impact. If you think about where we were today and how close you had to get before you noticed that impact then, yes, you will notice that as you drive down Huntsman Road and one of the measures that we've adopted there is we've agreed to plant trees to ameliorate that visual impact.

Ms HAY - Is that where the clay is going to go if it's a problem?

Mr GILMORE - Up here?

Ms HAY - Yes.

Mr GILMORE - It may well do. My colleague has just presented me with some numbers. I think the photographs were at the absolute minimum level that the dam is going to be allowed to go to and there have been, over the last 34 years, 164 days when you would see it that badly and 29 of those days occurred in a single event. So yes, there will be an impact; we don't deny that.

CHAIR - That is 164 days over what period?

Mr GILMORE - Over 34 years and as I say, 29 of those were in one really bad year. We did some analysis and that is really the point that I am trying make there; I am not trying to make the numbers do one thing or the other. We have looked at it and we have done some analysis on the water levels and, yes, in the worst case scenario there are some major visual impacts, we don't run away from that. But they are the same visual impacts that you see every time you drive pass Great Lake anyway. We are not apologising for those.

Ms HAY - We have talked about the spotted-tail quoll today and we've heard other people who are very worried about the wedge-tail eagle and the swift parrot. Have we any evidence about what might happen?

Mr GILMORE - The provisions for wedge-tail eagles are laid down by our department specialists and a kilometre is the number that they give us. This one is three kilometres away so we say, there will be no impact. If there is a wedge-tail eagle nest within a kilometre then we have to do things about that. In fact, we have identified a site at Warner's Creek where there is some potential wedge-tail eagles nest habitat and that is just over a kilometre away from where the quarry is and we have to take all sorts of precautions over there. But three kilometres away is not considered by our specialists to be an issue and therefore we have laid down no management regime that we would need to apply. As far as I am aware all of the wedge-tail eagle provisions that are applied around the State have all been derived from one of the specialists in our department who has deep knowledge of these things. All of the forestry operation rules and so forth to deal with wedge-tail eagles have all been designed by him.

Ms HAY - What about the swift parrots that we missed hearing this morning?

Mr GILMORE - Wasn't that unfortunate? I nearly knocked a couple over in West Hobart last week, too. They seem to have come back in force too this year. Look, yes, we know that they pass through here and, yes, there are a few trees of the species that Kevin talked about and we will put more than that down the side here. I mean it is just not an issue. You have a look at the hillsides; they are all forested and that's all good swift-parrot country. I don't think that this is going to make any difference.

Ms HAY - And the quolls will survive in this habitat that is not near the river?

Mr GILMORE - I have to be frank here because the story that I was told today - Sandy Tiffin raised it, quoting this woman Heather Hestermann whom we had do some work, Hydro had her do some work - was a new story. It was not one that we had been told and we have had several meetings with Heather Hestermann; she's produced reports for us. She's produced written information for us and this was not a story that I had heard before. In fact, I asked my colleague whether that was me or whether that was someone else. The reason that I queried it was because Sandy said that I was wrong and I do not like being wrong. I think that you will recall a map produced by Heather Hestermann on our behalf; the green patches that I pointed to were the quoll hunting grounds. I am happy to be corrected on quolls and any other area of specialty but I think that what I am getting out of the quoll people is that, yes, there are lots of unknowns but there also does appear to be some added information every time we raise some mitigation measure - someone finds another reason for us not to be able to do that. I take that on board with a grain of salt.

Mrs NAPIER - Do you have written confirmation from Heather Hestermann that the mitigation system that you have put forward is approved by her?

Mr GILMORE - She is not in a position to approve; she is a PhD student at the university who is doing work on quolls, and we respect that. We have spoken with her supervisor and her in a meeting with our departmental specialist where this mitigation strategy was discussed, outlined and agreed to. Now, what has happened is that subsequently there has been some criticism of that mitigation strategy but Heather Hestermann was there in the meeting when it was devised so I suppose we are at a bit of a loss. We are not in the business of saying that Heather Hesterman is wrong or misleading us or anything like that. What we are saying is that we are getting some mixed messages at the moment and they are hard to decipher but this mitigation strategy that you have before you was designed in a meeting with Heather Hesterman, her supervisor at the university, our departmental specialist and a Hydro fauna-specialist, so we tried to get together the people that could tell us the most about these things. As I think one of the later witnesses pointed out, not a lot is known about the quolls. That means it is very difficult to start making definitive statements about what will and won't happen.

All we are offering to do is to try to mimic the process that has taken place over the last 12 or 15 years, which appears to have been very successful, not because it was designed to be that way but because that is the way it has happened. That is what we are offering to do and we are very hopeful that it will be as successful as the first one was. With a bit more thought and design we hope it will be more successful than was the natural version of regeneration.

CHAIR - Mr Gilmore, that map which you have just circulated to us; are you happy for us to take that into evidence?

Mr GILMORE - That is fine.

CHAIR - I think that is a useful document for our purposes.

Mr HALL - A claim was made this afternoon regarding water yield, the fact that the amount of water coming into the impoundment was incorrect because of the effect of plantation forestry in the upper catchment. That is quite an important point. Would somebody like to comment on that one?

Mr GILMORE - Yes, I am happy to comment on that one. The water yield in catchments is certainly impacted upon by plantation activity. There is a lot of information around supporting that and it is quite complex and nobody professes to know all the answers in Tasmania. I suppose again it comes back to a question of risk allocation. In a sense the Hydro are the ones that are bearing that risk because they are assigning a water licence to the dam. If the catchment doesn't meet their requirements then they will suffer in that they will have less water at Trevallyn than they thought they were going to have, so that is a commercial risk.

I think the real issue here, though, is that the impact of those plantations ends up being managed by the forest practices process which determines how much of a catchment can be logged in any one year. I think that is really going to have more impact on the yield

in the dam than the fact that there has been some conversion from native forest to plantation over the last few years. Yes, there is a bit of an unknown there, although the figures we have for the hydrological yield go up to today in a sense. They have picked up those changes over the last few years and the hydrologists are not concerned about it.

Mr HALL - Just following on very briefly from that, there were comments made about Wild Dog Tier and the fact that there has been no studies done further up; I just didn't quite come to grips with that.

Mr GILMORE - I had a bit of trouble coming to grips with that, too. The requirement is to look at the impact of the dam and by definition it is very difficult for the dam to impact on what is happening up on top of the tier. I respect Kevin and where he is coming from and in an ideal world you would have a complete picture of Tasmania before you did anything, but that is not how it works and the impact of this dam on Wild Dog Tier and on Dunning Rivulet is going to be zero. They may well have an impact on the dam but, again, if the dam fills up with sediment then that is a commercial risk that the proponent is going to have to take. Frankly I don't see it as being a commercial risk that they are going to worry too much about. The Hydro's work on hydrology was substantial given that this is a proposal; it's not a construction thing. I think there would be nobody who would disagree with Hydro's capabilities in that area and their track record in hydrological assessment and prediction. We have, Ron and another of his colleagues in our Melbourne office, reviewed this documents and not found it to be wanting. That doesn't talk about Wild Dog, but in general terms it would be wrong to say that there was not a rigorous and competent hydrological analysis, including yield.

Mr GILMORE - I think the other thing about that piece of evidence that I was a bit concerned about was the comment that half the catchment had been converted to plantation. I'm fairly sure that's not the case. I've seen the land tenure and the amount of private land against the State Forest, for argument's sake; that just didn't jell with me as being a correct figure. Perhaps I can provide you with some information which would give you a better understanding of what the area of plantation in the catchment was as against non-plantation activity.

Mr HALL - If that could be provided to the committee, Mr Chairman?

CHAIR - Yes please. That's an offer I will take up.

Mrs NAPIER - I wanted to go back to the discussions we were having about faults on either side of the dam. I noticed that you were suggesting that the proponents to go RMIT Seismology Research Centre for a report on the site. What information do we have that in terms of seismology the place is secure? Has that been looked at? I would assume that it has been looked at and there is no movement there or no history.

MrWYBURN - If I can just respond briefly to that. RMIT has a seismology centre. It is recognised as the centre of knowledge in Australia and also south-east Asia regarding seismography in general. They have been recording events over several decades using an array of detectors in Australia and they can pinpoint the location depth of any event above about magnitude one, which we wouldn't even feel. From their plots of where various events have occurred they can see where any faults are active. They have a standard report which they can prepare for any prospective dam site, which would draw

on their collection of data over that long period. If there is any evidence of any activity on any old fault lines, that would be one fairly reliable way of picking that up. So that is something that should be done before the final design phase. The Hydro, in doing their investigation, looked at data that has been published about northern Tasmania generally, and I think they would also have looked at the data they had from south east of here. Their conclusion was, that for the proposed dam site, there is a very low risk of seismic events at the dam site itself. There could be some effects from more distant earthquake centres off the north-east coast. So on the basis of regional seismic knowledge there is no evidence that any of the faults in the vicinity of this dam are currently active.

Mrs NAPIER - If it were identified that there was some minimal risk, minimal but low, can that be accommodated by modifications to the design of the dam to ensure that if there was seismic activity that wouldn't result in dam failure? Is that the conclusion I should draw, if they found there was some evidence?

Mr WYBURN - No concrete gravity dam anywhere in the world has ever failed due to seismic events, and some of them have been located very near the epicentre of some very major events. Some dams have suffered some cracking but failure of this kind of dam in any seismic event hasn't happened. There are thousands of them throughout the world and not a single one has been known to have failed.

Mrs NAPIER - I just thought it was appropriate to get that on the record, Mr Chairman, seeing that that issue was raised earlier.

Mr LAWSON - Perhaps just to close it off, you have already noted that we have proposed the commission of the RMIT seismic counter, notwithstanding all that has been said. That will be included within tender documentation once requests for proposals -

Mrs NAPIER - So that is yet to happen, but you are saying there is already some assessment of it that has been done by the Hydro?

Mr LAWSON - Yes.

Mrs NAPIER - There were a couple of other questions that you might be able to tick off for us. Questions were raised about the stability of the sandstone ridge as it might be affected by increased levels of moisture. I take it that is the sandstone ridge up there next to the rivulet.

Mr LAWSON - That comment didn't make any sense to me and I couldn't offer any explanation that might address that. We will follow that up, however, and see if we can't find some more information to provide to the committee.

Mrs NAPIER - It just seems to me that if there is a useful answer to that then it would be good.

Mr LAWSON - That's why I asked the question. That sandstone ridge is actually quite some distance in elevation above the actual water line.

Mrs NAPIER - The issue was raised about the Peter Davies study on fish - I haven't read the study - where it said that there would be a significant effect on brown trout spawning. It

is my understanding that the spawning issue was covered below the dam because there were sufficient other tributaries that would provide adequate spawning conditions and above the dam there were sufficient tributaries that would allow for spawning of brown trout. Can I just get an update on that?

Mr GILMORE - That's our view. What I should say is that Peter Davies reviewed the Hydro's environmental work for this project as a specialist outside reviewer, as they had a specialist outside reviewer review their engineering work as well. So Peter Davies has seen all the material that has been prepared for this project and has reviewed it, in effect. We have also had discussions with Peter about the environmental flow issues because, in a sense, he is our Tasmanian specialist on those matters. We have used him in the department over a number of years to assist us in these matters. He did the original environmental flow work for the Meander anyway, so we have consulted him on a range of issues.

The trout is a difficult one because it is a feral animal and here you have a feral animal while you are trying to save the environment, so it is an interesting conundrum. However, the Inland Fisheries Service do have a statutory responsibility to look after trout and they have provided us with some material and some requirements that we have to build into this dam. They are certainly not concerned about it. The issue is likely to be that the trout downstream from the dam will do better because there is more flow of the river during the critical spawning periods and that there will be robust sustaining population in the dam itself that the locals may well like to go up and try to catch. We don't think there will be a trout problem; we have had no indication from either Peter Davies or Inland Fisheries that there will be and we are reasonably comfortable with the fact that there will continue to be fishing on the river and they will probably even do better.

Mrs NAPIER - But that is the same Peter Davies who's indicated and thinks that spawning is still going to be possible above and below the river.

Mr GILMORE - Yes.

Mrs NAPIER - The last issue was that the Ross River virus issue has become much more public recently. There were over 120 cases in one year. We only used to have between nine and 20. I haven't ever looked at the issue of whether low-lying lakes with waterholes that have been left over were a source of Ross River virus. I didn't even look at that, but has that been looked at as a health management responsibility?

Mr GILMORE - The Department of Health required us to consider Ross River virus, and it was considered. We spoke to the specialist here in Tasmania and we were advised that the vectors for Ross River virus actually require some salt in the water, some brackishness in the water, and that accordingly it was not found in those areas where it is just purely fresh water. My colleague has just presented me in the appendices to the DP and EMP, which is contained on your CD; we have a letter from the entomologist at the Department's Diagnostic Services, and he talks about the mosquito vectors for Ross River virus. The main vector on the mainland is rare or absent in Tasmania, and the other vector species that are here in Tasmania breed in low-altitude coastal regions in pools of brackish or salt water. Therefore the formation of a dam on the Meander River will not create suitable habitat for the breeding of these mosquitos.

CHAIR - Thank you very much. It has been a very worthwhile session and we appreciate your time in coming back to that.

THE WITNESSES WITHDREW.

PATRICK PRICE, SENIOR CIVIL ENGINEER, SINCLAIR KNIGHT MERZ; **WILLIAM LAWSON**, TASMANIAN PRINCIPAL, SINCLAIR KNIGHT MERZ; **LANCE DAVEY**, DAVEY AND MAYNARD CONSULTANTS; **RON WYBURN**, PRINCIPAL ENGINEER - DAMS, SINCLAIR KNIGHT MERZ; AND **JEFF GILMORE**, DEPARTMENT OF PRIMARY INDUSTRIES, WATER AND ENVIRONMENT WERE JOINTLY CALLED, MADE THE STATUTORY DECLARATION AND WERE EXAMINED.

CHAIR (Mr Harriss) - Thank you very much for the site inspection which we participated in. I am sure the value of that will become more evident as we progress through the next hour or so of taking evidence.

Gentlemen, I note you have some visual presentation to make. As you make the presentation you might bear in mind that for the purposes of Hansard there is extra explanation required so that it can be properly recorded rather than just pointing to a part of your presentation. We would now like to hand over to whomever of the delegation is going to lead the discussion. Feel free to handle the presentation whichever way you think fit.

Mr GILMORE - Mr Chairman, thank you for the opportunity of, first of all, taking you out to the site and letting you see the site of the proposed Meander dam, and for this opportunity to make a presentation to you. We can leave you with some copies of the presentation when we have completed it. If anyone has any questions on the way through, we would be more than happy to answer them for you as we go. As I understand it, there will be plenty of time for questions at the end of the presentation.

Briefly, I will introduce the presenters through the formal part of the presentation. I am from the Department of Primary Industries, Water and Environment. Bill Lawson is the State Principal for Sinclair Knight Merz - an international engineering company. Sinclair Knight Merz are acting as advisers for the Government through this part of the project. Lance Davey is from Davey and Maynard Consultants. Lance acted as a subcontractor for Hydro Tasmania during the feasibility stage. He has put together a lot of the economic work and we felt it was important that Lance was able to give you that information directly today. Also at the table are Pat Price and Ron Wyburn form SKM. Ron, as we explained out at the site, is SKM's dam specialist. He has extensive experience around the world with dams and will be available to answer any technical questions. My colleague, Debbie Miller, is also with us today. If there are questions of real detail in a number of the reports that we have provided to you, Debbie will be happy to answer any of those.

I will briefly run through the structure of the presentation. I will give you a brief overview. Bill Lawson will then take you through the background of the project, some of the work that has already been done, and a more formal description of the project itself. I will then run through the environmental aspects. We were going to bring along the environmental consultant from Hydro Tasmania who had done all the feasibility work but unfortunately he had a prior engagement interstate and wasn't able to be here. Lance Davey will then run through the economic and social justification for the project. Lance will also quickly run through the financing options that are on the table at the

moment. These options haven't been finalised yet; that will depend on how the proponents who want to take on the project see it. What we have done is canvassed the way those things could operate. Then, finally, I will present a brief summary.

Moving into the overview, for those of you who have not been around for the last 30 years you might not have heard of the Meander dam. As I am told by the locals, the dam proposal has been around for an awfully long time. It was very nearly built back in 1989 when the then Government committed to building the project and cleared the site and purchased all the private land that was to be inundated but then a change of government came along and the project was put on the backburner.

The current Government however has a well-stated goal to double the value of primary production in the State by 2008 and, as part of that, the Government commissioned a water development plan for the State which was going to provide a strategic framework for water development and agricultural development. It also covers a whole range of other aspects of water development, including the domestic and industrial use of water. It also covers many of the environmental aspects associated with our fresh water ecosystems. That provided a strategic context for the Meander dam which was identified during the Water Development Plan as a major regional strategic opportunity and, because there had been quite a lot of work already done, it meant that there was a substantial body of work already available to consider.

In terms of the project structure, the Government asked the Rivers and Water Supply Commission, as a government business enterprise, to act as the proponent for the dam. In some ways this was a matter of convenience. The Rivers and Water Supply Commission does have a charter to develop irrigation and, as it turned out, the Rivers and Water Supply Commission was the body that owned the titles to the land that was to be inundated. As I say, it was as much for convenience as anything else that the Rivers and Water Supply Commission became a proponent.

The Water Development Branch of the Department for Primary Industries, Water and Environment, for whom I work, is acting as project manager on behalf of the Rivers and Water Supply Commission during this feasibility phase. Hydro Tasmania was chosen as a consultant to conduct the feasibility studies through a public tender process, and this was nearly 18 months ago now. In last year's Budget the State allocated $7 million to the project, the Commonwealth has allocated in this year's Budget $2.6 million to the project out of a $24 million project.

It is worth me spending a minute here being quite precise about what the project is that we are talking about here because in some of the feasibility work that has been carried out a range of options had been canvassed at various times. I want to make it clear that the project we are talking about is the construction of the Meander dam itself. That will be used to release irrigation water down the river where it will be up to the farmers to pump the water out of the river and utilise the water on their properties. We are not talking about building any channels, as one previous Meander dam proposal had envisaged, to spread the water further out through the valley and into adjoining valleys, nor are we considering the options which were considered in some of our feasibility work of piping and pumping water from the Meander dam into the adjoining valleys of the Western Creek and Rubicon rivers and maybe even Quamby Brook. None of those topics are part of this project. The project we are looking at is the construction of the

dam and its use for irrigation. As an adjunct to that, the Government has agreed that Hydro Tasmania can use the flows out of the dam to generate electricity but, again, the mini hydro to generate that electricity is not part of this project. That is a commercial decision made in purely commercial circumstances by Hydro Tasmania and based on their own commercial needs. Hydro Tasmania has, however, agreed with the Government to make a contribution to the project because they do see it as valuable to their ongoing renewable energy production.

The primary focus of the project is on irrigation. There are two elements to that. The first element is insuring that the current levels of production in the valley are sustainable into the future and also providing opportunities for future growth. The current levels of production, in our estimation, are not sustainable. There would need to be a reduction in the volume of water currently being used over the longer term and this has been shown not last summer but over the previous two or three summers prior to that, where irrigation had been severely constrained by water restrictions. So what we are hoping to do is use this project to allow current levels of production to continue and for there to be substantial growth in production.

There are secondary benefits to the project, with a substantial increase in the environmental flow that will be going down the river in summer. That will provide some community and social benefits. There are some broader regional benefits from the economic activity as well and there are also opportunities for power generation with, as I said, the mini hydro not being part of this project in a formal sense, but the environmental flows coming out the dam will be used by Hydro Tasmania to generate electricity.

What I have tried to flag already is that there are three components to the benefits of this project. First of all there is the community benefit. There is economic activity, more agricultural development, the environmental flow and the social benefits associated with the project. There is also a commercial benefit associated with the project in particular. What I am referring to here is the electricity generation and the regional economic benefits and there is also an agricultural benefit in terms of the benefits to individual farmers where agricultural production can increase and farming enterprises can be made more profitable.

The Government has acknowledged up front that it is a supporter of this project and it has been prepared to fund the community benefit elements of it. The $7 million allocated by the State Government and the $2.5 million allocated by the Federal Government will be going towards the community benefits associated with this project. The Hydro has indicated - and as you can see, I have put 'buy' in inverted commas - that they see the commercial benefit associated with the ability to put in a mini hydro on this dam project as being a commercial benefit and they have been prepared to make a contribution to the project to ensure that that commercial benefit was available to them.

The component of the project that relates to the agricultural benefit - this is where the farmers or other private investors have to be prepared to buy, if you like, that agricultural benefit, so there has to be a return for those investors over time and they have to be prepared to invest enough money to pay for the project beyond that contribution, that I have already outlined, from the Government. Our discussions with potential proponents for this project indicates that they have a very positive view of it. We have talked to the

local farmers on a number of occasions; they are very positive about it and may well be prepared to invest in the project themselves. A range of investing institutions have told us that they are very interested in the project.

Some of these points will be covered in more detail as we go through the presentation, but I just want to flag them for you briefly up front. The project from here, if approved by this committee of the Parliament, Treasury will then open and assess the expressions of interest that were called some months ago. Following that, a request for tender would be issued to those proponents assessed as meeting the Government's requirements. The Government would then offer the proponents a package with all the necessary permits and approvals for the project to go ahead - and that includes planning, environment, dam permits and the like - and it would also provide the financial support for the community benefit. The proponents would bring to the project dam design and engineering expertise, construction expertise, adequate finance to cover the commercial elements of the project, financial expertise and operational and commercial expertise. The Government has not spelt out exactly how it wants the proponents to be, whether it wants them to be consortia or individuals or whether they should cover all these elements or only some of them. But indications are, from the expressions of interest that we have received, that at least most of them encompass all these parts.

The proponents would get out of the project an opportunity to be in the business of selling water to the farmers. As I have said, that may well be the farmers selling themselves water. Now as I have said, that may well be the farmers themselves selling themselves water but it may well be a commercial institution of some form or another. Now I just want to flag that there are some checks and balances in this process both for the government and the proponents. The Crown Solicitor is currently working up a draft of a formal agreement between the Government and the proponent that would encompass all of the elements of responsibilities for both parties and at the same time a formal agreement between the Government and Hydro Tasmania and Hydro Tasmania and the proponent would be put in place ensuring that all the operating rules were clearly understood by all the parties and that provisions for resolution of disputes and so forth would be made. The provisions of the Water Management Act would apply in this case and that provides the vehicle under which the farmers and any other commercial activity could take place. Then you get down the level of individual contracts with farmers that would be the farmer protection, if you like.

I just briefly want to run through a few issues that I have identified as being particularly important to the project one way or another. I think it's important for you, as a committee, to bear them in mind as we go through the rest of our presentation today and include in our submission a number of these issues. The first point is that there is an environmental impact with this dam. In fact with any dam there is an environmental impact and that environmental impact needs to be managed. Our view is that in this case we can do that quite easily and we can do it to the benefit of the community. There are site limitations that affect the project and the project is not easily scalable. The point I'm making here is that because of the physical limitations of the site it's not really possible to start playing around with the volumes of water that are going to be available. You can't have a three-quarter-sized dam. The reason for this is that for the first 25 metres of the approximately 50 metres of the dam wall, the amount of water that would be captured by that is about 6 000 megatlitres. The next 25 metres of wall would capture 37 000 megalitres. So the vast majority of the water that's going to available for

irrigation is not going to be captured until the dam wall is pretty much at its projected height. It is not a project where you can say, 'Yes, we'll have half the project or half the dam wall', or anything like that. It just is affected by the limitations of the site.

There are broad community benefits. There are certainly economic benefits to individual farmers for the use of this irrigation water. But there are broad regional benefits to the State that we will highlight further in our presentation. The other thing that will occur from this project is that there will be many agricultural opportunities and those agricultural opportunities typically will be at a much more profitable end of the farming spectrum than dry-land agriculture.

The final point I want to flag is that risk allocation, particularly when it applies to the commercial risk associated with this project, has been a very important consideration all the way along and you'll hear us talk about this risk allocation on a number of occasions through the presentation. But it is important that we get you to understand just who is going to be subjected to the risk at what point and how that applies back to the Government's involvement in this project.

I am now going to hand over to Bill Lawson.

Mr LAWSON - Just a question to the Chairman if I might before I start? There's various matters being discussed or explained out on-site. For the benefit of Hansard you probably want to run across those items again?

CHAIR - Yes, I think that will be valuable and questions my flow again to formalise that process.

Mr LAWSON - All right, I won't skip across any of that. I terms of the background I would like to emphasise the purpose of the proposal, talk about the previous investigations, the history of the dam project as a whole and its various iterations. I'd like to talk to you about stakeholder consultations and, as Geoff has just mentioned, the issue of risk, the assessment and allocation of risk which is more and more a part of any major project. I'd like to talk to little bit about the proposed means by which the project will be delivered and then give you a description of the project. That's perhaps where I will run across some of the things we talked about a little earlier.

Now, to reiterate purpose you are well aware of the Government's desire to double the value of primary production by 2008. Obviously this dam has a major potential impact on that objective. Obviously the irrigation that is already taken from this river is very heavily dependent on what time of year that might be, and of course the availability of water during times of low flow is exactly when the water is so often required so, if you like, this project creates a very substantial buffer or a means by which those differences in demand can be met.

It definitely will allow the expansion of agricultural production within the valley and it will of course increase security of take-up of water for those who are investing in it and this will overlap into the area of risk - doing things about mitigating and removing risk.

We move now into the area of investigations. The desktop review has been undertaken at previous studies, of which there have been several. In the late 80s studies were

conducted, as Jeff has said earlier, and the site was cleared. In 1994 there was an investigation of alternatives including the farm-dam options and again Jeff has already mentioned those. Then last year a major engineering environmental and economic study was conducted by Hydro Tasmania and their subconsultants into the dams, so it is not a recent thing. This is a project which has been on the books and has been looked at from various directions by various parties and it is significant of course that it has always proved robust enough to come up with ticks in the appropriate boxes from all those points of view.

In terms of stakeholder consultation, the Meander dam was proposed in 2001 as one of the responses to a call for water development projects that were made by the Government. Meander dam was one of those. There has been a wide level of involvement in terms of sharing information with stakeholders and people who may be interested. There has been a very substantial newsletter process. The statutory DP and EMP development proposal, environmental management plan, has been advertised nationally for public comment, the community meeting in Deloraine discussing feasibility studies has been well attended and well subscribed. Importantly, too, there have been meetings with people who have seen some downsides to this and there has been an endeavour to understand all those viewpoints and to take those on board and do what can be done to accommodate those without compromising the project proposal.

If we could now move to the issue of risk. As I said a moment ago, this has more and more become a consideration in any project, whereas I think in days gone by projects perhaps have been done without thinking about what might happen if something goes wrong. There is a very formalised process now in major projects for identifying risk and importantly identifying the consequences of those risks, what can be done to militate against that and control that. Sometimes of course in some projects those considerations might arrive at a point of intolerance where really a project is not able to proceed because those risks are so bad or so high.

That has not been the case in this project. Two major risk analyses have been done. One has been done for the entire project involving stakeholders, consultants and DPIWE staff. When we came on board we were very interested to see how far that had gone this is before we were heavily involved. We came on board then and got heavily involved in looking at the technical risk, particularly the dam engineering, and that is where we have relied very heavily on our pro and Ron Wyburn in terms of understanding those risks and making sure that the advice being given to our client or to Government is at world's best-practice levels. Those risks have been very carefully weighed up. As a consequence of assessing the risks, there is an allocation of risk in terms of who is to handle certain risks - this is all part of mitigating the risk - and what can be done to offset the particular risk. In the document that you have with you, there has been some allocation in terms of land ownership and Hydro Tasmania, certainly in terms of the granting and undertaking of getting funding approvals. You have heard something of the Federal and State Governments and Hydro funding of the project, and of the area of water agreements, which is all about taking up the available water. So that opportunity can be created but it must be taken up.

Then in terms of risk allocation, there is of course the actual project execution - the design and construction and financing - I probably should have had that at the front - as

well as all the commercial risks. It is important to stress that risk analysis has been undertaken in a very formal manner in accordance with Australian risk standards.

If we now move to the area of project delivery, there have been many changes to project delivery during the 30 years of my professional practice. In the last 10 or 15 years, there has been an acceleration of various permutations and combinations of project delivery. Gone are the days of somebody doing a design and saying, 'I want this built'. Often today we are seeing people specifying a functional requirement, saying to the markets in the widest possible sense, 'How might you fulfil this functional specification for this thing that I want?'. So what we have is a project which is seeking all aspects of the project in terms of some 50 per cent of the funding, the design, the construction and the operation. So it is seeking to be procured or have the project delivered in that sort of environment.

The first step of that is a call for expressions of interest. The call has been made and, as you've heard earlier, those expressions of interest - I think seven in all - have been received and are unopened in secure care of Treasury. We can't open those until this committee takes its considerations. Once they are opened, they will be assessed against pre-set criteria which are focussed on the objectives of the project, and I won't go back across those.

The role of Sinclair Knight Merz in that process is of professional adviser, and there is also a probity auditor appointed. At this point I declare to you that Sinclair Knight Merz has no other involvement in this project and it is important that we are able to offer impartial professional advice to government. Once that assessment process has been undertaken, there will be shortlisting of consortia. As I have said, they are unopened; we only know the titles and the makeup of the bids as provided within the expression of interest process, and obviously there are some interesting groupings of interested parties within that. They will need to be shortlisted and they will be invited to tender. So that will be a request for a proposal, and the tendering process will encompass the agreements, the permits and approvals that will have been undertaken as part of the risk mitigation measures by government. It will be a commercial proposal that is being sought. So it will be, to repeat, the funding, the design, the construction and the operation.

So it's a long way from just asking somebody to build a dam to this design; it is a procurement process which is very current and very open to drawing the best possible response from the commercial players out there. Moving now to the project description. To state the obvious, the dam is to be constructed to increase irrigation and to use the irrigation flows to generate electricity through the Hydro scheme. There are supply-pipe priorities in terms of that irrigation employment. There is the domestic and stock-water environment. The environmental flows are very low during the summer so it will create a more environmentally sustainable flow through the river during the summer months. And then there are the irrigation and the commercial aspects and my colleague will come to those in just a short while. We have been to the site this morning so the location is well known to you.

We move to the key technical data of the project. It is proposed that this dam be constructed using a techniques known as roller-compacted concrete. The concrete is placed in a very dry form. It is perhaps best described as the use of earth-moving

technique in the placement of concrete. Once it is placed it is then vibrated to produce a dense mass of concrete. The proposed dam is a mass dam. It gains its stability from its mass. It is stable because of its bulk and the application of gravity through that bulk. The roller-compacted concrete is a preferred technique these days. I have looked into alternative forms of dam construction and the use of this method is clearly, in our view, the best way to proceed. But as I have said, this will be a design construct environment in which the project is delivered. There is the potential for ideas which may give us a surprise to come through the tender process, but we are pretty confident that the roller-compacted concrete dam is the way to go.

We are talking about a dam that is 50 m high and 170 m long on the crest. It has five take-off points. There are five octate points to allow the take-off of the water at the best possible location for the use of the water downstream. So that will be a matter which is monitored. The quarry that will be necessary to produce the stone for the construction, to form the concrete, is on-site. That site will be part of the inundation area so it will be used before it is flooded. The mini hydro station has a single 1.9 capacity turbine proposed with a flow range between 2 and 5.5 hu-megs, which is technical mumbo jumbo for how much water goes through it. It is a significant contribution to the State's electricity, such that Hydro - as you heard earlier - have agreed to a contribution of $3 million - as I recall - into the finances of the project.

The key technical data - I have probably moved across some of this already. The dam proposal has been shown to be technically feasible. The roller-compacted concrete method has been identified as the lowest cost construction and it is a proven technology; there is no guinea-pigging in this. The design proposal drawings that we have on these slides are simply the drawings that you have in the documentation that has been provided to you. Mr Chairman, that concludes my contribution to the presentation.

Mr GILMORE - Thanks, Bill. We will move onto the environmental issues. As I indicated earlier a dam does have an environmental impact and we have spent quite a lot of time and effort studying that impact. The impact though comes in three major groupings. The first impact is in the inundation area itself where the plants, animals and the habitat are lost due to the inundation and where Aboriginal and cultural heritage is flooded. And there is also a construction impact with things like roadways and machinery moving around, and the quarry and so forth. So there is a constrained environmental impact in the inundation area itself.

Probably the one where most of our attention has been focused is the dam itself. A dam of this scale is going to have a major impact on the flows downstream. And it is the impact of that changing flow regime that we have studied. Fluvial geomorphology is the technical term to describe how that flow regime is going to change.

The vegetation along the river itself is also an important component in the ecosystem and there will be an impact on that. There will also be an impact on the aquatic ecosystems themselves, the fish and the insects and so forth that live in the river itself.

The third area of environmental impact that we have spent quite a lot of effort in studying is irrigation. We wanted to make sure that the water that was going to be

available for irrigation was going to be able to be sustainably used and that the farming practices themselves would be sustainable.

Our view is that the environmental impact of this project can be managed and managed successfully. Already the Environmental Management and Pollution Control Board has issued an environmental protection notice outlining a whole range of measures that the proponents of the project will have to take into account and deliver on. The mitigation and monitoring and adaptive management identified in the approvals process is also locked into that environmental impact management.

So I will just briefly touch on those three areas and describe for you some of the key issues that we have identified. In the inundation area itself, five Aboriginal heritage sites had been looked at. We got a specialist in Aboriginal heritage to go and look at those sites again, relocate them and provide us with an assessment of them. The assessment was that the best way to manage those sites would be to seek a permit to enable them to be flooded but for there to be no other activity to disturb those sites. That has been incorporated and already that permit has been granted.

There was European cultural heritage in the inundation area as well, particularly some old sawmills. Most of the useful equipment from those sawmills has already been relocated to the museum in Launceston. There is one old piece of machinery that is well rusted and quite damaged which we will move out of the inundation area and place strategically along the side of the dam.

But the main issues that we have been confronted with in the inundation area relate to the plants and animals that are there and the impact that the water will have. As we explained to you earlier, the inundation area was cleared back in 1989 and what is there now is an enormously rich habitat that has grown back since then. In some places the vegetation is impregnable and in other places there is a rich mosaic of habitat. The animals that have done best out of this new habitat are the spotted-tail quolls and the area to be inundated has proven to be one of the richest hunting habitats for spotted-tail quolls that has been identified in the State. That is one of the issues that we are going to have to manage.

There are also some *pomaderris*, which is a one- to three-metre shrub on the national endangered list. There is a group of about 30 plants up on the side of the inundation area. The plant that I'll go into in somewhat more detail is the next one on that list, *Epacris exserta*. There's a lot of complex taxonomy about the plant that I will give you a very brief flavour of. But there are about a 120-odd plants actually at the construction site itself, at the dam wall site, and there are populations of them downstream. There are other flora and fauna present but they were not significant. We carried out a range of surveys for flora and fauna throughout the area. There were reports of a number of endangered plants and we went out and specifically looked for those plants and could not find them. We then followed up with other specialists in the field to make sure that we weren't missing something. There have been some transient sightings of various endangered species: swift parrots, wedge-tail eagles and all of these things. But I think the specialists would argue that they are not an integral part of this area; they are just moving through.

The aerial photo gives you a picture of the inundation area. The aerial photo was taken after the land was cleared but the regrowth that we saw out there this morning certainly hasn't reappeared at this stage. You can see at the dam wall site itself a range of benching that had been carried out in the original studies. Later on, when I am talking again about the spotted-tail quoll, what we have agreed to do is re-create some of the complex hunting habitat. We have agreed to re-create it on the private land that is owned by the Rivers and Water Supply Commission. So we'll be transferring things like rotting logs and so forth, debris and material that exists already and transferring it over to that land. We will also be replanting particularly the native grass species and trying to get them established on that land, and also some of the tree and shrub species as well. But this area is obviously quite different out at the site at the moment.

Continuing with the inundation area, there are other issues and we talked about some of this in terms of the geology of the site itself. Is the dam going to leak, is the water all going to go out underneath the dam wall and all of these sorts of things? What about the sediment movement from upstream? Most of you have heard of the Dunning Rivulet landslip and those sorts of things. There were karst issues; a number of people have raised with us the possibility of leakage at Huntsman Saddle and there is also the question of stability of the underlying rock formations. The answer to a lot of those issues is that we have studied most of them in some depth. We have had people come back and have another look at karst and we have had a fluvial geomorphology study of the whole system down to Deloraine. We can talk with some authority about the sediment movement and how that is going to apply. Essentially, all of those issues are ones that are manageable and one's that we do not believe are major constraints in any way to the project. There are some risk allocation issues here, and some that the Government will need to work through with potential proponents, but those are issues of scale, not of real importance.

To return to the spotted-tail quoll, it is a listed species both in the State and nationally; as I indicated, the cleared area has formed an excellent hunting habitat. While there has been some work done on the quolls in the area, and indeed we received a report from the student who carried out a lot of that work in the feasibility stage, not a whole lot is known about the spotted-tail quolls. But the best estimate is that there may be up to 12 individuals affected in the inundation area. The home range for these individuals is actually in the forested areas surrounding the dam site itself but they move out of the forested areas down into the inundation area to hunt and there is some suggestion also that they migrate through that area as well.

A lot of that information is not clear and the specialists do not have a really detailed handle on the impact that it is going to have but the issue for quolls is that they are very territorial beasts and they are going to sort out their territoriality amongst themselves and that is going to have an impact on the individuals. Our expectation is that over a five to ten-year period with that habitat newly created beside the dam site the population of quolls will return to its former levels.

We have talked about that habitat renewal for quolls but we will also be using that for all of the other invertebrates and vertebrates living in the area that re-creation of habitat will go some way to offsetting the loss in the inundation area. We are also working with our colleagues in Forestry Tasmania to ensure the forest management plans in the surrounding State forest reflect the sort of activity that is going on in the dam. One of

the provisions that has been put in the environment protection notice is this slow clearing of the area to enable the animals to move out in a slow adjustment way.

The reason for clearing the site initially is to get all of the organic material out of the inundation area because as that starts to rot down, if it is covered with water then that will lead to water quality problems. So the area will be cleared of as much organic material as we can and that will include removing, for example, an old tip site at the very southern end of the inundation area and a couple of old sawdust pits from the sawmills. All of that material will be removed from the site. We will also be undertaking research and monitoring to ensure that our activities are having the effect that we are looking for.

Having looked at those issues in the inundation area we will now briefly look at the issues downstream because, in effect, this became perhaps the most complex of the management issues. I have just dubbed this the epacris story because this little plant that lives in a very small habitat, a metre wide and a metre high from the edge of the river channel, links all the elements of the downstream story together. As I mentioned before, there are some plants at the construction site, about 120. They will be destroyed in the construction process and there is not a lot we can do about that. The other issues are we are making sure that changes to the water flows are not going to affect the habitat of the plants, whether the changes in the flow would waterlog the plants or dry out the plants too much. What our assessment shows is that with the proposed environmental flows, irrigation flows and the like those changes will not have an impact on the plant.

The other change to the plant is going to be due to the sediment transport of the river. This will have an effect because the sediment that is transported down the river forms the basis of that habitat. Typically what we are seeing down through the gorge - we stood at the very top end of the gorge today - is that areas of this plant, *Epacris exserta,* are ripped out during flood events and then sediment is redeposited and then the plants grow back again.

The other issue we are interested in is whether erosion and deposition further downstream would change and we have developed a risk management matrix to identify where those risk areas are and to put in place some measures to see whether we can manage that risk.

So the *Epacris exserta* itself - this is the little plant you can see here has quite a woody stem with reasonably sparse leaves. You can see here the impact of the water. The plants are used to living in that sort of environment and adjust accordingly. You can see that we are right close to the water's edge here and typically these plants that we have studied now in some depth are living up to 80 or 100 years at least.

The reason I have been very careful in my terminology here and have written the botanical name out in full is that there is quite a lot of uncertainty about the species and its status, so this *Epacris* aff. *exserta* (Union Bridge) refers to the particular plant that only exists in the Meander River and the Mersey River, and our botanist tells us after quite a lot of study that almost certainly this plant is not *Epacris exserta*, which is the South Esk heath, and it is either a species of its own or it is related to another epacris species called *Epacris maculata.* In order to do all that taxonomic work to prove up what we were studying didn't seem to be of much value to us, so we have treated it as a separate species in a study area, and all the study that we have done has been on the basis

that it was a species in its own right. That in fact would have lifted it up the scale of how important it was on an endangered or vulnerable status rather than diminish that status, and all of the studies we have carried out have been on the basis that it was a very limited population with very, very limited numbers. And so we carried out a whole range of studies on this plant. We did a risk assessment, we looked at where the population was, we mapped the habitat, and we did characterisation of the river to make sure we understood how the different habitats were important to the plant. The plant basically grows everywhere, but what happens is flood and drought events clean it out of those places where the habitat is not conducive, and in those areas where the habitat is conducive it lives to a ripe old age.

We also importantly did what is known as an extension survey. We had a lot of difficulty early in the project because the information that had been used to list the plant on the various registers had been very limited and unfortunately, as with all of these things, when you do a scientific survey the survey is really only as good as the accuracy and the amount of effort that goes into it. There are scientific techniques and statistical techniques that were used, but we in a sense had to provide a lot more information about the plant than had previously been in existence. So we went looking for the plant in other places. There were, I think, two or three populations known in the Meander, and a couple of populations known in the Mersey, but what we did through this extension survey was first of all look at maps and aerial photos and say, okay, where are the likely habitat areas for this plant, and then we went out and searched for them, and basically we found them everywhere we looked.

So this is a bit of a scan at a population level which is really from a management perspective the thing that is important for us. At the moment we are aware of 21 different populations of this plant for 7 000 individuals. In the Gorge itself, which is critical in the sense that it is the most upstream population of all and it is also the largest single population, there are about 1 800 plants. There is another Meander population that we drove past today where there are nearly 1 000 plants. But over on the Mersey there are at least two populations that are greater than 1 000 plants, and we think that if we went and looked at all of the other potential habitat areas in the Mersey then there is probably another 4 000 or so plants based on the survey work that we have done already.

So what we are doing here is we are saying, okay, yes, there will be an impact of 120-odd plants at the dam site itself, and these 1 800 plants in the Gorge are at risk - and I will explain why in a moment - but we think carefully managing the other populations will mean that the plant continues to thrive in its very limited habitat. The reason I say that is because if you add in the additional 4 000 plants that we think are out there then essentially the plant is rare, it is not endangered, it is not critically endangered, it is not even terribly vulnerable. If you look at the listing criteria, if we had gone out and found some more plants we probably could have taken it off the list.

So what we will be doing with this plant is we will be managing the populations where the impact is relatively minor and will also be ensuring that off site there are a good collection. We have already entered into negotiations with the Botanical Gardens to make sure that we have genetic material being preserved off site. That was started a long time before we became aware of just how many plants there were out there but we still think it is a worthwhile backstop.

The sort of management measures that we will take, this second Meander population, the one that has 950 beside it for argument's sake, that is down in an area where there are cows grazing nearby, fishermen go and it is about 50 metres from a road so the population is fairly robust but simple vegetation managements and fencing and those sorts of things can be put in place to manage these populations successfully into the future.

The reason that the Gorge is so important and why the population that is in the Gorge is at risk is the point that I made before. Because the dam will trap all of the sediment that would otherwise have flowed down the river in a sense there will be no new habitat created in that Gorge for the plants. By the time you get further downstream some of the other tributaries to the Meander like Jackeys Creek and Western Creek will bring in sediment to the system and that will form part of the habitat renewal but in the Gorge itself the Gorge is constrained by the rocks that form the Gorge and so the habitat is at risk. Our specialists tell us that there is a risk that 80 per cent of the population in the Gorge would be cleaned out but it might take 300 or 400 years to do it. So what happens is because there is no sediment in the water itself, when a flood goes down the flood tends to strip the sediment that is already forming part of the habitat away and exposing the roots of the plants and they are then obviously at risk of dying.

Lastly I will touch in this section on the irrigation area itself and the issues that are associated with the land capability, the capability of that land to be irrigated and the production sustainability. We did some quite extensive work on this area. It was not work that would have otherwise been demanded of us but we felt it was important to ensure that the Government's commitment to sustainable production was met at the same time as its desire to increase production. There is a large area of land that is suitable for irrigation over 7000 hectares and we think that the water demand would be well met before you got to the 7 000 hectares.

We did extensive salinity testing using the latest equipment over the whole region and while there is some very localised salinity potential, those areas tend to be away from where the water demand is or too far away from the river to be economically irrigated and we will be making sure that landowners in those areas are well advised about the salinity potential.

We have worked closely with the Meander Valley Council on this salinity work. The council had already undertaken some survey work and they have done some more subsequently.

I am going to hand over now to Lance Davey who is going to briefly run you through the economic and social benefits of the project.

Mr DAVEY - Firstly we considered the overall economic benefit and that is the benefit to the overall community which includes both public and private benefits and costs, and this was in the earlier study of the two. We also considered the financing options and the financing viability can be different to the economic viability, we say these are not the same. The financing study has a narrower focus and basically what I am saying is: will the people who put up the money to build the dam get a high enough return from those who use the water and will the people who want to use the water get a low enough price? That is the big issue there.

The overall economic benefit comes from a number of areas: firstly, improving environmental flow - the summer flows; secondly, increasing agricultural production; and, thirdly, generating electricity. It is important to note here that National Competition Council provisions will apply so that is the final test on the economics.

The water demand: we surveyed farmers - potential users in the area - on two occasions. Initially more than 300 letters went out to anybody in the area that we thought might possibly be interested and then later we refined that a bit to those who we thought would probably be more likely to use the water and went back to them when extra information came up through the study. Current water rights on the Meander River itself are less than 2 000 megalitres per annum - and this is permanent rights - and, in addition to that, people have been using over time temporary rights for water of around 4 000 megalitres and possibly there's also been some utilisation over and above that so that perhaps the usage currently on the Meander River is around 7 000 megalitres. If water rights are cut back to just the permanent, we'd see that dropping back from around 7 000 megalitres to 2 000 megalitres, which would have a pretty significant impact on agriculture in the catchment along the river.

The survey demand on the river itself, and this is the second survey, we've gone back and said, 'In view of the fact that some of this water may be taken away; in view of the fact that it might be expensive to get it further away from the river than some of the people in the earlier survey were thinking, we came back with this demand of around 15 500 megalitres of water demand right along the river'. That was from 63 farms and it was based on a price of about $55 a megalitre. In addition, there are another 20 farms away from the river who said that, despite the fact that there would be some cost in getting the water from the river, that there is probably another 5 000 megalitres that would be taken up away from the river. All of this remains to be seen. We said to people that they're not actually signing off on this at the time but we want them to be pretty serious about the fact that there will definitely be a cost. It could be on a take or pay basis - even if they don't use the water they might have to pay for it - so we're really trying to get them focused on how much water they would demand at a range of prices. Obviously, at higher prices than $55 the demand dropped - at $75 a megalitre it dropped and at $110 a megalitre it obviously dropped even further.

Mrs NAPIER - What did it drop to?

Mr DAVEY - At $110 I think it was about 6 000 megalitres. Our view, and it was borne out by the survey, was that as that water price goes up it tends to cut out some of the enterprises such as dairying and livestock enterprises which would use water and tends to get concentrated more on croppers who can afford to pay more. The actual survey showed that about 60 per cent of water at this lower price was for dairying, 10 per cent for other livestock and 30 per cent for cropping, so to a large extent dairying is the one that we would really expect to expand as a result of this scheme.

As to the economic benefits there - we have put up a table and not everybody will be familiar with this but the NPV is the net present value and this is just a method of trying to take account of the fact that the money is spent up front to build the dam over the first few years and the benefits happen over a long time. Net present value tries to take account of the fact that a dollar in a year's time isn't worth the same as a dollar now so it

discounts future benefits and costs back to the present day. For example, if you are after a 10 per cent return on your money, $110 in a year's time is worth the same as $100 today so where we have actually used 5 per cent in this study, they have discounted back any income and costs in the future by 5 per cent a year to bring it back to its present value figure.

Now, just running through those components there - we have split up the benefits into the four areas and the first of those is saying that the first, say, 5 000 megalitres of water is used basically for environmental flow and without that being there the farmers, if they had had that water taken away, would have had their income cut back substantially and in present day terms that is worth about $16.4 million. Just to expand on that slightly, we calculated something like a net loss of about $1.4 million a year to the farmers in the river if that 5 000 megalitres was taken away from them to give better environmental flow and not replaced so we see this dam as being able to replace that.

In addition to that, we see something like another 15 000 megalitres available to having got back to where we are now with irrigation to actually expand irrigation and we calculated something like $4.2 million net income extra per year and that, if you discount each of those back over the future back to the present, that gives us $42.6 million. Electricity sales - we have put a present value of $7.5 million. I understand that may have changed a bit since this first report was prepared but these were the figures we had at that time.

In addition there are other public benefits, if you like, in terms of flood mitigation, water quality and improved recreation. The Meander River apparently is one of the most popular trout fisheries and this is despite the fact that currently the flow gets very low in the summer in a lot of years so we see some benefits for recreation. Water quality - in high flood periods the water is fairly turbid so that the councils have to accommodate that and in the summer with very low flows there is also a water quality issue.

In terms of the costs of the scheme, the scheme operating costs over the 20-year life that we calculated come back to about $2.6 million in current day terms. The capital costs of the dam and the mini-hydro there, we have got a present day cost of $26 million, which includes the mini-hydro. When we talked about the $24 million figure, that is excluding mini-hydro.

Interestingly, on farm we calculated that to expand this irrigation farmers would need to spend something like $10 million on in-farm capital expenditure - new irrigation systems, new dairy water infrastructure and the works. When we discount that $10.6 million back to the present day, because that will happen over time, it comes to $8.3 million in present day terms. This is sometimes called the benefit cost analysis. We can see the total benefits there are $69 million and the total costs $36.9 million in present day terms so there is a net present value of $32.1 million.

Just to follow on from that there is another study that we looked at briefly. Input-output analysis is a method to try to take account of what happens in all the sectors of the economy as a result of an increase in one area, in this case, agriculture. This work was based on a TFGA and University of Tasmania input-output analysis model and, as I say, it aims to show the income and employment effects of a change in one sector, as in this case, in agriculture. The results from using that were that something like total income

for the economy of the State as a whole would increase by something like $44 million a year. That is income not taking account of costs. On-farm employment would increase by something like 60 full time jobs. Employment off-farm is another 60 or 70, which takes total employment up to 130 full-time jobs. Total wages paid would increase by nearly $5 million a year. Obviously most of that would be in this Meander Valley area.

In terms of the employment benefits, about half of them are in agriculture but you can see there things like food processing. The area of vegetable factories and so on, which are in the area, would go up by 20 per cent; construction and utilities by 9 per cent; other manufacturing by 7 per cent and services by 11 per cent.

Coming to the second part briefly now, the financing options. As I say, this the side which is more limited than the overall economic study. It looks at whether investors will be prepared to put some money into this and if they do, will farmers be able to afford to take up the water. As also mentioned earlier, no decision has been made and there are also a number of ways in which the project might be able to be financed. The process itself involves marrying current water usage, projected demand and potential returns from each megalitre of water. The work that we did suggested that at $55 per megalitre it is likely that most enterprises would be able to afford that and make a return. This is supported by the survey work.

In terms of the capital cost of the dam, if we look at the $24 million and take off the $9.6 million of government input it is likely that that funding could be repaid over something like 20 years. If we could get 15 000 to 20 000 megalitres of water taken up at that sort of price then there would be interest by financiers. I guess that all remains to be seen. The work that we did was effectively a base case and we were using a financing of the construction cost less government input through take or pay contracts for 20 years. Take or pay means that the people who take up these contracts to buy water would pay for that water even in years when there was high summer rainfall and therefore less need for irrigation. That sort of thing may well be required for a financier to be comfortable that he is going to get a return on funding.

The other options, other than that, which could be looked at and which may well be amongst these seven expressions of interest are superannuation funds who may not require an immediate high return but would take a long-term view on water and see it as being a very good long term investment. That financing is another option. That's difficult with this type of project because we have a large amount of money up front to be outlaid to build the dam and irrigation uptake might take several years so we have a need to be paying interest for several years before there can be a high cash flow coming in.

Equity finance is another. Quite a few of the farmers whom we have surveyed have expressed interest in wanting to own the dam - that gives them longer term security in terms of water price. Once they have put that money up front they know what their future is and it would probably give them more confidence to invest that $10 million that I suggested on-farm. There are obviously several types of financing options which will be looked at and the expression of interest process which is yet to be gone through completely will bring these options into commercial practice. That is the end of the economics and the financing.

Mr GILMORE - Okay. What I am going to do is just very briefly provide a bit of a summary from where we've come to. Obviously our presentation today has really just picked out the highlights contained in our formal submission but also, as you indicated earlier, we did provide everyone with the CD with all of the available documentation that we have on this project. We are not expecting people to read it all but it's there and people can refer to it if they want to. So I am just reiterating that the project is part of a strategic development here in Tasmania, the strategic vehicle being the Water Development Plan. The project has strong local, regional and statewide economic benefits. The project has environmental benefits and an environmental impact. The project has strong State and Federal Government support. The project has strong local community support, although I acknowledge that is not universal, and in my layman's terms the engineering is fairly straightforward. The environmental issues are manageable and the commercial issues will be tested in the marketplace. As we have already said, there are seven consortia who have already displayed an interest.

Just before I conclude, I would like to thank Debbie Miller, who has been involved in this project almost from the beginning and has provided tremendous support; my colleagues in Water Development branch, who have also worked very hard on this project; my colleagues from Treasury who are here today and others in our department; and the private sector and the consultants who are here with us as well. I believe all of our people have acted, throughout the Meander Dam project, in a very professional, accountable and open manner. They have acted at all times with total integrity. While we haven't pleased all - and I accept that - I believe that we have shown that there is a project here that is feasible and we would like to see the support of this committee given to the project so that it can continue. Just before I finish, this is just a bit of colour and movement - it's a nice bit of technology that someone had so I thought I'd share it with you. It is a digitally created aerial flyover using aerial photography basically and it's really just designed to give you a visual impression of the dam itself. I should have had some dramatic music as well, I can see that now. I think that last shot gives you quite a good perspective of just how close it is to the Great Lake apart from anything else. That is the end of our presentation. We are happy to take any questions.

CHAIR - Okay, thank you very much. That has been both extensive and most informative, and again we say thank you for the on-site information which you have provided.

Mr HALL - My first question - through you, Mr Chairman - is perhaps an engineering or a geological-type question. Claims have been made that there is potential for upstream landslips with consequential effects on sediment and nutrient levels in the storage area. Would somebody like to comment on that one?

Mr GILMORE - Perhaps I can open up and my professional colleagues can fill in the gaps that I leave behind. Essentially the dam isn't going to change any of the activity that occurs upstream. I mean, that is clear. It won't have an impact on upstream landslips. However, the reverse will apply - when there is a large landslip upstream it will have an impact on the dam, and part of the design of the dam is about managing that impact, because the sediment would then move down and essentially be captured by the dam and remain in the inundation area. That is acknowledged in the engineering feasibility study and there are some provisions in that to account for that sedimentation effect. So in a sense whatever occurs naturally above the dam in the catchment will continue to occur. What will happen is the vast majority of the sediment created by those events will be

captured in the dam and the townships downstream from the dam will be less affected by the sedimentation effects created by those landslips than they would have been in the past. There was another component to the question that I have just forgotten. There was sediment and water quality, was it? Oh, the nutrients.

Mr HALL - Yes.

Mr GILMORE - The nutrient issue is going to be managed in the dam itself. Bill Lawson pointed out the multi-level offtake. That is really about water quality, to ensure that the water quality can be maintained at all times so that the water is taken from a vertical layer that provides good water quality so that you don't get water that has been sitting on the bottom, that remains cold. You can always be taking water off the top that is warm, aerated and oxygenated. So our view of the dam is that the water quality will be improved downstream from the dam and it won't be having a direct impact on the landslips above the dam.

Mr HALL - Yes. Let us just follow on from that. And there were also some claims made that the dam will prevent flushing flows which will affect the quality of the water downstream.

Mr GILMORE - Yes, that claim has been made. Our view, when you look at the hydrology over the 35 years of data that we have, and size of the dam, is there will still be substantial floods going down the river. In fact, I think over a two year period it will remove about one in three of the floods only, if that, so you are still getting a substantial flood going down the river each year basically. The dams will fill easily, based on the hydrology work that has been done, and that won't be an issue. The flushing flows will continue. They are an important part of that fluvial geomorphology study that we talked about earlier.

CHAIR - If I can just intervene there, you alluded, Mr Gilmore, to the fact that one of your other professional colleagues might like to comment on that landslip issue in terms of the geology or the engineering issues.

Mr LAWSON - Merely to make the observation that landslips are a function of geometry, the slope of ground, the nature of the underlying soils and lubrication of those soils - so as long as gravity is with us those risks are going to be there. There are many difficulties with landslips, but with a new landslip, the difficulty comes from knowing when it might happen. There are lots of slopes all around Tasmania which are known to sit on the verge of landslip. Until the event occurs you do not know. It is a very indistinct business. So to claim that something is going to happen is a pretty tenuous argument because of the variables there. You do not know, until it does happen. That is just a general comment about landslips.

CHAIR - So is it a reasonable assessment that this particular project will not contribute to the possibility of landslip?

Mr WYBURN - As a generality, I think you would have to say that it is unlikely. To follow on from what Bill has said, landslides tend to occur if you have soft material which is on a relatively steep slope. It tends to occur around reservoirs, particularly if the level falls rapidly, locking in the residual water pressures in that soil. My fleeting acquaintance

with this particular site is that where the ground is soft tends to be on fairly flat slopes - in other words, where there is deep weathering. Where it is steep it tends to be rocky with very little topsoil cover. The pattern of operation of this reservoir is likely to be such that there will not be extremely rapid rates of fluctuation. As a general observation one would say that reservoir-induced landslides around the perimeter of the pond are fairly unlikely - and that is really as far as one can go.

Mr HALL - Just another question. This one is probably more with a treasury focus regarding National Competition Policy. There have been some claims made that there could be some contravention of National Competition Policy and COAG water reform in regards to this project. Would anybody like to comment on that one?

Mr GILMORE - I will happily field that one. The Government is obviously committed to the COAG water reforms and the National Competition Policy principles and this project is being considered with all of those issues in mind. We have done quite a lot of work over the last 12 months looking at some of these aspects, knowing always that we would have to meet that National Competition Policy hurdle. Our view is that we will do that and do that easily. Basically, in very broad terms, what we have to show is that there is a broad community benefit that is being met by the Government's contribution to the project. We believe that we can show that there is that and that the project will be fully supported by the NCC when it comes to consider those matters. But we are doing that in a very open way and we are also in regular contact with the Auditor-General here in Tasmanian, who is also looking at those same issues. So we believe that we will meet those conditions and when the assessment is done by the National Competition Council we do not think that we will have any problems at all.

Mrs NAPIER - I have couple of questions. A number of times we have been referred to the fact that the Hydro is putting $2 million towards the total cost of the project, but the documentation that we are provided with indicates that that is really not an issue in today's considerations. Can we confirm that the Hydro is going to put $2 million into the project, given that we are also talking about the financial viability of the project?

Mr GILMORE - That is true. It is always difficult in a project like this with a number of elements to know where to draw the various lines. Essentially, the difficulty for us is that Hydro Tasmania are making a totally commercial decision. 'Do we want to be there? Can we make money out of being there? What is the impact of the Meander dam on our current electricity assets, notably Trevallyn in Launceston?'

The State Government took the view early in this project that it would be worth canvassing with Hydro Tasmania whether they were interested before they went and sought interest from other parties and the reason for that was at the end of the day there has to be an agreement between Hydro Tasmania and the proponent of the dam from a water licence point of view because at the moment Hydro Tasmania are the holders of the licence for water in this area, There is also an impact of the dam on Trevallyn and the only people who could really understand what that impact was were Hydro themselves. So Hydro have looked at this from a commercial basis, they have looked at the impact of the dam on their assets at Trevallyn and they have also looked at it from the generating capacity of this station associated with Meander Dam.

The reason that we have taken it out of the project from a practical point of view but left their $2 million contribution to the project in is that really reflects how much value the Hydro see in the project overall. To them, after they have covered their construction costs and what have you, they see the value of the electricity in commercial terms at about $2 million. We have an agreement with Hydro that that $2 million is on the table. The actual number hasn't been finally signed off yet and nor has the formal agreement been signed yet but we do have an agreement in principle with them and it will be at least a $2 million contribution that they make.

Part of the confusion that surrounded this and the reason we have tried to exclude it because of this confusion is that when Hydro Tasmania's consulting engineers looked at this project they came up with the mini-hydro configuration that maximised the amount of electricity that was generated and that involved having two machines, one of them quite a bit bigger than the other and they were going to manage the water in the reservoir to maximise the amount of electricity that could be produced. When Hydro's business development people started looking at this from an investment point of view they actually took a different tack and they decided that the actual investment that they would make in the larger maximum production unit was not a good investment because for a large proportion of the year at least one of the machines would be standing idle so they went and turned the analysis around and said, 'Okay, what is the best commercial benefit we can get out of this amount of water coming through?' and so the proposal that we've briefly sketched out today of one machine to a maximum of 5.5 cubic metres per second of flow is really based on their maximising the commercial benefit to Hydro Tasmania and we have made no secret about any of that. It is just that it has meant that some people have been confused between the two proposals.

Now, Hydro Tasmania's business proposal is their commercial risk. They will be undertaking all of the investment. There will be no Government funds required. They will, at some point, present the Government with a cheque for $2 million plus a little bit and there will be formal agreements signed but how much that mini-hydro is going to cost them and how much they are going to spend on the project is really a commercial decision for them. As we understand it, it is also quite a sensitive commercial decision for them, given the national electricity market and given the Basslink connection and their commercial interaction with other electricity marketers on the mainland. They're keeping their commercial business to themselves and we think that is quite right but the agreement with the Government is on the table and that is that Hydro will make a contribution to the project of at least $2 million.

Mrs NAPIER - And is it envisaged that the power generation would be as a consequence of normal river flow that would be released pretty well all the year round?

Mr GILMORE - That is right. The way the dam will operate is there will be water flowing through the dam at all times and in the DP and EMP we have given what we consider to be the environmental flow regime that would occur. That essentially sets a minimum monthly flow for each month, so it's obviously lower in summer than it is in winter. Those flows will be matched by the operators of the dam and that water would all flow through the mini-hydro station and be used to generate electricity. During the summer period, the flows will be a little bit higher than that because the irrigation water will also be released, but that will also be released through the turbine and therefore will generate

electricity. So electricity will be generating on a day-to-day basis using the flows that have been released from the dam.

Mrs NAPIER - Further to that, where you made a reference even then to the impact upon Trevallyn power station, what impact is this project likely to have on, for example, the water-holding in the Trevallyn dam and the operation of the Trevallyn power station, given its current modus operandi?

Mr GILMORE - As I understand it - and again this is commercial modelling that Hydro have done as much as anything, so they haven't shared all of their secrets with us - from the modelling work -

Mrs NAPIER - It would unusual if they did.

Mr GILMORE - that I've seen, they've got a hydrological model for the whole Trevallyn catchment and they have run that model utilising the data that we've created for the Meander dam. They've said that overall, with the mini-hydro and with the additional irrigation work, they don't think the operation of Trevallyn will be affected. What will happen is there will be a change in the inflow out of this part of the catchment into Trevallyn, but that is still offset by the commercial benefit associated with the mini-hydro. If you think about it in intuitive terms, what's happening in this valley is that there will be an additional 15 000 megalitres of water taken out that would otherwise have flowed into Trevallyn, and that will be used for irrigation. There are some other swings and roundabouts that are accounted for as well, but at the big-picture level that's what's happening. They will be able to use that flow for electricity generation purposes to offset the loss as well, but there will be a net gain in electricity overall.

Mrs NAPIER - A net gain. The other question I had was in relation to the karst. There is a reference here to risk management, and it talks about the kinds of questions that might emerge in terms of leakage and the impact of this dam upon the karsts and underwater formations that flow from this area. Can either Mr Lawson or you tell us a little bit more about that and how you assess that risk?

Mr LAWSON - The Huntsman Saddle area is the area of greatest concern in the sense that the top surface level is driven by the landform that we drove out to and looked at. The distance from the surface down to solid rock represents a zone in which leakage could occur. However, the terrain is very flat and hydraulic gradients are such that it is not very conducive to leakage. However, one of the approval conditions from the ACDC approval for the dam is that there be a monitoring regime set up in that area, which is established before the dam is filled, to understand the ground-water flows in that area before the dam is filled and then afterwards, and that that be undertaken by a competent and independent body, I think it says, to understand and report on that so that any such monitoring is a condition of the approval.

Mrs NAPIER - So it is mostly the Huntsman Saddle area that is associated with that?

Ms LAWSON -As we have said, the potential leakage under and around the dam, Ron is best to take this question, is an area in which grouting is likely to occur as part of the construction process. Do you want to pick up on that Ron?

Mr WYBURN - All dams leak but the amount of leakage ranges from something too small to see or measure to something that would concern you. On good foundations or less than good foundations, if there is concern about leakage around or under the dam then you drill a lot of holes into the rock and you pump in a mixture of cement and water and sometimes sand at very high pressure which finds its way into joints and hopefully seals them all up. Leakage around the dam is something that can be investigated and largely avoided. What little might still occur is really of no great consequence in relation to karst phenomena. I am not personally familiar with the geology of the area, but I do note that there is a reference in one of the geology reports to the fact that there are no known areas of karst typography in the vicinity of the dam site and storage area. In the Huntsman Saddle area there are interbedded layers of a calcareous nature which could conceivably provide a conduit for water, but on the face of it there would not appear to be any significant loss of water or consequential effects.

Mrs NAPIER - So whatever leakage there might be, I appreciate the comments that Miss Miller provided the forum, whatever leakage might occur can be blocked?

Mr WYBURN - Yes. You would first monitor it and ascertain the cause and then there are measures by which it could be prevented or largely so. From looking at the typography of the Huntsman Saddle area it would appear to be particularly indicative of potential for large-scale leakage from that point.

Mrs NAPIER - Another question that I wanted to follow up was how quickly were you expecting this dam to fill? You were talking about taking it slowly in terms of vegetation removal in order to protect as much as possible the native habitat or the native animals, but one flood every three years is going to fill it up pretty fast.

Mr GILMORE -No, I suppose the difficulty here is the terminology. Essentially the river floods every year and I perhaps should have included in the material an indication of the flow; it is obviously so variable. In a typical year the dam will probably take two to three months to fill, but on another year one rainfall event could fill it. It is a moving feast in that way. The idea with the progressive removal of the vegetation is obviously to stay ahead of the water but it is really to give those animals a chance to move out without being stampeded. Again, it is really going to be the nature of that particular season and how the rains occur and so forth and that will have to be managed at the time.

Mrs NAPIER - One final question, Mr Davey, about some of the information that you provided in this report on page 15 and 16. Where you came up with that net present value analysis; did I hear you say that it was done over 20 years?

Mr DAVEY - A 20-year life. I will just check whether it was 20 or 25.

Mrs NAPIER - The same figures are on our table that you had up on your screen but I just wanted to clarify that it was 20 years.

Mr DAVEY - Yes, 25 years.

Mrs NAPIER - Where you indicate that, on the same page - page 15 - up near the beginning of that, he indicates that the value of additional farming income would be estimated at $11.1 million for a net farm benefit of $4.2 million - I note that that's per annum. What

is the current farm income in the area of those farms that were used as part of the analysis? And what percentage increase would that be?

Mr DAVEY - I don't know that figure completely but if we look at the figure just above the one you're talking about that relates to 5 000 megalitres of irrigated agriculture.

Mrs NAPIER - So the recovery of farm income lost, that refers to 5 000?

Mr DAVEY - Yes, that relates to the 5 000 megalitres; the first 5 000 megalitres gets us back to where we were having taken away 5 000 megalitres for environmental flow.

Mrs NAPIER - I guess what I'm interested in just as a layman's question; what percentage increase in agricultural product worth is likely to be generated in the district as a consequence of accessing additional irrigation, not taking into account compensation for loss of environmental flow?

Mr DAVEY - I don't know exactly. What I was trying to get at here was that that bottom figure, the $4.2 million, relates to 15 000 extra. There were about 7 000 megalitres used currently in the area. If we say 5 000 is about $1.4 million, irrigated agriculture then would be something between $1.5 million and $2 million. So we are talking at least a doubling or a tripling of current irrigated agriculture.

Mrs NAPIER - So you're saying it's safe to say that we're going to double the amount of irrigated agriculture in the region?

Mr DAVEY - Probably triple because we're going from something like 7 000 megalitres of water used there at the moment down the actual river itself, to something like 20 000 megalitres.

Mrs NAPIER - I will ask this question although I think Ms Miller probably explained it to me. If a lot of top soil up there is reasonable quality top soil and I have no reason to think that it mightn't be given the grass that seems to grow in some of this soil. If it is reasonable quality top soil, what's the argument against removing that and at least using that in more appropriate landfill situations?

Mr DAVEY - Sorry, the topsoil -

Mrs NAPIER - Saving the topsoil rather than leaving it under the water.

Mr LAWSON - In the inundation area?

Mrs NAPIER - In the inundation area. I have seen it done before with dams. As I understand it the argument is associated with water quality but I thought maybe after 12 months that would settle itself down anyhow. It seems to me a little silly to leave all that good dirt in there as there's always a demand for good quality topsoil.

Mr LAWSON - Through you, Mr Chairman, if I were looking at that I would be doing some numbers on what it was going to cost me to win that material. It's not easy going.

Mrs NAPIER - It is a potential part of the project -

Mr LAWSON - My intuition would tell me it would be very unlikely to be economic to win it and move it, just from an earth moving point of view. If you can pick up material and move it to where you're going to move it in one action that's a goer, that can work out financially. But once you've got to load it and you've got to move it and then you've got to put it somewhere else and spread it, it gets to be very expensive. Farm dam construction for instance is made economically feasible by the use of earth scrapers, where it's a single operation with one piece of equipment. Whereas if you get onto say road jobs, where you've actually got to dig some material, load it on a truck, cart it and then spread it somewhere, it runs away.

Mrs NAPIER - I was thinking of using scrapers.

Mr LAWSON - But that would not be scraper country there. Nobody would say it wasn't feasible but it would -

Mr GILMORE - Can I just turn it around a bit? There is no precluding that occurring at all and the only difficulty, apart from the economic ones that Bill has highlighted, is that it is actually in the pasture area where some of those Aboriginal sites are and so we'd have to be very careful about where that came from. But, certainly, it's not precluded.

Mrs NAPIER - Okay, so it's not precluded.

Ms HAY - Could you just explain the purpose of the second coffer dam because I don't quite understand. The first one captures 6 000 megalitres, the next one 37 000 -

Mr GILMORE - Sorry, that's cutting too many corners with my language, I'm afraid. The coffer dams above and below the dam are solely for the purpose of keeping the water away from where the construction is occurring and I think the downstream coffer dam remains but the upstream coffer dam would be removed after construction is complete. The point I was making about the height of the dam is that the actual dam itself, the water that would be captured behind the first 25 metres of height in that wall, would only be 6 000 megalitres. So you build a very high wall and not capture very much water. The next 25 metres in height on the dam wall is really where the storage capacity is coming from and an additional 37 000 megalitres is captured there, so it's really just a function of the site behind the dam and I'm sorry that I've caused that confusion.

Mr LAWSON - Just to make sure, the bottom coffer dam is to stop the water coming back upstream from downstream. If you're going to start digging holes it gets deeper and the water wants to go there so it's a case of isolating the construction zone.

Ms HAY - Okay. Most of my other questions have been asked and answered sufficiently.

Mr BEST - Just a couple of quick ones. You mentioned the study, Jeff, about the quoll and the relocation or reconstruction of habitat. I just want to hear that you believe that's going to work and what the risks are in relation to the quoll because I think we're going to hear a lot about that. I just want to hear from the expert studies that you've done in relation to that situation.

Mr GILMORE - The quoll is quite an interesting and complex animal to study and, essentially, the difficulty for us has been that there is no consistent picture of how they're going to behave given a different set of circumstances. What we do know about them, however, is they are exceedingly territorial and they fight like crazy to protect their territories and that involves injury and death basically. If there are too many animals for the size of the territory then animals will be injured and die and, in effect, that is the natural set of circumstances that occurs when food is short, there's a drought, a fire or what have you. What we're going to do is we're going to create some of that tension but all the specialists agree that there's no point in capturing the quolls that are in the inundation area and then relocating them somewhere else because all you do is create more tension and more fighting and probably more injury and death.

Our approach has been based at a population level, so if we assume that there's a population of quolls in the area what we're aiming to do is really mimic what has occurred over the last 10 years since the site was first cleared and, that is, to create a complex habitat which we now know is ideal for a quoll hunting. The quolls will still live in the surrounding forest areas, that is where their dens will be, but what we'll attempt to do is mimic the habitat that's been created following that clearing. So we've got a model to follow and we think by doing that that we will see over time that the population increases as the hunting becomes more -

Mr BEST - Could you just summarise how confident you are that this would work?

Mr GILMORE - I am very confident that we will be able to manage the quoll population. Whether we can put tags on individuals and track each one I am much less confident about but over a 10-year period I think we will see the quoll population recover.

Mr BEST - And the same thing with the epacris?

Mr GILMORE - The epacris is a much more complex issue because of the way it grows and where it grows. Our view is that the impact on the epacris will be manageable and what we will end up with is a robust population of what is already a rare plant. They will not be everywhere that they are now but they will be there and they will be thriving.

Mr BEST - Just a final one to Bill: we have quite a detailed report on all the topics that you had to examine, so I just wonder if you could summarise a brief overview of how you approached the project, looking at it from an objective point of view, as to whether all of the issues are sustainable or whether they are not. Did you have the view that you would like to see the project work or was it a view of looking at this whole thing and saying, 'Well, can each one of these particular topics be resolved?'. I am just interested what the approach was.

Mr LAWSON - If I understand your question - and tell me if I have got this wrong - you are really asking about the whole project from an engineering viewpoint and the constituent parts and that they all stick together?

Mr BEST - Yes, what the approach was.

Mr LAWSON - Any engineering project must first of all be assessed from the point of view of the whole because a chain is as good as its weakest link. In that sense there is no

problem with this project, this is not particularly complex. We have taken specialist advice in the area of the dams and the levees and the like and that is why Ron is over from our Melbourne office - he has been over before and we have been conferring with him.

I think it is also noteworthy that the 2001 study was done by the Hydro and they are globally acknowledged as world players in dam engineering and the like and Ron would confirm that too, that their reputation is global.

In that sense we were coming into this project in our advisory capacity - and that is all it has been - with a backdrop of very high integrity work being done and we have examined it from our viewpoints holistically and individually. In answer to your question, in that respect we are very confident.

The second thing I want to say to you is to take you back to the project delivery mechanism where this is to be design and construct. Remember we talked on the site about how that works where the constructor has a very strong influence over the designer to make sure that how he wants to build it is designed into it so he is not given something that gives him big problems. That is a detailed process obviously and what we are looking at here is conceptual. It is normal in the detailed design process in any engineering project, whether it be for an aircraft or for a road or for a dam, to hit a lot of specific technical issues and have to deal with them. I guess that is where the training and experience of technical people comes into it where you are confident when you go into a detailed design process of being able to meet and beat those challenges. This project would readily fit in that sort of expectation level.

Ms HAY - I am sorry, there is just one more Jeff. Has there been any fallout regarding the obtaining of the fire permits for the Aboriginal sites that will be inundated?

Mr GILMORE - No, there was not. We started communicating with the Aboriginal community right at the beginning of the project and, because these five sites had been identified on the database, we knew there was a potential for sites to be around and we wanted to make sure we knew where those were. We started, as I said, communicating with the Aboriginal community very early on and they were quite supportive of the process that we were going through. There was no fallout at all subsequent to the issuing of the permit. I think it would be fair to say that the sites don't appear to be particularly significant nor large but they are there and we now know where they are and we have a much better handle now on the significance of them. It has been very cooperative.

Mrs NAPIER - Could just follow up with some questions on the financing options? The $55 per megalitre figure I presume would have been premised on the cost of the project, which is set at $24 million, is that how that figure came up?

Mr DAVEY - The figures $55, $75 and $110 came up as a range of options which we put to the farmers in the area as to how much water they would want to take given each of those prices.

Mrs NAPIER - Is it your estimate that, given the range of financing options that have been looked at in this paper, that $55 per megalitre is going to be deliverable to the farmers? What confidence factor do you have that it will be delivered in the vicinity of $55?

Mr DAVEY - That was based on the work by Deloittes which said if there was 22 000 megalitres of demand and the price was $55, the investor would get a return of about 11 per cent. At the higher water price and lower demand, the return was about 9 per cent. So, I guess, that initial conclusion was based on the fact that hopefully there would be financiers out there - and they might in fact be the farmers themselves - who were prepared to take a return of somewhere about 9 to 11 per cent.

Mrs NAPIER - In here it said somewhere between 9 and 20 per cent is quite often expected. I think superannuation companies quite often look for 10 or 11 per cent, don't they?

Mr DAVEY - Yes. We are hopeful and I guess the proof of the pudding will be when these envelopes are opened - the submissions on the financing. Basically, the conclusion would be that if they were prepared to accept a return of around that level we could deliver water to farmers at a price that we think they would be prepared to pay.

Mrs NAPIER - So that would be relying upon maximum uptake of available water?

Mr DAVEY - Yes. As I say, it has to be probably in that 15 000 to 20 000 megalitres uptake, remembering also that the total that could be delivered is 24 000 megalitres. So over time there is scope for increase over and above that. I think 15 500 of that megalitre total demand was close to the river. There would be a high surety of farmers actually taking that up. Some of the stuff to get it up to 20 000 megalitres or over could be away from the river a bit, but the is a decision farmers might have to pump themselves away and that is another cost. In that second survey, there was something like 7 000 megalitres that people said they would get away from the actual river itself. So effectively we told them they would have to pay that price down the river, plus a price to get it away to their own property.

Mrs NAPIER - I was noticing, in relation to the Government's contribution, we have $2.6 million, I think, from the Commonwealth and $7 million from the State. On page 19 of our submission it says that the State Government is likely, if the project becomes self-supporting, to seek to receive a commercial rate of return or to partially exit its investment, enabling it to provide funds to be utilised in other future projects. Is that part of the formula of whether this project is financially viable or not?

Mr DAVEY - No. The work on the financial viability that we did initially was that that money would stay in there. I guess, when the submissions come through, the Government would look very favourably on a submission that said, 'We can deliver water at a price that we think will get uptake, and we think we can actually do better than is stated here'. Perhaps then there could be some return to the Government. The report that we did did not have money being returned to the Government.

Mrs NAPIER - It specifically refers to the State Government being interested, if possible, in withdrawing its investment. Is the Commonwealth money a grant, or is it a long-term loan? What is the status of the Commonwealth money?

Mr GILMORE - If I could just add to that. Essentially both Commonwealth and State contributions are grants. What the State has said, and it was in response to a number of people who were interested in financing the project coming and talking to us, was that

this was one of the options being used in a number of projects around the Australia, where after the project has started to generate good cash flows then some of the government contribution could be paid back in terms of a profit-sharing arrangement or something like that. There are different models for that, and we have not explored any of those in detail with anybody, but they have been put on the table by people who are interested in financing the project, so we did not want to run away from that. The Government has said that if there is money that comes back it would be used in further water development projects, so they have made that quite clear as well. But, as Lance said, this will be one of the issues that the Government will consider in the expressions of interest and the tenders. If the financing is capable of sustaining a profitable operation and that profit can be shared, then I am sure the Government would like to receive some money back that it could then plough into another project.

Mrs NAPIER - Thank you. But the $55 per megalitre to the farmer was calculated on the premise of both the Commonwealth and State money being grants and staying in the proposal?

Mr GILMORE - That's right.

Mrs NAPIER - You were talking about the seven proponents who have put forward expressions of interest, which have not yet been opened and looked at. Is that question of State government funding one of the criteria that might be considered? You said it might be looked at favourably. Is it one of the criteria that would be considered?

Mr GILMORE - I am not party to the assessment process at all, so I can't answer that, but there will be assessment criteria developed to assess those expressions of interest and tender.

Mrs NAPIER - Are they likely to be released publicly before they are actually applied?

Mr GILMORE - I can't answer that because I don't know. Our part of the job was to hand that over to someone else, and I was rather pleased that that's the way it went. If perhaps I could just step back from the specific a bit, a number of people have been concerned about the commercial viability of this project and the way we have gone about trying to show that, and I suppose one of the problems is that there is no linear sequence of questions and answers that you undertake, and then suddenly out of the bottom pops the right answer or the wrong answer as the case may be. Essentially what we have done is assemble half to two-thirds of a jigsaw puzzle with gaps all over the place, and I am not even sure that in an economic study point of view we have covered everything. We have surveyed farmers, we have spoken to them, we have gone out onto their farms with them and tried to assess what their water needs are. We have done a lot of analysis of the farming enterprises and how they can make money. The intangibles are always the human dimension. All our analysis shows is that $55 is still cheap water, but if you go and ask any farmer in Tasmania they will tell you that $55 is expensive water.

Mrs NAPIER - Of course it is!

Mr GILMORE - To the guy who just spent $3 000 a megalitre of water to finish off his crop of wheat up near Dubbo or something, $300 is cheap, so it is very much a human dynamic that you have to try and assess. Certainly $55 is at the upper limit of water

prices generally in Tasmania, although there are farmers in the South East Irrigation Scheme paying three times that, but what we have pitched $55 at is something that the farmers are not running away from, basically, because at the end of the day it may be that they have to pay for it through a water price, but it is one that enables all the agricultural activities that are likely to take place in the area to go ahead and be profitable. We know that. That is not to say that every individual farm will be profitable, but we know that farming enterprises can be profitable at that level, and in fact very profitable for some farming enterprises. So we have built up this picture of the economic viability, and we are pretty confident that that is the way it will unfold.

The other difficulty in dealing with farmers and water prices, though, is that farmers typically don't cost every element of water, and we are actually in a position to cost the water delivery to the crop, whether it is grass or poppies or whatever it happens to be, and we can tell farmers what the cost of water onto their crop will be. Typically farmers don't do it that way. They worry about the price they hand over for each megalitre of water to the department or to someone else, but then they spend hundreds of dollars pumping it around their farm and they don't even consider the pumping cost as part of their water cost. So what we have had to try to do at the same time as developing this picture of economic viability is undergo a bit of education as well with the farmers to make them understand that at $55 agricultural enterprises are extremely good, and it is not something to frighten you off. Indeed, at $110 there are a whole range of agricultural enterprises that could occur and still make a healthy profit.

So it is that sort of mix that we have been trying to sort of flesh out, and it does give some people concern when we do not have all of the jigsaw puzzle there in front of them at one time, but it is the evidence that is mounted up as we have gone through our studies that has convinced us that the water demand is there to make this achievable, and the price that the water will need to be delivered at. That is part of the commercial risk as well that whoever invests in the project will have to work out for themselves. So we are confident that we have a package that people see as attractive. Now they have to go away and do all their calculations and assess how valid they think our material is to their commercial judgment.

Mrs NAPIER - It is fair to say, though, given that we are using this figure of $55 a megalitre, you may be right - sometimes they pay $200 a megalitre. But given that 60 per cent of your people surveyed were interested in it for dairying, they're not going to spend much more than $55 a megalitre in dairying on water. It is not really viable. In fact I usually hear the a figure $50, but I accept that $55 is close to that.

Mr GILMORE - Yes, I hear the $50 figure bandied around, and then you go and talk to a couple of dairy farmers and they tell you, 'Oh yes, but we could do something else'. Lance's work does spell some of this out. A lot of it will depend on how much infrastructure is already on your farm. If you have to go out and buy all your infrastructure again, then a lower water price will obviously be much more favourable than a higher one, so those sorts of issues are also taken in. To people who've come to us to talk about the project and investing in it, we've given them all this material and we've said, 'Look, this is the material that's gone to farmers. Here's the survey form. Here are the responses we've got back. They respond at $55 and at $110 they don't, so don't come into this thing thinking you can start off with a water price of $200.'

The other sort of interesting anecdote about one of our meetings with the farmers is that by definition the farmers are going to try as hard as they can to get the price of water to zero. I mean, that is their job, if you like, to get it to zero, and the investors' job is to get it as high as possible, so they are going to have to meet somewhere in the middle, and most of the people that I am aware of that have been interested in putting in an expression of interest have been out and talked to farmers as well to verify some of this for themselves. So I don't think there is going to be any huge gap in there. Everyone knows the information, and certainly for the farmers themselves, $50 was a big hurdle for them when we first started talking about those numbers and we accept that.

Mrs NAPIER - You're right, we are talking about the gold of the future, aren't we?

Mr GILMORE - Absolutely.

Mrs NAPIER - If we are responsibly looking at a particular project, we need to know that the Government does not intend withdrawing its money pretty early on and putting the price up. Not that they would, of course, Mr Chairman.

CHAIR - But I think the points have been made that that is not the intention, and indeed the responses by Mr Gilmore have been very concise in that the surveys have been conducted and the responses have been given in relation to the questions asked and therefore the viability confirmed as far as you are concerned, Jeff.

Mr GILMORE - I am really positive about the viability. The current drought on the mainland is just highlighting how valuable water is. I think what our work is showing is that using current thinking in farming, whether it is dairy, poppies, fat lambs or whatever it happens to be, you can mount a solid case that this project is financially viable, and we strongly have that view. We think out in the future, though - in 10 or 15 years' time. That is why the superannuation funds are sniffing around, because they see the community value of water changing quite dramatically over that time, and this is typically what has happened in the south-east of this State, where what originally started off as an irrigation scheme where they fattened a few lambs and grew a bit of barley or something, is now in high-value horticulture where millions of dollars are being invested and where the absolute security of your water right is the critical point, and the actual cost of the water is pretty much irrelevant in the scheme of things.

CHAIR - Members, and particularly the delegation, thank you very much. It has been a very extensive briefing, and for the benefit of members we have about 20 minutes maximum. We do have to reconvene here at 2.30. We have a very heavy program this afternoon, so we will need to start at 2.30, not a minute after, so please be back and ready to go at 2.30. Thank you very much, Mr Gilmore and your team.

Mr GILMORE - Thank you.

THE WITNESSES WITHDREW.

MR RODNEY STAGG AND **MR LLOYD EVANS** WERE CALLED, MADE THE STATUTORY DECLARATION AND WERE EXAMINED.

CHAIR (Mr Harriss) - Thank you very much, gentlemen. You were due on at 6 o'clock, but we did take an opportunity at about 5.40 p.m. to pick up on some issues which we needed clarification on following evidence earlier in the day. So we are in your hands, so please go ahead and make whatever contribution you feel fit.

Mr STAGG - Thank you. First if I might outline who we are, and the importance that we see of community values in this proposal. The Meander Resource Management Group is a member branch of the Tasmanian organisation and also the national body. We have 147 members in the Meander Valley of whom 90 per cent would actually live in Meander.

I am going to speak on the submission - mainly the third paragraph. The Meander Dam will be of significant social and economic benefit to the Meander Valley. It will increase the amount of renewable water available for agriculture and domestic use. The construction of the dam will see a major increase in employment in the region and will bring long-term sustainable growth to the district's primary industries. I refer in that to the Meander Valley's Directions and Issues Paper from February 2002, to realise the importance of agriculture and forestry to this municipality. It says this, under 'Employment': 'The Meander Valley offered a total of 3 918 jobs, with the most prominent employment sectors being agriculture and forestry (843 jobs), comparing that with manufacturing (375), education (277) and the wholesale trade (202)' and I will come back to those figures.

The current situation in the Meander Valley is that there was a huge investment by landowners in ensuring that their properties could be made viable. That investment has taken a long time and it has also taken a lot of money. In that investment there becomes a social value attached - both to the local farmer himself and the local community, and the flow-on effect to the whole Meander Valley. I think it is important to realise that there is more to the dam proposal than just a number of directions coming within the departments to do with flora and fauna habitat because people are an important equation in all of this. The flow-on effect can be achieved by giving the landowner a continued means of investment. That continued means is currently water. The changes in irrigation practice over the last 20 years have certainly shown an increased production level but also an increased investment level. The potential for growth is there and it has been there for quite some considerable time. A number of farmers are using the water that is available at the present time. Looking at the job proposal of 843 jobs currently, what would be the position if double the amount of water was available to the landowners that are presently available for that water? If we have 843 at the moment, what is the potential over the next 10 years for the investment opportunities, the growth of the municipality and, above all, the investment proposal which flows to every other person in the sector?

I will take a local one in the Meander area. It started off as a family business with the father and son. The father retired and the son and his son are on the property. He has invested $500 000 just in his dairy alone. He has invested heavily also in acquiring

another property for investment purposes. The Meander River flows between two properties, both owned by him. He has invested heavily in putting a bridge across the river. At the present time he does not want the water from it, but in three months' time he could well be restricted so that he has to draw his cows off two months or three months before he should be able to. He requires the water and the opportunity is there for the continued flow which will come from the building of the dam to increase the production on that farm - as it would with most farmers right from Meander through to Hadspen.

We like to think of investment as coming from what we can already see. I think the potential for this irrigated land, and what the flow effect will be, we cannot put a price on. What we do know are these figures that have been made available from irrigation schemes throughout the State. The prime example of that is no doubt the Coal River Valley. To go down and see that now, and remember what it was 15 years ago, you would not have thought it possible to grow the crops that there are down there. That is what I think is the biggest potential for this municipality. Not what is being produced here now, but what could be produced if we had the water supply. Again, it comes back to investment, the social value for that investment and the flow-on effect to the whole municipality. The growth potential there - as I mentioned before - with 843 jobs already created with agriculture and forestry. Could that double in the next five years? Could it triple in the next 20 years? And what could the investment value for this municipality be, and the flow-on effect right throughout the whole State?

I finish there as far as my submission is concerned. I will hand over now to Lloyd Evans, one of our members and also a local farmer, to talk on what his investment is and how he sees the future.

Mr EVANS - As a representative from the TCA on the Meander Catchment Coordinating group, I would just like to stress that during the last three years we have had a number of meetings with senior staff from the Land and Water Management branch of the Department of Primary Industries. We have tried to get through to them what a devastating effect the environmental flow that they are proposing would have on cropping and dairying, on people who are already irrigating out of the river. The least that they require is 50 megalitres. At the present time we are restricted in irrigating, after the river drops, to 22 megalitres. To increase that flow to 50 megalitres you could say that after Christmas there would be no irrigation water available out of the Meander unless there was a flash flood or something like that so that the effect on dairying alone would devastate the industry. It would just wipe it out practically - it would be similar to what's happening on the mainland now with this drought. That effect would be similar to a drought on the dairymen who are operating off the Meander.

I have a letter here from Minister David Llewellyn stating that they are reviewing the environmental flow requirements but we haven't got any guarantee. And as far as the farmers of this district are concerned, the only answer we can see is the construction of the Meander Valley dam. It is vital that this should go ahead. As Rodney was saying, millions of dollars have been invested over the last 20 years in new dairies and irrigation plants and farmers have been able to increase production probably threefold in that time. If this doesn't go ahead and they imply this environmental flow that they're looking at we'll be wiped out and the money we've invested will be down the drain - there's no doubt in my mind that is exactly what will happen.

I think it's vital that the dam goes ahead. As Rodney said, there are many farmers on the river now who haven't got a water licence and with the installation of the dam, with the extra water that's going to come on line, it's going to boost production, boost employment in dairying, poppies and cropping - potatoes and everything in that line - there will be a boom. That's how I see it: this dam is vital for the Meander Valley, for the residents and for the youth. We're struggling to get employment for the youth in the area and I think this is the answer. That's all I 'd like to say on it that I feel that it's a vital thing that the Meander Valley dam be constructed and give the opportunity to the people in the Meander Valley to push ahead and see a real future.

Mr STAGG - As a community group we speak passionately about our community. We respect our community and we would like to see it grow. I just leave you with three sentences: Meander Valley needs to grow; the potential is there to grow and the Meander dam has the capacity to achieve both of them.

CHAIR - Thank you very much.

THE WITNESSES WITHDREW.

JOHN TABOR, MANAGER AND **WARWICK HOLMES**, BOARD MEMBER, MEANDER VALLEY ENTERPRISES CENTRE INC. WERE CALLED, MADE THE STATUTORY DECLARATION AND WERE EXAMINED.

CHAIR (Mr Harriss) - Welcome, gentlemen. Either or both of you are quite welcome to make a verbal submission to the committee. We have your written submission, of course, if you want to lead us through that. If you need to add anything to that, you are welcome to.

Mr TABOR - I will briefly summarise what you have in front of you and we will be pleased to answer any questions you might to put to us.

The enterprise centre submission is largely from an economic point of view, based upon the economy of the Meander Valley municipality as a whole, and on the individual farmers who will be affected one way or the other depending on whether the dam is built or not. Our submission covers two areas: one, the general construction of the dam and the effect it will or will not have, if it does or doesn't go ahead; two, the financing operation of the Meander Dam and how we see the necessity of it being locally operated by the community and irrigators themselves.

I think I might have heard earlier that if the dam didn't go ahead and if environmental flows did come in that things would stay as they are, but we don't believe that would be the case. We believe that the irrigation that is taking place at the moment will not continue on that basis if the dam isn't built. I think everyone has heard about environmental flows being brought into the river systems and that has seen a withdrawal of temporary water rights. If that happened without the dam being built there would be a significant reduction in irrigation within the whole Meander Valley itself. The economy of the Meander Valley would reduce dramatically. I will give you an example in a moment of how the fortunes of farming can affect that economy. If the dam does go ahead, at a very minimum - in fact it won't stay there - the irrigation practices that are happening now will continue but of course will improve or increase as well and give the capacity to increase. I think we have heard before there is around about 25 000 megalitres available for irrigation out of the total 43 000 megalitres the dam will hold and of course the balance of that is environmental flow which will improve summer flows and so on that you've already heard about.

I should say something about my background. I've been with enterprise industry management for two years. Before that I had 30 years with a major bank. Five years prior to taking up this position I was looking after one of the major banks, the largest for rural farmers that they had in northern Tasmania. So I do understand the economy of farmers, how they battle with seasons, prices and all that sort of thing; I understand how it all works through to a financial level.

When I took up this position two years ago the area was quite depressed economically and it was quite noticeable. The farmers had had quite a few fairly lean years. The town of Deloraine, in particular, the small businesses had turnover decreases for a number of years. As you are aware, this last 12 months or 18 months there has been a pick up in seasons and a pick up in rural prices, until this year when they started to go back down

again. It is no coincidence that the economy of Deloraine and the wider Meander Valley has started to, in my words, boom during this last 12 months and it's very noticeable. Empty shops have filled up, reopened businesses and a large part of that is because there's more money coming out of the rural sector. That's just to give an example of what will happen on a more sustainable basis if the dam does go ahead. If it doesn't go ahead we'll have spiralling downturn the opposite way and it will go right through to the local businesses. There will be empty shops and all that sort of thing - it goes right through the economy. Bear in mind that the Meander Valley is a rural based economy. A lot of other areas of income are certainly very important, it is certainly very important for tourism and others, but it really just puts the icing on the cake.

We feel that the community and the irrigators as a whole can certainly manage the operation. The options in running the project once it does go ahead will probably come down to two. One is that the consortium of local irrigators, which has submitted an expression of interest, will get up and be accepted. Alternatively, a commercial interest will come in and be allocated the operation of the project. That option does concern us because if that happens the farmers cannot go to another water source and buy water from somewhere else to get it a bit cheaper. It's basically a monopoly situation: when the demand picks up they will have no option but to try to pay the asking price or go out of business, change crops, change enterprises or do whatever.

If they have control of the operation through their own investment they will obviously need to pay enough for water to actually make the whole project work. One would think that it would lead to a slightly lower price that they would have available for further on-farm development. If a commercial interest did come in, of course they would take a profit and it would go out of the local economy altogether and there would be less money to stimulate the local economy. That is it in summary and I'd be pleased to answer any questions.

CHAIR - Thank you, Mr Tabor.

Mr TABOR - I should say that Mr Holmes is a board member of the enterprise centre and is a dairy farmer in his own right so he fully understands the implications.

Mr BEST - We had heard earlier today questions on the State Government's contribution and whether in fact it is a public works project. We have heard a fair bit already about it being very much a public project, but I am interested in what your views may be about that?

Mr TABOR - In regard to the public contribution, you mean -

Mr BEST - Yes, that it is an allocation of public funds.

Mr TABOR - and how it is treated.

Mr BEST - and the fact that the question was raised earlier; is it really a public project?

Mr TABOR - I believe that it would not need to be seen in that way. I think a lot of public money, in my understanding, was coming forward to virtually pay for the environmental flow which was going down the river, which nobody was going to use except the Hydro. I do not know if that is the right way to look at it.

Mr BEST - No, I am just interested in your views. That is all.

Mr TABOR - Obviously there is a large amount of water that will come down the environmental flow, in summer months especially, that is contained within the storage that is not there at the moment. When the dam has been built and is holding that water it is in the public interest to have that environmental flow there, so I would see, from a purely economic and commercial point of view - hardheadedness - that that is the payment for that.

Mr HALL - Mr Tabor, your submission talks about, and you spoke just a few minutes ago about the financing options and, of course, if the dam was built that is a process. You talked about the concern or you weighed up the local ownership aspect and the external commercial interest. Can I ask you then, what would be your view on a combination of both those? Have you thought about that at all?

Mr TABOR - I had not thought of it as such. I guess there would be a lot of issues that would have to be looked at. I would see that a combination would be desirable if there was not enough local investment available. That would certainly be desirable if that was the case. I still think that a local, if there was sufficient funds available, to make it fully locally owned, that would be the best result. There would need to be the right representation on the board for expertise and all those issues which would need to be taken into consideration.

Mrs NAPIER - I just had a brief question. What is the current price per hectare of good-quality land in this catchment area? Presumably there you are talking about stuff that is probably three, two and less than a four.

Mr TABOR - I will hand that over to Warwick in a moment but probably there is a small amount of some of the best land, some of the best red cropping-soil, in the State. Of course, that is way up there in price but a lot of other land is for dairying and so on, but Warwick is probably slightly better at this.

Mrs NAPIER - Maybe you could give me a price for good cropping land and good dairy land?

Mr HOLMES - I cannot do that for the cropping land. Good dairy land that is irrigated is probably about $1 800 an acre or $1 200 if it is not irrigated or no water.

Mrs NAPIER - And you are giving me acres there and not hectares. Can you give me an estimate on what increase in value it makes if you can deliver irrigation to that land?

Mr HOLMES - Probably about $1 000 to $1 200 an acre.

Mrs NAPIER - So that is almost double your value.

Mr HOLMES - Well, yes. On our property we are milking 450 cows at the moment. If we get the water that we are hoping to get we should be up to about 700 cows. We could not do it without irrigation and we have no more on-farm storage. We tried to get more on-farm storage but we could not get a water right.

Mrs NAPIER - You could not get a water right?

Mr HOLMES - No.

Mrs NAPIER - So you could not get winter fill.

Mr HOLMES - No.

CHAIR - Just to take it, if I can, Mrs Napier - do you have a temporary right which will be relinquished?

Mr HOLMES - No. I only have a water right for a winter fill for my dam which is 380 megalitres, but I could not build another dam and get a water right for it. We tried to buy the land next door; we could build the dam but we could not get the water as a winter take.

Mrs NAPIER - And of those farmers that are approximate to you how many of them would have on-farm dam storage site potential but have not pursued it?

Mr HOLMES - One neighbour would have on-farm water as a possibility; it is a very bad dam site but it is the only dam site. It is a small dam site and it is probably as good as no dam site, but we are getting to the stage that if we don't get a lot of water and seasons are getting drier we are going to be milking fewer cows and the economy is going to fall backwards. My dam site covers 24 acres and it is a very bad dam site because the ratio of water storage to the land value was just out of proportion, but the only way we could get a dam site was to sacrifice 24 acres. We really need a better water system or a wetter summer.

You will notice that Deloraine was very prosperous last year and it was prosperous because we had a wet summer and we could continue milking. We had better harvest of our hay and silage and all of our crops were just a lot better. If you could do that every year with irrigating water you would see the whole district from here to Launceston improve considerably because we have reliable water; it would make a big difference to the economy and what the area could produce.

Mrs NAPIER - And as a farmer are you able to afford $65 a megalitre for irrigation for dairy?

Mr HOLMES - We can afford $65; it would be about the most we would want to pay. From the meetings that we have had in our district, which is a small district, we feel that we would need to know the cost of the water before we get involved in this scheme. We are also concerned that if it is done by a private operator probably we will not be offered the water because they will want to make too much money out of it.

Mrs NAPIER - Say a cooperative did manage to develop the project, what would be a reasonable rate of return?

Mr TABOR - Are you are talking dollars per megalitre they are prepared to pay or can pay?

Mrs NAPIER - I was merely talking about what rate of return would be reasonable for the cooperative to make in order to be able to not only manage the existing water but maybe other issues that arise so far as water management is concerned.

Mr TABOR - Greater return on the funds invested or as a return on the particular basis?

Mrs NAPIER - On the basis of funds invested.

Mr TABOR - It's a difficult question. You could look at a lot of farmers and because of their individual circumstances it would be a different answer for each one. I wouldn't like to answer that. If the dam goes ahead there will be an increase in the water cost for farmers that irrigate, or irrigate with that water, and they know that and they accept that. The fact that they are accepting that says a lot, too, because what their future will be if the dam does not go ahead could be quite catastrophic. I find it difficult to answer concerning the margin because there are farmers who, at the moment, are extremely highly geared for borrowings, and others that own their farm properties, so there are different circumstances for each one. If the water cost goes up dramatically one lot might still get by and the other lot go out of business.

I would say that if the dam doesn't go ahead there is going to be a group of farmers, who are irrigating and getting by at the moment and largely relying on the flow in the river itself, who do not have a future if their current irrigation entitlements are reduced which we know they are going to be.

THE WITNESSES WITHDREW.

SANDY TIFFIN WAS CALLED, MADE THE STATUTORY DECLARATION AND WAS EXAMINED.

CHAIR (Mr Harriss) - We have allocated half an hour for both your submission and then questions, so if you would like to read your submission please.

Ms TIFFIN - I am just going to speak. I haven't written a submission but thank you for the opportunity to speak to you today. My background is that I have been working in the conservation movement and in organic sustainable agricultural now for most of my adult life and I am a resident of Meander. I live on the other side of the hill where the dam is going to be constructed and I am pretty acquainted with the area. I have great concerns about it; in fact my concerns about it have been so great I actually thought this was all a bit of a furphy, the whole thing. I have not actually gone as far as trying to mount a public campaign because we all felt it was so impossible on every ground that one could claim sustainability, that the dam would never get up. In fact I have referred to it as a plot from 'Yes Minister'; how long can you keep the facade going for various reasons.

If one wants to look at what sustainability means it is usually thought that there are three arms to sustainability: the social, the economic and the environmental. It doesn't fulfil any criteria as far as I can see. A preliminary comment I can't help making I suppose is that the Premier keeps talking about trying to make Tasmania the intelligent island and I am very sorry to say that this dam just shows that we are still stuck in the dam-mania stage of Tasmania, which I thought we got over some time ago.

As a veteran of the Franklin campaign I'd hoped that that would be the last major dam issue that we would have to fight. Of course, this is a completely different kind of a dam issue but the same principles apply; dams are not environmentally friendly and never have been. Anyone trying to claim that there is some environmental benefit to be gained from this dam is frankly talking through their hat. All around the world, United Nations commission on dams has pointed out this fact. Despite the benefits that are gained from dams with hydro electricity, irrigation, feeding people et cetera, the overall conclusion is that dams do not provide equitable benefits in society. There are many people who lose out, and the environment always loses out because you can't say that you can fix the environmental problems that we have created in the Meander Valley by creating another environmental problem. It is like saying to someone who is ill that we will just stuff a plug in your artery and that will fix you. It just isn't going to work.

If you want to be more specific, the Meander catchment - the reasons why it has the problems it has - has a huge amount of damage caused to the plateau. The reason why the Dunning Rivulet landslide happened when it did was because there is nothing to stop water just rushing down off the Western Tiers because there is 15 000 hectares of completely degraded catchment on top of the plateau down to bedrock. When it rains, as it does, with very periodic extreme rainfall events of some inches in some hours - I think the one that caused the Dunning Rivulet slip was something like six inches in a couple of hours. That is what they assume up on the plateau.

Then you go into the forestry area. Now, there is no mention of forestry anywhere in any of this documentation and it is just a complete shocking mistake. There is one mention

in the assessment document which is the one I was looking for, the one that has just come out, and it refers to the catchment being a little flashier than it used to be. Well, that is an understatement if ever there was one.

When Mike Sindersitch was doing a study on the catchment some years - it just hasn't seen the light of day yet - he took photographs and would come and tell me, 'Yes, there has been a major rainfall event; the water is full of turbidity'. There are huge erosion problems directly attributable to the recent logging that had gone on in the Huntsman area which is the area up behind the dam site.

There are lots of studies now to show that turning catchments into plantations reduces the water yield in the catchment by up to 40 per cent. This is work that has come out of the centre for cooperative studies on catchment from Monash University in Victoria and it's up to 40 per cent loss of water yield.

So what we're talking about is a problem that we've created. If the river is not performing as we would like it to perform for other purposes downstream, it's because upstream it has major problems. It needs major changes in forestry practices, it needs major rehabilitation of the catchment and then we might see a little bit more water in the summer.

My particular interest is in sustainable agriculture. The concerns I have I would like to mention further downstream. I think the whole economic and agricultural survey that's been taken is extremely lacking. It doesn't have any discussion of alternatives and this is what I want to talk about.

There's no point saying, 'Oh yes, we want to improve agricultural development in the valley; we want to improve summer flows et cetera and therefore the dam's the only answer'. It's not the only answer. There are lots of other ways that one can deal with this. It's not sensible to have wasted six inches of paper I think in all this documentation and a lot of people's time to not actually address the issue. If we ask the right question, which is how can we improve agricultural output, how can we improve social return without causing major environmental problems - the issues of endangered species and all other things are another whole area that I'm not going to address today particularly. But I certainly concur with all the concerns that people had about those issues as well, but I'd like to take the opportunity to try and talk about the agricultural issues.

There's been quite a lot of discussion in the past on the alternative of on-farm dams. All the departmental works to date have proven that on-farm dams are the best economic alternative and also provide the greatest equity, and they don't need to use public funds. There was a scheme at one point to assist people to put farms on through the Tasmanian Development Authority or whatever it was called at that time. I think it's a perfectly reasonable way to go to assist people if they can't afford immediately to get those on-farm dams in place.

In 1993 Professor Hocking looked at this issue and he found that scheme C, which was individual on-farm dams, provided irrigation over the same areas as scheme A which is the 43 000 megalitre dam we're talking about today. It was only going to cost $23 million and would provide a lot more benefit. It said: 'The strength of the relative case for on-farm dams is further strengthened when the results of the analysis related to

the objective to increase production of dairying and intensive cropping as part of Tasmania. Scheme C, farm dams, not only has more favourable benefit/cost ratios than the other two schemes which were planned for the Meander River. It also delivers larger benefits more rapidly than either of the major dam schemes and does so at a low cost per hectare than either of them.

Now, again, when this proposal came out, the Department of Economic and Agricultural review within the Department of Primary Industries looked at this and basically concurred. They said that even on a poor site the construction cost would be far less per farmer than cost of having this dam. What we're talking about is 55 farmers benefiting from a scheme which they claim - the price actually goes down; I think it's quite amusing - the price started at $30 million and it's now down to $26 million. I've never heard of a dam ever coming in on budget. The Craigbourne Dam just for example started at $6 million and ended up at $9.6 million and that was completely paid by the Government.

The people who use that water at Craigbourne pay $90 a megalitre; why would people in Meander be paying only $55? I think the point that Mrs Napier raised before was very important. The $55 megalitre figure discussed is a hypothetical figure which was asked of farmers: 'Would you pay $55?'. It bears no relationship to what the actual cost of this water is going to be.

Even without the dam the cost of water in the Meander River according to the department 's ready reckoner of water prices which was released about two years - I'm afraid I couldn't find my copy before I came today; if you wish to see it I'll try to hunt one out for you - pointed out that the cost of water in the Meander would be $90 a megalitre. That's without the dam. I don't know where they're getting this $55 per megalitre dam; it's a wish list. It's like waking up in the morning and thinking, 'I know, I think I'll have water for $55 a megalitre' and then waiting for the tooth fairy to come and give it to you. It's not feasible, it's just a wish. This was just one page asking why aren't we talking about on-farm dam schemes?

Why is it now, suddenly, that I am told within the department anyone who is in a managerial position is for the dam, and anyone who is a permanent employee, who has the chance to have a word without getting their contract sliced, is opposed to the dam for the same reasons as I am. It is not viable. There are alternatives. There have been apparently 124 permits issued since 1992. Obviously a lot of the people who wanted water have gone and got it themselves. That is why not many people actually want it. Those who do want it by and large are off the river; they have not been told how the reticulation of this water is going to occur. This scheme is not viable unless that reticulation occurs, yet I have asked various people and they are all keeping very mum about who is going to pay for it and how it is going to be paid for. We are not talking about $7 million worth of Tasmanian taxpayers' money involved here. We are potentially talking about an awful lot more, not just in the cost over-runs of the dam. We are talking about reticulation to make the dam viable because it will not be viable with the 55 farmers that have already been identified. Seventy per cent of those farmers are dairy farmers. They are not prepared to pay more than about $55 a megalitre. Most of the land that we are talking about, even if you try and split the Class 4 into high, medium or low, is not suitable for cropping more than once about every seven years. I have studies here to show that when land is cropped all sorts of problems occur.

If we want to talk about sustainable agriculture, I would like to see a discussion of how we achieve that. From everything that I know and understand about sustainable agriculture we ought to be aiming towards organic agriculture. It is the only sustainable agriculture that there is. The sorts of issues that organic agriculture can address include the other important place where one ought to be keeping water, and that is in the soil. No one has actually talked about why people need irrigation - because they've already got soil degradation. They need irrigation to make up for the fact that the soil is not holding the water. I have one study here from Victoria called 'Alternative Farming Practices Applicable to the Dairy Industry' by D. Small, J. MacDonald and B. Wales in 1994. They showed that biodynamic dairy farmers used only 333 megalitres of water a year compared to a conventional farmer using 410. Water use of megalitres per hectare on a biodynamic farm was 5.5, on a conventional farm 6.4 megalitres, so that is quite a considerable saving. It is about a 20 per cent saving. I got this this morning on an e-mail so I haven't had a chance to actually get a percentage there, but it is certainly a lot less. The interval between irrigation on a biodynamic farm was 15 and on a conventional farm was nine.

So what we are talking about here are ways that you can actually use a lot less water. Why does organic agriculture do that? There is an interesting 21-year study just come out of Switzerland called 'Organic Farming Enhances Soil Fertility and Biodiversity'. If we are worried about environmental consequences, what are we all talking about every day? - biodiversity. When we are talking about sustainable agriculture, the emphasis is not on the biodiversity of the soil, the living soil and what that can do. I was trying to get another figure today to talk about organic matter and its relationship to water-holding capacity. I haven't been able to obtain that yet, but I would certainly be happy to supply that if anyone is interested. But certainly what they have shown in this study is that the long-term experimental results show that organic management systems allow for a sustainable agricultural production with lower input and lower yields. The lower yields are only about 20 per cent lower. Agricultural over-production is a major problem today, so it is not really an issue. Simultaneously, soil biological processes and species diversity were improved in organic farming systems. It is this biodiversity, and it is the organic matter in the soils that results from organic agriculture, that is useful in holding the water there. It is a lot cheaper than trying to build a dam. It is a lot less environmentally damaging. In fact, it enhances our agricultural environment to go down this way. The only study that's been done on soils which are similar to the ones that we're talking about irrigating here in the Meander Valley has been conducted by W. Cotchin, J. Cooper, L. Sparrow, B. McCorcall and B. Rowley on the effects of agricultural management on soda soils in northern Tasmania. Quite a lot of areas of soda soil is found at Deloraine and the Westbury area, some of which are aimed to be irrigated. What they've found is that the more cropping that's done, the lower the organic content and the higher the potential for erosion. They found that in the United States, when an organic farm was compared to a conventional farm literally next door, the erosion rate on the organic farm was 8.3 tonnes per hectare per year while the conventional farm was 32.4 tonnes per hectare per year. So I am saying that this dam does not fit into a proposal which has any coherent sustainable agricultural focus. Therefore any attempts to claim that it does are spurious to say the least.

I would like to see some leadership on the part of the Department of Primary Industries, Water and Environment - serious leadership, I mean, not just a token organic department

or whatever. I would like to see some serious leadership in this area. One of the schemes that's been proposed in New Zealand, which I think could be very applicable to this valley, is what's called 'topo-climate'. It's the scheme that was put forward in the Southland Municipality. It's an area about eight times the size of the Meander Valley, but it has similar kinds of soils, similar kind of climate - probably a bit cooler. What they did there gets back to the three-cornered perspective on what sustainability really is. They didn't just look at how you get the best value for your agricultural dollar in the land that we're talking about; they looked at other aspects such as downstream processing, who controls it, where the jobs are created and so forth. They spent $4 million on researching an area, as I say, eight times bigger than the Meander Valley. For $4 million they got a return of over $36 million a year extra and over 3 000 jobs.

We're talking about a miserable 130 jobs for $30 million. I don't think it really equates very well at all. For the amount of money you put in you could get a much better return using topo-climate. What is it? It's a very intensive look at land capability. They set up satellite stations to transmit to two satellites. They collated the millions of pieces of data together to give them a picture of what the particular microclimates soils were in different areas. They found that even in fairly marginal grazing land it does have pockets of flats and different areas that can be used for other things.

They found that by turning fairly low quality grazing land - 0.5 per cent of that land - only 0.5 per cent of it into high intensity, horticultural areas they were able to achieve those benefits that I described before - $36 million and 3 000 jobs. What sort of things? They were looking at unique crops, niche crops, crops that were suitable to the climate and the soil of the area. They were often using organic techniques because organic markets are the future. If we want Tasmania's agricultural production value to double in the next 10 years that's where we ought to be going.

New Zealand has projects where they've got 50 dairy farms now joined together in huge organic projects. We're going to lose if we don't get on this track pretty quick smart. We're going to lose out to New Zealand. We've got the opportunity, being an island, of trying to give the image of being clean and green; we ought actually to be clean and green and go down this path. It will be the path that will bring us the benefit.

They found that by growing these unique crops, then having processing in the area, having all steps of the process controlled by the farmer groups, was where the benefit occurs. All the agricultural discussion in the project is so disappointing. All they talk about is growing commodity crops for multinational companies. As we can see what's happening on the north-east at the moment with Simplot, as soon as that multinational company decides to up and go it will, and where will everybody be? If they do develop the genetically improved strain of poppies that Mr Hall here supports so strongly in the Meander Valley, what will that mean? It will be the death of the industry. People may remember what happened to the hops years ago - they developed a new variety of hops that was five times more powerful than the old sort. What happened? Four fifths of the farms closed down.

If they develop a better variety of poppies, well I can assure there are not going to be that many farms in business and if they find that they can do it cheaper elsewhere they will up and go. We ought to be thinking about the whole spectrum of sustainability and it

does not mean putting ourselves continually in the hands of multinational companies who will up and go as soon as look at us because they can find better options elsewhere.

There is no economic analysis of the no-dam option. There is no analysis of how much present productivity is limited by lack of water or how much it can be increased by more. There is no adequate analysis of the negative irrigation impacts such as eutrophication, saltation, particularly in light of the poor soils, of which 77 per cent rate as class 4M or worse. They are called that because they are mainly waterlogged, so what are we going to do? We are going to irrigate waterlogged soil! Fantastic - I think that is really useful. They are going to need cut-off drains, raised beds and so forth to make them viable. There are no figures on flood costs or economic costs of mitigation; there is no analysis to project a catchment yield decrease or saltation from upstream forestry.

There is no attention given to the limited capacity for intensive farming of the land we are talking about. As far as salinity goes, yes we may not have a big salinity problem at the moment but down at the bottom of the catchment we have the worst salinity problem in the whole of the Australia and it is getting worse. Salinity tends to creep up the catchment. Are we planning for salinity? It seems to me this is a very foolish step to be taking when we don't actually understand what we are doing.

Again I could also tell you about how biodynamic agriculture can remediate salinity, but that is another story. Just in short, I would say that on the agriculture issues none of this has been addressed because the right questions were not asked in the first place. A lot of people have made good careers out of spending a couple of years now working on this but, really, if one takes away the benefit to the people doing the work to support this proposal, it comes down to the political pork barrelling which is what dams are really all about and always have been. I often think if Tasmania could get ahead on big infrastructure projects we would not be in the position that we are now as we always are in having the greatest unemployment in the whole of Australia.

As Michael Hodgman always says, we export more per capita than any other State in Australia and we have the lowest per capita income of any State in Australia so if big projects could fix that we would not be in this situation because that is all we have ever seen in Tasmania.

If we want to be the intelligent island we have to start thinking laterally; we have to ask the right questions and come up with a variety of answers. Just putting all our eggs in the one basket of one big dam with a very questionable economic return is, in my opinion, not intelligent at all and that is all I have to say.

Mrs NAPIER - You referred to the 1993 Hocking study on farm dam storage. It is my understanding that in this area all on-farm dam storage potentials that were identified at that stage have since been followed up.

Ms TIFFIN - No, not as far as I am aware. The study mentioned, that was the review. The comments in the Agriculture and Economic Review mention that 'no professional assessment by qualified engineers of the potential sites for on-dam storage on individual farms was explored as this was outside the terms of reference of the feasibility study'.

The report refers to a farm survey suggesting that 58 per cent of farmers had no realistical alternatives for the supply of extra water, however, only 40 per cent of farmers or 18 of them were identified as having some interest in a long-term water right. It appears that no farm site assessments by suitably qualified engineers were implemented by farmers identified and before making these comments, so, the answer is no.

Mrs NAPIER - So which report are you referring to there?

Ms TIFFIN - This is the agricultural and economic review put forward by that section of DPIWE in relation to the DP and EP.

Mrs NAPIER - And what is the date of that?

Ms TIFFIN - The date of that was January 2002. As far as I am aware, no, there has not been a proper analysis of this done. All these matters are outside of the terms of reference of this whole project, this whole dam study, which is why I am saying it is so disappointing because if we were actually taking into account all these other issues we would not even be talking about a dam. It is just not sensible.

Ms HAY - Just one thing. You are saying $55 a megalitre is not feasible. What are you basing that on?

Ms TIFFIN - I am basing it on the fact that none of the pricing tables that I have seen for the pricing of water were anything close to that figure. They all start at about $90. For this area they start at $90. As I say, unfortunately I could not find that but I could get a copy of that for you to show you what I mean. These were figures put out by the Department of Primary Industries under water reform, what the costs of delivering irrigated water would be in different catchment areas and the Meander catchment was identified to be at least $90 a megalitre. When I was involved in the Meander Catchment Valley Coordinating Group this was presented at that meeting for discussion. I will just have to see if I can hunt it down in my files but I could not find it before I came.

Certainly the question I would like to ask is why, if the water is $90 a megalitre for the Craigbourne Dam users - and that is a much smaller dam than this, totally subsidised by the taxpayer - why would a dam that is going to be ever so much more expensive, privately operated which means that they have to get some sort of return on the dam itself - it has to be financially viable or we will not be performing to National Competition Policy - why is that going to be only $55 a megalitre? Particularly when 70 per cent of the people who have been identified to take up that water are dairy farmers who will not pay any more than that anyway. In fact, we do not even have maximum allocation taken up yet, even at that price.

Mr BEST - The size of this dam in comparison to Craigbourne - it is a bit larger dam, isn't it?

Ms TIFFIN - That is right.

Mr BEST - It has larger volume, you have more farms, more people which would probably -

Ms TIFFIN - Yes, but you are talking about an apparently unsubsidised dam versus a completely subsidised one, so there is a major difference there. All I am saying is that

we have not seen the economic figures to justify any of this as yet. It is still very hazy, to say the least. From what I can make out - and I am no economist but even I can work this out - it does not seem to be very viable. This is why I am saying I keep thinking this whole thing is just a furphy, that it cannot possibly get up because it just does not make economic sense.

CHAIR - Just on that matter then, would you concede that if, in fact, the numbers do stack up and the various players in the field are able to get an equity partner then the project will proceed?

Ms TIFFIN - Well, it also has to conform to environmental and social sustainability questions as well and what I have been trying to point out is that they are equally doubtful. The whole point of this dam is that it is actually encouraging the completely wrong sort of agricultural future that Tasmania needs to be sustainable in the future. We are encouraging people to use more water on low-value crops under the control of multinational companies. All these things are very anti-sustainable.

CHAIR - To come back to my question and maybe a proper answer to that.

Ms TIFFIN - Well, as I say, I do not see how it can get through National Competition Policy. That has to be the ultimate test of this and unfortunately that will apparently be the last point of the whole process. I know that Environment Australia has serious concerns about what's happening because of the endangered species issue but it still has to go through the National Competition Council.

CHAIR - And that's a given -

Ms TIFFIN - Yes, that is right and there are very grave concerns on all those issues.

CHAIR - Thank you very much.

Ms TIFFIN - Just one point on the quoll issue that I might mention. I have been up there with Heather Hestermann to the site. The site that was pointed out on the screen on the aerial photograph of where the quolls are apparently and where they are going to be moved next door is actually wrong. The area of major quoll habitat is at the back of Archer's Sugarloaf and the reason why it is important is that it is one of the few places left in Tasmania that has the area from the riparian strip right up to the hillside able to be traversed by those animals because they need both kinds of habitats. The area pointed out by Jeff Gilmore on the screen is out in the middle of the dam site, it is flat land, it is not where they are and it does not enter into the equation at all - as far as I am aware from Heather Hestermann. She actually made the point that her work has been misrepresented and the area that she is concerned about is not the one that is referred to on that screen and the area where the quolls are is not the one referred to on the screen.

CHAIR - So who is this person that you mentioned?

Ms TIFFIN - Heather Hestermann is the woman who did the study on the quolls. She is doing a PhD on quolls and she did the work on quolls for this report. She is of the opinion that trying to manufacture habitat has never been tried before. It is a completely untried thing and that it will not answer the concerns that she has about the loss of habitat

because the loss of the habitat is where the slope of the hill goes down to the river and that is where the animals are heavily congregated.

So it is not actually the fact that it was cleared that is important; it is the topography and the fact that it is a relatively undisturbed area going from that slope down to the riparian area, which is important. Once the dam is in place the logging and the forestry that has already occurred around the back of the tiers will not provide them with migratory route from one part of the tiers to the other. She has found no quolls in that forestry area, which is what you'd expect, I suppose. That is what is important but there are other people who will speak more on that and they would have to mention that it is not an easy matter to just shift quolls from one place to another or recreate habitat, not at all.

CHAIR - Thank you very much.

THE WITNESS WITHDREW.

Mr CRAIG WOODFIELD WAS CALLED, MADE THE STATUTORY DECLARATION AND WAS EXAMINED.

CHAIR - Mr Woodfield, we would now be happy to hear your submission and then, of course, at the end of that we will ask you some questions. We do have your printed submission. We have had that for a little while now.

Mr WOODFIELD - Thank you for the opportunity to present to this committee. It is very much appreciated. My name is Craig Woodfield. I am the water policy officer for the Tasmanian Conservation Trust. I have a degree in science from the University of Tasmania, several years' experience in the agricultural industry in northern Tasmania and a number of years of experience working on water reform in the Murray-Darling Basin before returning to Tasmania last year.

I guess the key question to this committee and one of our key concerns is the definition of 'public works'. We are of the opinion that this proposal is in no way public works. There are no public benefits and it is not eligible to receive public funding. This is effectively a private infrastructure proposal which will benefit a small number of irrigators in the Meander Valley. Although there are some flow-on benefits from that we do not consider it to be appropriate for public money to be allocated to it. It is unfortunate that no standard definition of public works seems to be used in Tasmania. On the mainland, certainly in New South Wales and Victoria, there is a standard definition which certainly clarifies a lot of these issues.

I am just going to briefly go over a few of the things that I have already raised in my submission and expand on them a little bit and respond to information that we have seen this morning as well. I will just follow on from some of the points that Mrs Napier was raising about the actual figure for water, the demand for water and the prices arrived at. It seems that the figure of $55 per megalitre was the starting point. That was the maximum that farmers would pay and the whole project has been fitted around that, basically, to make it viable. When you are looking through the original agricultural and economic reports, particularly the financial summary prepared by Deloittes, the figure of $55 per megalitre does not stack up very well. In fact, Deloittes found that for a return of 9 per cent and sales of 20 000 megalitres, a figure of $93 per megalitre was actually required. Even going up to 25 000, that figure was still $74 per megalitre. So there is a lot of inconsistency in the actual figure that water will have to be sold at to make this project viable.

The demand for the proposal is also a really key part of this. Again, if we refer to the agricultural and economic report that was prepared by the proponents we see that although 24 000 megalitres of water was identified as a figure for the level of demand, only 11 000 megalitres of that was actually on the Meander River. The other 13 500 megalitres is for off river properties: Rubicon Creek, Western Creek, Quamby Brook and probably a few other places. There will be significant additional costs associated with achieving that level of demand, which will have to be borne by those people, but is unlikely to make it unviable for those people to take up that demand, as is also conceded within the agricultural and economic report. In fact the figure of $1.98 million additional infrastructure for Rubicon Creek and $2.27 million for Western Creek is actually quoted, not including GST. So there are a lot of actual problems with

realising this potential. There really has been no justification for this potential usage, which is something else we have a lot of concern with.

I will just touch briefly on the direct benefits and only having just received a copy of the submission given to the committee, I notice that a net present value of something like $69 million is presented. It seems very strange that those figures could be developed in almost a total absence of knowing the irrigated land, knowing whether all the projects will achieve viability, knowing the water sales and so on.

I can't see - and I am not a qualified economist and I will have to give that to the economists that were used - how those figures could be treated seriously in the light of, as the proponent concedes, so many holes within this proposal at this point. In any case the key issue in the Meander Valley is really not the need to have a dam to establish environmental flows, it is the over-allocation of water and unlicensed abstraction of water. Research from the department which is contained in the document prepared for the water management plan, which was shelved unfortunately earlier this year, estimates usage to be 68.8 megalitres a day - over summer this is - where the total licence allocation is only 22 megalitres so the real question here is not that we need a dam to supply environmental flows but that we have a management regime in process that isn't working. People are taking water out without a licence and people are taking water over and above their actual licence.

A dam won't solve that. The only way to solve that is to get a new sort of management regime in place that will have things like water meters and allow a very accurate figures on the amount of water usage. The proponent also suggests that the dam is necessary to install environmental flows which is absolutely untrue. The great forestry catchment based around Scottsdale are on the verge of signing off on a water management plan which will result in increasing environmental flows for that catchment. That was done without a large dam - $7 million of State funding wasn't required to achieve that.

There are another 18-odd catchments around the State which will go through that same process. Those catchments won't have a large dam with $7 million of public funding to achieve environmental flows either, yet those environmental flows will be achieved. So it is a very strange argument to say that Meander Valley is so unique that this huge infrastructure project and this very large government investment is required to achieve environmental flows. There is no precedent in Australia and in the world to my knowledge of a large dam being put up to achieve environmental flows.

A few of the negative impacts of the proposal have been mentioned in the previous presentation. The spotted tail quoll is one of the key ones, an icon species of Tasmania. Tasmania is the species stronghold; the species is recognised to be in decline and this dam will effectively destroy one of the densest populations in the State. It is conceded that the habitat will be lost and the individuals are likely to be lost as well - a figure of between 10 and 12 individuals is widely accepted.

The mitigation measures that the proponent put forward to prevent this are totally insufficient and the subject of an appeal, the preliminary hearing of which is on Monday. Creating new habitat for a species is a very dicey proposal. It is difficult to see how the proponent could be assured of preventing a loss of ecological value of spotted tail quoll,

particularly as the key issue with this inundation area is not that it has been logged or whatever. It is the fact that it is riparian, it is river vegetation and a riverine environment.

The areas that have been put aside by the proponent as new habitats for the spotted tail quoll aren't their habitat. They don't have those valleys and also considering the continued decline of the species on a State and regional basis it is difficult to see how that population could then be regained over what is effectively a very long period of time. We are talking 10 or 15 years before the habitat in the new areas would be up to the quality of the habitat in the inundation area.

The economic viability has been a major concern and, as I said, I am very pleased we finally have an economic analysis of this proposal because this is the first this has happened. We had a financial analysis very early on in this piece and estimations of economic benefit. But to see we finally have some economic analysis is welcome. It's a pity this didn't come at the start of the process. Now everyone is in a position where we have to go away and look at those figures and make some judgment on how accurate that economic analysis is. I will just touch on the fact that, firstly, National Competition Policy earned the Commonwealth contribution. I welcome the admission this morning that National Competition Policy guidelines will be adhered to. It has not always been acknowledged that that would necessarily be the case. I think it is absolutely critical that National Competition Policy is adhered to. If it is not the risk to the States is quite significant. When Queensland contravened National Competition Policy with the St George scheme a number of years ago, the Commonwealth withheld the equivalent amount in funding that the Queensland Government was putting into the scheme - i.e. $15 million - until the Queensland Government basically rectified the situation and brought that scheme into line with National Competition Policy. So if the Meander Dam was found to contravene National Competition Policy and the State Government decided to proceed anyway, you could reasonably expect the Commonwealth to withhold $7 million of funding from the State until such time that the Meander Dam did comply.

It is the TCT's opinion and the opinion of a number of experts that we have contacted that the proposal as it stands contravenes National Competition Policy. It is very clear that public money not be used to prop up water infrastructure, that full cost recovery be demonstrated and it is difficult to see how an argument could be constructed as to $7 million worth of community benefit being derived from the proposal as it stands.

The Commonwealth have promised $2.5 million to this proposal. We have an undertaking from the Commonwealth that that will not be supplied until this proposal meets full ecological sustainability and economic viability criteria. So I would not count on that as given. It will not be provided, as it should not be provided, until this proposal does meet those nationally agreed criteria.

We've also raised concerns with the Treasury procedure that has been followed in referring this proposal to this particular committee. Subsequent to my writing my submission we've received further correspondence from the Government on this issue. We originally raised concerns that the ceteris process of project initiation process, value management and so on has not been followed. The Government in their correspondence asserts that the development of the economic and agriculture report and the feasibility studies fits within those criteria. I'm not sure that is the case but we will have to look

more carefully at that and I hope the committee will very carefully consider the Government or the proponent following due process for referring this to this committee.

I will close now and allow a few minutes for questions because I am sure you will want to question me on some of this material. But I guess in closing there are a number of things we would expect this committee to do in regard to this proposal, considering that there is $7 million of public funds to be allocated here. I think none of us would have to try very hard to think of a good use for $7 million in regional Tasmania. Combined with the $2.5 million from the Commonwealth, that's a total of $9.5 million of public funding going into this proposal. If one of the scenarios that Deloittes and the consultants have come up with eventuates and only 40 irrigation schemes take on water from this proposal, that's effectively a subsidy of $237 000 for each business. There are not many other places in Tasmania we could get that. As I said, we would like to see this committee do a couple of things: first of all, wait until a full cost-benefit study has been prepared, taking into account the true extent of demand for the water, the cost of this water and the cost of the environmental impact on threatened species and other issues; secondly, that proposal the then be presented to the National Competition Council for the preliminary indication of how this fits with the COAG water reform framework; and, thirdly, that any public money invested in the project be recouped at an acceptable rate of return for reinvestment in other rural communities around Tasmania. There are - as I have said - a lot of other catchments in Tasmania with a lot of other irrigators. All those communities are also facing the same problems and all those communities also contribute to the economic well-being of the State. At the end of day this is a question of equity, whether we should be pouring so much money into one proposal in one area.

I will finish now. Just one additional thing. Geoffrey Lee, who is a renowned photographer, has taken some photographs of the area - I know you have all toured the site - showing the extent of the empowerments, its visual impact from places around the area and basically the ugliness of the dam over the summer when it has dropped down a little bit and a huge area of muddy flat will be exposed. So if you would just like to look at that, it might help you in your deliberations.

CHAIR - Are you tendering that as part of your evidence?

Mr WOODFIELD - I am simply passing it around; I will take that back. Having toured the dam site this morning, that has probably answered some of your questions.

Mr BEST - You made the comment about public works. You view the mini-dam scheme as not being public works?

Mr WOODFIELD - That is a commercial enterprise, as Mr Gilmore pointed out - a purely commercial enterprise for the purpose of making money. Certainly there is public benefit, for the electricity, but at the end of the day the Hydro would not be doing it if there was not a dollar in it for them. So, no, not at all. As has also been pointed out, it is quite a separate issue to the allocation of money to the irrigation side of things.

Mr HALL - Mr Woodfield, you talked about creating new habitats for species, in terms of quolls and so on, and that is fraught with problems. On the other hand, the proponents are claiming that the site cleared some 15 years ago has attracted the present colony of quolls. So is it fair to say that if new habitats are created it is not a problem?

Mr WOODFIELD - Not at all. As I mentioned, there are two issues there. One, this species is in decline and that decline is expected to continue in the near future. Secondly, the value of the habitat that is there at the present is because it is because it is riverine habitat with riparian vegetation associated. That is the true value of it. The habitat surrounding the empowerment is not that and will never be that. It is not vegetation along a flowing water course. The third issue is that the empowerment area lies in the middle of a wildlife corridor in which quolls, when they do move - new animals or old animals being displaced - move up the western tiers. The empowerment will basically prevent that flow of animals. So not only is there damage to the population but there is loss of critical habitat - which will not be replaced because it is not riparian habitat - and fragmentation of habitat, as a whole, across the region.

CHAIR - Just one question, Mr Woodfield, from your written submission. You commented that one of the parts of the Department of Water, Industry and the Environment's submission - or some of the issues raised - point to the fact that sustainable development of agriculture within the Meander Valley is approaching or has exceeded its maximum limit.

Mr WOODFIELD - That may be so.

CHAIR - You have said here that is the case. Can you give us the source for having made that assessment?

Mr WOODFIELD - Which page are we on?

CHAIR - Page 4. The last paragraph before point 7 on page 4. The very first sentence. I'm just -

Mr WOODFIELD - Interested in that?

CHAIR - It's more than an interest; it is important for me to understand as to whether in fact the agricultural capacity of this valley has been reached. You're saying there in your submission that it has been.

Mr WOODFIELD - I apologise for that, it's probably a bad reflection or an editing problem. It should say that it may have been. Is approaching or has exceeded its maximum limit is my statement, so I'll suggest that in the light of the problems with this proposal, in light of the problems with securing definite figures for water, in light of as the proponents claim, all viable farm dam options have been taken, and in light of the fact that the proponent has, as part of the justification for this, had to do something which has never been really done before, and that is split up land classes - I'm sort of digressing a bit here, but I think I've referred to that in a previous point. Land is classed on its suitability for irrigation, class 3 being the most suitable, class 6 being pretty ordinary, and to justify this proposal the proponent has basically split up class 4 which makes up the majority of the land not under irrigation still. It may not necessarily be suitable for irrigation, but the proponent has used it and split it up into three levels and used the highest level, claiming that that isn't suitable for irrigation.

In light of those things, it is possible that sustainable agriculture in the Meander Valley is approaching or has reached its limit. I think that's not an unreasonable assumption to

make. Building a large dam is not necessarily the solution for that; it could be that we have to look at other options, or that simply irrigated agriculture, or whatever, in the Meander Valley may not be able to expand much more, and the claim of doubling agricultural production in Tasmania may not necessarily be achievable. That is, I guess, a key point with all this. I am not aware of any holistic study that went into saying that agricultural production in Tasmania could be doubled sustainably, it seems to me to be merely rhetoric. To be clean and green and to be smart and to be expanding into the future really should have been addressed first: how far can we push agriculture in this State, then a target set after that. Unfortunately we started with a target and now we're going to see if we can reach it.

CHAIR - So would I be too bold if I were to make an assumption from that, and also from what you've just testified to the committee that you have made no quantitative or qualitative assessment to have made that comment in your report?

Mr WOODFIELD - No, but I don't think that comment is an absolute fundamental statement of truth for me, indicating that I'd done the research. I think that is an opinion - that it is approaching or it may have exceeded its maximum limit.

CHAIR - Is that a value judgment?

Mr WOODFIELD - Yes, absolutely.

Mrs NAPIER - You raised the question as to whether this particular proposal would pass or would meet the requirements of National Competition Policy. Taking particular note of the suggestion by the Federal Government that States should compensate irrigators for the loss of water as a consequence of increased demands on the environmental flow, why are you of the view that this wouldn't meet the National Competition Policy guidelines?

Mr WOODFIELD - That's two separate questions, so I'll address the second one first. You were referring to the Deputy Prime Minister's statement in the press in the last couple of days?

Mrs NAPIER - Mm.

Mr WOODFIELD - First of all, I guess that is a statement from the Deputy Prime Minister and is still not government policy. For that to happen it will require the agreement of all the States, so it is certainly not something we should be counting on happening for sure. It may happen, but it certainly won't be happening for sure and it may not be happening for a long time if it does happen. So I think until that is resolved and the States agree to going down that compensation path we can't really consider that as being a definite yes. On the first part of the question regarding National Competition Policy, as has been alluded to, the only justification for contributing public funding to water infrastructure projects basically in the form of a grant as has been proposed here is that that service will provide a community service obligation - it will provide some community benefit or some public benefit.

There is no precedent for a large dam delivering environment off-loads being considered as such. In my opinion and in the opinion of all the people I've talked to, this could not possibly count as such and therefore the National Competition Council would expect the

money, if any, to be recouped at an acceptable rate of return. That is not an unreasonable assumption, nor is it an unreasonable request.

Mrs NAPIER - Do you see any community benefit in flood mitigation?

Mr WOODFIELD - The downgrading of the mini Hydro scheme has happened in between the original proposal and the finalisation in the supplementary DP and EP has basically removed all flood mitigation values of the dam. I will be struggling to find it at short notice but I can refer to it to you in the future. Basically in a wet year the hydrograph in the Meander River downstream of the dam will virtually not change from what it currently is. In a not wet year there will be some mitigation - I think Mr Gilmore referred to about one in three floods being held back. So you are still getting two-thirds of the floods and you'll still be getting the large floods in winter. The initial floods will be held back by the dam wall, the dam water will build up and the dam will spill. So we'll still be getting the large floods in winter and spring. There is really no effective flood mitigation from this proposal or none that can justify the spending of $7 million of public money, that's for sure.

Mrs NAPIER - And of water quality?

Mr WOODFIELD - Water quality will not necessarily be fixed by this dam, neither with town water supply. I have had some dialogue with the Meander Valley Council, the town water supplier in Meander and Deloraine, and their opinion is that it is secure. They use measures such as costs to keep demand at an achievable level. An environmental flow regime will be delivered from the Great Forester Water Management Plan, which will provide water quality, and it does not need a large dam, it does not need $7 million of public money to do so.

Mrs NAPIER - A lot of people will agree with you about that. Are you aware of the steps being taken to try to identify an appropriate dam site in order to compensate for those environmental flows?

Mr WOODFIELD - But that's not an intrinsic part of an environmental flow regime. The environmental flow regime will go in whether that large dam is identified or not. It's not part and parcel. I'm fully aware that they're looking at all sorts of options, including farm storage, which is the most economical and ecologically sustainable way of getting water to farmers.

CHAIR - Okay. Thank you very much, Mr Woodfield, for your evidence and your submission to us at a previous time.

THE WITNESS WITHDREW