REPORT ON PROCEEDINGS BEFORE

PORTFOLIO COMMITTEE NO. 5 – INDUSTRY AND TRANSPORT

WATER AUGMENTATION

At Moree on Monday, 15 May 2017

The Committee met at 1:15 pm

PRESENT

The Hon. Robert Brown (Chair)

The Hon. Rick Colless
The Hon. Paul Green
Mr Scot MacDonald
The Hon. Penny Sharpe
The Hon. M. Veitch (Deputy Chair)

UNCORRECTED TRANSCRIPT

The CHAIR: Welcome to the fifth hearing of Portfolio Committee No. 5—Industry and Transport—and the inquiry into the Augmentation of Water Supply for Rural and Regional New South Wales. This inquiry is examining water demand and supply, the suitability of existing water storages, flood history and technologies to mitigate flood damage, and water management practices, including those practices for environmental water. Before I commence I acknowledge the Kamilaroi people, the traditional custodians of this land. I also pay respects to elders past and present of the Kamilaroi nation and extend that respect to other Aboriginals present. Today we will hear from a number of witnesses, including the Gwydir Valley Irrigators Association, Moree Plains Shire Council, Mr Alec Lucke and W. J. & A. Seery Partnership. The day will conclude with evidence from Growth Agriculture and local farmer, Mr Daniel Kahl.

It does not appear as though anybody is broadcasting here today but if anybody wishes to broadcast they can get a set of the guidelines from the side table. Members of the public gallery are not to be the primary focus of any filming. Witnesses may note that there could be some questions that they can answer only if they had further time so there will be provision for questions on notice. In that case we request that answers to questions on notice be given within 21 days of those questions being received in writing. If anybody in the gallery wishes to assist members, either by note or by verbal prompt that is fine, but anybody else should approach the Committee staff if they wish to talk to witnesses. To aid the audibility of this hearing I remind both Committee members and witnesses to speak into the microphones; however, I am not sure whether they are working. In addition, several seats have been reserved near the loudspeakers for persons in the public gallery who have hearing difficulties. I ask everybody to switch off their mobile phones or to turn them to silent. Not only do they disturb the flow of the hearing but also they interfere with the Hansard equipment. I welcome our first witnesses from the Gwydir Valley Irrigators Association.

MARK WINTER, Vice-Chair, Gwydir Valley Irrigators Association, affirmed and examined

ZARA LOWIEN, Executive Officer, Gwydir Valley Irrigators Association, affirmed and examined

NICHOLAS GILLINGHAM, Treasurer, Gwydir Valley Irrigators Association, affirmed and examined

The CHAIR: Before we proceed to questions from the Committee, and given that we have just received your submission, some of the Committee members are furiously reading through it to try to see whether there is anything they do not understand. Would any of you like to make an opening statement? We will try to keep it brief but, as I say, because you are presenting here for the first time feel free to elucidate on any of the things you said in your submission.

Ms LOWIEN: Thank you, Mr Chairman. First of all, I welcome you to Moree and thank you for coming and holding your hearing in a regional area. It is very convenient for us having only to walk down the main street here today rather than to travel. I hope you enjoy your brief stay in Moree and take in some of the beauty that we have to offer. The Gwydir Valley Irrigators Association represents irrigation entitlement holders in the Gwydir Valley. We represent those with general security, high security, supplementary water, as well as groundwater and unregulated entitlements. We have approximately 250 members across the entire valley centred around Moree. It is our major irrigation area. I suppose the important part of that is 250 irrigation entitlement holders, but obviously 250 very passionate community members as well. We come here today representing an industry but also a community, and that is an important part for us.

Moree and the Gwydir Valley are beautiful and productive regions in the State. When agriculture is doing well and when we can do well—for example in 2011—we can produce about 8 per cent of the State's gross domestic regional product. Agriculture employs between 20 per cent and 30 per cent of the population and we generate 72 per cent of the gross regional product from that employment; and for irrigation that is off 10 per cent of the land. So it gives you the scale and the value of irrigation and agriculture in this region. It is obviously ingrained in everyone in the community, whether directly or indirectly. When you see a region like this heavily reliant on agriculture there is an impact when changes to water, whether by natural sequences or by policy reform, have a significant flow-on impact. And we are feeling or experiencing the flow-on impacts of that after about 20 years of reform.

Copeton Dam was built in 1976 and finalised. Since then we have gone through progressive stages of reform culminating in the current process of the Basin plan as we speak. Throughout that period we have now seen 28 per cent of the high security entitlement, 29 per cent of the general security entitlement, 13 per cent of the supplementary entitlement and nearly 55 per cent of the groundwater entitlement handed over for environmental use. That has had a significant and detrimental impact on the broader economy. We are seeing that now and that has been realised and advocated by the MDBA as part of its socio-economic analysis of this region. There are two key profiles, both Collarenebri and Moree, in that where we have seen a total of 200 jobs lost just from water reform. That is on top of nearly 1,000 jobs lost out of the economy due to natural agricultural reform. The important piece to note on that is that agriculture, and cotton in particular, often gets attention because of its reduction in labour. It is important for us to note that every business is finding ways to reduce labour due to the cost of wages at the moment.

The examples that we would provide are where businesses in town, whether it be Coles or whether it be any of the major banks, are also reducing the labour requirement on the back end of agriculture. We are seeing a flow-on effect through all businesses due to wages pressure. It is not just agriculture that is having to reduce its labour requirement. As a result of those reforms the Gwydir Valley has a significantly reduced production capacity. That is on a hectare basis where we see 25 per cent to 35 per cent of hectares planted—less now what we did before the Basin plan reforms. The production graph within the submission will show that. One of the important factors that we want to say is that irrigators are trying to do their best to increase the production per megalitre. This association has invested heavily in research and development through our systems comparison trial at Keytah and other investment opportunities where we are trying to maximise the production per megalitre that we have.

We have seen significant improvements in that and we are managing to pick up some of the production that we could have lost due to water recovery. The reality is that has economic flow through, so we cannot always pick up the complete difference. What we ask for people is to realise that while we make every drop count we ask all water users to make every drop count. We have been very active in environmental water management, and Mr Winter here is on the local committee for that, so we ensure that environmental water users, the new water users in the system, are as efficient as they can be as well. There are some opportunities to improve and reform that and we have recommendations within our submission to highlight that to you as well. I

will pass to Mr Winter to give a bit of an understanding of his involvement in the industry as well as to Mr Gillingham.

Mr WINTER: I was born and bred in Moree. I went to school in Moree. I have been here all my life. I am the fourth generation on our land out there bordering the wetlands. Up until the late 1960s we owned some country right in the wetlands. That section now is sort of dried, it has all been drained down. I have had a good insight into the water situation based on the environmental situation, and since the 1980s I have been involved with irrigation on our family farm. I am also, as Ms Lowien said, the irrigation representative on the local environmental contingency allowance [ECA] committee.

I am on the Carole Creek. To me, with your environmental water some sections of the valley seem to be better represented and have better environmental output now than what they had before. I used to be able to ride across Carole Creek in my younger days and muster sheep on the other side. Now it runs almost all the year. It only received water when there was a medium to high flow from the Gwydir River. The Mehi was similar. Both those systems were excavated out back in the 1980s to use them to deliver stock and domestic and irrigation water down those systems as well. One of our bugbears is the embargoes that have been put on supplementary water to send it all the way down the other end for drinking water for Broken Hill. We are not against sending drinking water to any town, but it is just an inefficient delivery of water when such a little amount can get that far. It is going 2,000 kilometres to get there.

The CHAIR: We noted the term "embargo" in your submission. Can you explain what you mean by an embargo? What actually happened?

Mr WINTER: When rainfall events happen below the Copeton Dam it is called supplementary water. To start with, I suppose the first 500 megalitres per day at Yarraman just north of Moree out here goes to the wetlands regardless. Then after that there is a 50:50 share in the water sharing plan. Fifty per cent of that can be taken by irrigators. It is all managed by WaterNSW. The other 50 per cent is sent down mainly to the wetlands. It is up to the Office of Environment and Heritage [OEH].

The CHAIR: Is that the amount that you are saying is embargoed?

Mr WINTER: No, it is this 50 per cent. When there is an embargo on, irrigators cannot take their 50 per cent.

The CHAIR: The embargo on is the irrigators' 50 per cent?

Mr WINTER: Yes. It is at the discretion of the Minister.

Ms LOWIEN: It is actually on both percentages.

The Hon. PAUL GREEN: It is not on the 500 megalitres; it is what is left over.

The CHAIR: So 100 per cent of what is left over, whether it is environmental and/or irrigator is embargoed to enhance flow down the system to try to deliver drinking water to Barwon.

The Hon. RICK COLLESS: How is that delivered? Is it delivered through the Mehi River or the Carole Creek?

Mr WINTER: It can be delivered through both the Mehi and the Carole Creek into the Barwon. It never went down there originally because they used to just flood out. Historically, about 10 per cent of our water in a major flood got through. All the other times the rest of it used to just dissipate out into the wetlands. There are two reasons there. One is historically it did not happen. The other one is we have lost opportunities for our community to turn that into production through our industry. It is not a loss from us personally as irrigators because we still have our same entitlement. The entitlements for the water volume that has been taken—some taken, some bought—has lost our services in the community. Because we have our own licence we can still do our own operation but there is less turning into production and jobs around the area.

Mr GILLINGHAM: I manage a large farm west of Moree for Sundown Pastoral, an irrigation farm. It is one of the larger cotton farms in Australia. We have tried to be as efficient as we can with the water we have. It is our most limiting resource and we spent hundreds of thousands of dollars in being efficient. One of the things that we are always concerned about is how efficiently is the water being used in other parts of the river system such as the environment. The embargo is another one Mr Winter raised. We just want to make sure that is being efficient. The other thing is can we get more water into this Gwydir Valley area? It has amazing soils here. It could be a huge food production bowl for Australia. The biggest limiting factor we have is not so much the land resource here; it is the water resource. If there are opportunities to increase our water allocation or our water volume into the valley, whether it is getting it from over the eastern side of the range or from a dam

up at the Horton, anything like that could help production in the whole community and hence food production in Australia.

The CHAIR: I might ask you perhaps the first question to take on notice. In your submission you talk about percentages. When you say that 10 per cent of the land produces 72 per cent of the domestic product I assume you mean 10 per cent of the agricultural land? I see you nodding. Has your association ever done any crystal ball gazing to try to put a value or tonnage—however you would like to do it—on what sort of production you could get out of your valley if the water equation was solved for you? If water was not part of the equation would you be able to have a crack at guessing what you think the output of this valley would be compared with what you have said it is now?

You do not have to answer it now but obviously you represent a lot of people. You have already gone so far as to say what the actual output is today. You know how much land you have that is under irrigation and you know the difference between the dry land production in terms of dollars or tonnes and irrigated production. Would you be able to just give us a snapshot? I am not just asking to be a smartypants. We are going to try to ask the same question of DPI Water and the Department of Agriculture to see if we can build a picture of what sort of capacity we have in some of these systems which are limited at the moment by water. Whether it is limited in the amount of water you have now compared with what you had 20 years ago because somebody has taken some of it to keep their boats afloat in South Australia, or whatever the reason, the Committee and I would like to know has anybody got a guess as to what you could produce in your valley, in your system, were the water equation solved for you and we got you some water instantly from somewhere?

Mr GILLINGHAM: We value it at probably about $500 a megalitre. That is how much we can generate out of it in income clear of costs.

Mr SCOT MacDONALD: That is farm gate?

Ms LOWIEN: That is farm gate. That is cotton production. Obviously we also the horticulture, which we did not explain. They probably go to about $900 to $1,100 a megalitre. Although we have had research to show how the opportunity for horticultural expansion is quite real in the Gwydir. We have excellent soils, we have great soils right next to the river where it could be and we have got the largest pecan farm in the Southern Hemisphere already in the valley. The biggest limiting factor for them is high-security water. An increase in high-security water could expand that industry quite significantly. At the moment there is about 1,200 hectares. If it went up to 1,500 or maybe 1,600 hectares they would have processing here in town and that has an even bigger flow-on effect.

The CHAIR: You have answered part of my question because you have obviously thought about it?

Ms LOWIEN: Yes.

The CHAIR: I am a city boy so it does not make much sense to me to say that you can produce X per megalitres of water?

Mr GILLINGHAM: Yes, I know.

The CHAIR: How much water would you need to turn that unirrigated land into the sort of production figures you are talking about? What I am trying to say is: what do you use now in water to produce 8 per cent of the State's gross domestic profit [GDP] out of 10 per cent of the land, 72 per cent of that value being irrigated? You do not have to do it now.

Ms LOWIEN: I understand.

The CHAIR: But would you be happy if we sent you a question—

Ms LOWIEN: We could definitely produce a forecast based on that.

The CHAIR: —to just try to tease it out.

Mr GILLINGHAM: Yes, easily.

Ms LOWIEN: We know that we are increasing our production per megalitre so we can produce more cotton with less water and we are increasing that now to 1½ bales per megalitre and even higher in some cases whereas once upon a time it was historically only one, so it was a one-to-one. Now it is quite significant and you can see if you look at the production graph where we had 25 per cent less area we are going back to the production we once had, so that curve that you are asking for is for that to be drawn as an estimate of what you could do on the land area that we have got, or the water, for example.

The CHAIR: You mentioned that if parts of the production were able to swing over to something like horticultural production, the value at the farm gate is higher than for, say, cotton, is that what you are trying to say?

Ms LOWIEN: Yes.

Mr GILLINGHAM: That is right, but a lot of that comes back to reliability; you have got a permanent planting.

The CHAIR: Yes, well, take that equation away. Obviously you are not going to put permanent plantings in, although a lot of people did, didn't they, down in the southern basin, and they had to pull them out?

Mr GILLINGHAM: Yes.

The CHAIR: If someone could solve the equation and give you the water—it won't be me; it might be my great-great grandson but it would be interesting for this Committee to have someone stand up somewhere and say, "We guess we could get 20 per cent for the current State's GDP out of the Gwydir Valley if we had unlimited water". You mentioned that you felt that the Murray-Darling Basin plans socioeconomic study bore out what you already knew, and that was that the northern basin has suffered under the regime in jobs and the things that go with servicing a community like schools, medical services; everything depends on keeping jobs within the community. If you lose jobs, you lose everything else. You obviously put in a submission?

Ms LOWIEN: Yes.

The CHAIR: I guess we could probably find that submission somewhere.

Ms LOWIEN: We are happy to forward it to you. Some of what you have in here has come from there. We tried not to re-create something that had already been written. The impact of the basin plan was very much felt by the community. As Mr Winter said, it was not so much on the irrigators for that form of reform because it happened through the commercial arrangement rather than previous reforms we had experienced.

The CHAIR: Without trying to put words into Mr Winter's mouth, from what you are saying, sir, I take it that you would see that the Wentworth pipeline to Broken Hill is a bonus to the northern basin?

Mr WINTER: Yes, definitely.

Ms LOWIEN: Anything that had an option to secure the supply of a regional town; we are not wedded to any solution on that, but it should be a priority of governments to ensure that towns have drinking water.

Mr WINTER: Not just Broken Hill but all the way up, all the other towns up along the Darling and the Barwon system.

Ms LOWIEN: A number of towns have a quite risky supply along the Barwon-Darling and they need—

The CHAIR: Town supplies?

Ms LOWIEN: Yes, and I think under the current New South Wales strategy additional funds have been put into the regional water supply strategy. I believe this area was the recipient of some funding under that for Ashley and some other areas but I think it needs to be a priority to secure an efficient supply as opposed to the current system that relies on upstream communities.

The Hon. RICK COLLESS: This is a very interesting discussion; thank you very much. Through the course of this inquiry there has been a lot of discussion about the Murray-Darling Basin Authority [MDBA], how it operates and performs. The Gwydir is often referred to as a closed system, as is the Lachlan and the Macquarie, as I understand. What sort of size flood is required to get water through into the Barwon and is there a more constant flow now going Carole Creek and the Mehi River?

Mr WINTER: Yes, now it has irritation supply all summer; there is water flowing through there whereas probably on dam days it used to run when there was a mediocre flood in the Gwydir and Durham.

Mr GILLINGHAM: But it does not leave the system due to irrigators using it. They only deliver water to the pumps. There is extra water put in the system which gets out the bottom end of the Carole and the Mehi. You are going to lose small amounts out of those systems without breaking riverbanks but to get the significant flows you tend to break riverbanks.

The Hon. RICK COLLESS: But that is all regulated; it is all controlled?

Ms LOWIEN: Yes.

Mr WINTER: Historically between Garah and before it ran to the Gil Gil Creek, it used to just flat out; this is back in the wool days and actually they built little weirs. They did the same on the Mehi to flood more land and give better grass for the stock. That all silted up over the years and had to be desilted to use it to put water down for irrigation supply into the Gil Gil Creek and similar on the Mehi system where there is a system of billabongs, I suppose you would call them—little yabbie creeks that run off. If they put too much water in there it would run out into those little creeks rather than go where they wanted it to go. There was limited capacity.

Ms LOWIEN: Our end-of-system capacity is around about 2,700 megalitres a day and that is what can be delivered through both those systems at any one point in time. The challenge is that obviously that is not a lot of water to remain in bank. So we have seen, for example, when water was sent from Copeton Dam down through the Gwydir River, out through the Mehi and on to the Barwon-Darling we saw about a 4 per cent efficiency from headwater to Bourke, so that is a 96 per cent inefficiency of delivering water.

The CHAIR: Loss.

Ms LOWIEN: Yes.

Mr GILLINGHAM: Loss.

The Hon. RICK COLLESS: So that would be from when that water enters the Barwon-Darling?

Ms LOWIEN: Yes, so they have to nominate a delivery point. In the case of the environment it is often a gauge and from then on it is losses as per when it occurs. They measured a minor gauge increase at Bourke that was essentially 4 per cent of the original flow to the grid from Copeton Dam.

Mr WINTER: Ironically, that is the same figure that they had to keep in Menindee Lakes to supply 8,000 megalitres to Broken Hill for domestic supplies. They only got 4 per cent there.

The Hon. RICK COLLESS: Surely as that water is going through to Bourke it is going to provide environmental benefits anyway?

Ms LOWIEN: That is a question for the environment and they would say, yes, it provides broad environmental benefit although its target was originally in the Mehi River for a fish recruitment strategy in which it was targeting a specific hydrograph shape, which it met. Fish recruitment and fish monitoring from that event did not indicate any recruitment as such from it but that there were broader environmental benefits from such water in the system. For us, it comes back to the question of environmental water management and efficiencies and whether or not that is an appropriate use of water.

We know that the water being released from Copeton Dam is quite cold—and I see that Mr Lucke has just walked in—in the sense that it is not a temperature scale that would allow for breeding. They do say that dissipates as it gets past Moree but we are not seeing evidence of recruitment from the use of such water so we see that as a failure and a poor use of water for that outcome. If the outcome was actually flows in the Barwon-Darling, be open and transparent about that and not target it as something else.

The Hon. RICK COLLESS: I will follow up on the issue of environmental water and your comments about the supplementary flows after 500 megalitres. I think you said it was 50-50 to the environment and productive water. The supplementary flows that go to the environment are in addition to the environmental water that is stored in Copeton Dam. Is that correct?

Ms LOWIEN: Yes.

Mr WINTER: Yes.

Ms LOWIEN: That is part of the water sharing plan and the rules within that. It is called "planned environmental water" as opposed to held.

The Hon. RICK COLLESS: What happens with that environmental water if there is a series of natural environmental supplementary flows? Does the proportion of environmental water in the dam increase? It has happened in some of the other storages further south. They have ended up with translucent flows or supplementary flows going through the system to the environment and, therefore, they do not have to let the environmental water out of storage. They let the productive order out of storage but the environmental water remains there. The proportion of the environmental water in the storage actually increases at the expense of productive water in the storage.

Ms LOWIEN: "At the expense of productive water" is probably not the right assertion but, yes, that is what happens. If they are getting natural events—and I do have an analysis of environmental water use in the submission—they often do not use their water initially from Copeton Dam and they will use water on the

tail end of that to supplement flows that may have been accessed by irrigators. That is normally the strategy. You can see a disproportionate increase in environmental water as irrigators are using theirs. The best highlight of that would have been in July this year when we saw the dam at 20 per cent but there was 8,000 megalitres of irrigated water in that dam, with the exception of high-security entitlements, which are 70 per cent irrigation. But that is quite a significant disproportion of dam capacity, which is something that we as an organisation try to communicate as a community, because once upon a time they could look at the dam and say, "Twenty per cent—we'll get a decent amount of cotton grown this year. We'll see some business in town", but the reality is there was a much smaller amount actually available for production—

The Hon. RICK COLLESS: Fifteen per cent of it could be environmental water, for example.

Mr GILLINGHAM: More.

Ms LOWIEN: Yes—more, in that case—or town water supply.

The Hon. RICK COLLESS: That leads me to the next question: Is there a need to rebalance that equation so that there is a better balance between productive and environmental waters in any given storage at any given time?

Mr GILLINGHAM: Yes. They have had a go, especially the Commonwealth environmental water, about selling it into the open market temporarily if they have oversupply up there or they believe they do, but that has only ever happened once.

Ms LOWIEN: In this valley, yes.

The Hon. RICK COLLESS: Do you think there needs to be a mechanism put in place where that is automatically generated when the figures get to a certain point, whatever that might be?

Mr GILLINGHAM: Yes, I agree.

Ms LOWIEN: The Commonwealth has internal capacity to do that, but what we are seeing is not a lot of appetite for that. I think a couple of factors for the Gwydir are that we do believe it is over-recovered. Whether the basin plan proposed amendments go through or not, we would see ourselves as having excess environmental water anyway. We are not seeing behaviour of use change significantly prior to the basin plan as to post basin plan to support the additional amount of environmental water. I am not sure whether it requires a fixed equation when it gets to a certain amount. Obviously lots of the environmental water requirements are based on long-term numbers as opposed to the actual, so there is often a bit of disproportion that way, but we do think there is opportunity for the permanent or temporary regular sale of environmental water back into production in this valley.

The CHAIR: We move now to questions from the Hon. Penny Sharpe and the Hon. Mick Veitch before we return to Mr Scot MacDonald.

The Hon. PENNY SHARPE: There is a lot of great information in the submission—thank you for that. I want explore the claim that water has been over-recovered, what you base that on and what evidence there is.

Ms LOWIEN: Bear with me: There are some numbers here! Hopefully Hansard will pick them up.

The Hon. PENNY SHARPE: They will!

Ms LOWIEN: Obviously under the Basin Plan there is a target, an in-stream target, of 42 gigalitres. Have you heard the term "long-term diversion equivalents"?

The Hon. PENNY SHARPE: Yes.

Ms LOWIEN: It is 42. We currently have a recovery amount, by my calculations on actual figures based on both Commonwealth and the New South Wales website, of 48.5 long-term, so that puts us—

The Hon. PENNY SHARPE: Does "long-term" mean 10 years or 20—

Ms LOWIEN: No, that is over the 100—

The Hon. PENNY SHARPE: It is over the 100; it is over the full plain.

Ms LOWIEN: Yes, over the full time series. So that 48.5 obviously puts us 6.5 over-recovered just on in-stream. Now, if the basin plan were to go ahead without any amendments, the Gwydir could be asked to contribute to the downstream requirements. Obviously it is a whole argument about connectivity efficiency of that, but we would be asked to put around 11.8 gigalitres, based on the default apportionment calculation. That

actually puts us slightly under the target, obviously, so we have got 48.5. We would see about 5.3 gigalitres needing to be recovered into the future under that scenario.

The Hon. PENNY SHARPE: You would argue that you are over-recovered and therefore should not take any more because they are already getting that, essentially.

Ms LOWIEN: Yes. The caveat for all of this is that we actually think the way they calculate that long-term number for the Gwydir is inaccurate, and that is something that is subject to review under the planning assumptions review at the moment. We actually see that number, instead of 48, as more like 61.4. That is quite a significant jump, so that puts us significantly over-recovered. We are talking 19.4 gigalitres over, if the basin plan amendments go through. That requires no more over the 42 that is currently—

The CHAIR: Have you given us your rationale for those calculations in your submission?

Ms LOWIEN: I can give you the spreadsheet, if you would like.

The CHAIR: That would help, because it is a pretty complicated issue.

The Hon. PENNY SHARPE: That would be useful. I now understand what that means—thank you. When I was reading your recommendation 1, about WaterNSW and DPI Water and the confusion in relation to who is responsible for what. On page 12 of your submission you talk about being unaware of any scenario planning for future demands of water, particularly rural and town water. Can you talk me through your concerns about that?

Ms LOWIEN: There has obviously been a lot of change in the departments, and I am sure you are very well aware of that from the other hearings. Our association and I in particular have not been approached, for example, for any scenario planning for rural water needs in this valley. I am not sure about the other valleys, so it comes from my perspective in this case. For us I think the point about the concern for that is, one, the example of the use of embargoes in the past for rural water needs and the impact that has had here in our valley. But the other part is that irrigators and other users in the system, and now the environment under the Commonwealth in New South Wales held entitlements, have growth-in-use provisions so we stay within our long-term diversion limits.

If there is a significant growth in urban requirements, whether it be in this catchment, they would supersede those other forms of entitlement. If there is planning not occurring in an equitable fashion, there is quite a real impact for areas that may have significant urban growth that was unexpected. What we do not think that that is a significant concern immediately for us, the nature of farming and the nature of the New South Wales landscape is unclear as we currently stand, so we want to make sure there is some form of planning around that for the protection of rights for all users going forward.

The Hon. PENNY SHARPE: That is a fair point. Are you making the point regarding the Department of Primary Industries and WaterNSW that it is unclear whose roles and responsibility it is? Do you think that is a function of changing staff and loss of corporate knowledge, or is it fundamentally a problem with the restructure making it unclear?

Ms LOWIEN: I think it could be a combination, to not really answer your question. There is definitely an uncertainty. I would open it to Mr Gillingham and Mr Winter to say from their perspective. Obviously I have a lot more visibility of what is happening within the department from my daily involvement with them. But I do see a very unclear understanding within both organisations on occasion as well as from the community perspective.

Mr WINTER: I am seeing that as well. Some of the fellas in WaterNSW are not quite sure. When things, some sections, were changed over from DPI—Water to WaterNSW, like the compliance section, there is one section that they is in a little bit of a limbo. They do not know who is doing what—what personnel in the different areas have which job. We struck that last September at the end of last winter. There was some country down on the eastern end of the watercourse that had floodwater over it in areas that had never been flooded before, and it was not a big flood. It was only a mediocre flood. There were a lot of questions raised over whether some of the banks that were in the area were legal or not. They still have not got onto that. They do not know which section of the compliances are going to do it, or who is going to do it. The responsibility used to lie with DPI—Water, but that has been handed over the WaterNSW. They are still in the process of getting through that.

The Hon. PENNY SHARPE: Finally, I want to ask you about the wetlands. How do you think the wetlands are travelling? From your perspective, what changes do you think need to be made to ensure they stay in reasonable shape?

Mr WINTER: They are travelling very well, especially after the big wet that we had in September. The environment now has water—planned water—that the environment never had. Years ago it just rained, and what came down came down. Now they have entitlements in the dam; they have the environmental contingency allowance [ECA]; they have the Commonwealth bought water and the 50 per cent of the water-sharing plan on top of the 500 megalitres.

I might add in relation to that 50 per cent that the irrigators do not always get 50 per cent. Quite often when there is a lot of rain on the farm we are busy pumping our own water off our crops. The supplementary water comes down the river. Obviously, it cannot be held up. When it gets to a certain level they just have to open all the gates to avoid damage of the weirs. In that situation, the irrigators can only take what they can take; they often cannot get their full entitlement, so that goes onto the environment anyway. Realistically, in the long term, the environment gets more like two-thirds—60 per cent to 67 per cent or somewhere in that area over a long term. The wetlands are in very good shape at the moment because each year we do a three-year budget to try to plan whether they are going to be proactive or reactive. Of course, that can be changed quite easily if you plan for a big flow and you get a drought or vice versa. That seems to be working fairly well.

With respect to planning, what do you do to make it better? I do not know whether I think that we should be doing anything. It is a natural thing. Parts have it always have been naturally formed from land use over 120 years—especially in the Gingham side of it. When my great grandfather was down there that was all wool country. That is evident today from the old woolsheds that are down there. They had to erect windmills and bore drains to get permanent water. From what I remember of Gingham when we owned a section there, when I was a young fellow, it was just all hyacinth, shags and water. That has changed from the 1880s through to the 1960s. The number of floods we get now is quite a lot more than there was back in those earlier days. My grandfather saw a flood in 1910 and another one in 1950, and no major floods in between. I have lost count of how many major floods we have had in my time. The water comes down faster. That is probably as a result of clearing up in the hills and down here. As for putting another channel through, you might be referring to the constraints committee. Is that what you are referring to?

The Hon. PENNY SHARPE: No.

Mr WINTER: They have been looking at putting a bigger channel through delivering more water down to the bottom end. They have had to go through a lot of privately owned land. It is just going to use more water to flood country that only got flow probably once in every three to five years within the last 40 to 50 years, but if you back before that the country it would not have got flooded that much. A lot of it has been drained over time because after the dam was built they put a channel through there to dry it out to try to control the hyacinth. There was a big fear that water hyacinth would get into Menindee Lakes, or some seeds or floaters would go down there. The three State governments and the Commonwealth put funds together for the Moree Plains shire to control that. They still have control. There is still hyacinth out there but it is sort of under control. There is only a little bit of it. They drained that to get rid of the hyacinth and also to deliver stock and domestic water down there. Now they since have piped that water—in latter years—for stock and domestic supply, so that is no longer needed. So that is allowed to be filled back in, which will spread some water back out again. So man is manipulating it.

The CHAIR: Anyway.

Mr WINTER: Man has been manipulating it all the time.

The CHAIR: It sounds as if man has been manipulating it since 1880.

Mr WINTER: If people keep manipulating it, we have to say, "We've got what we've got", and try to manage that. We want to keep that, not make it something different. The outcome might be different to what you make, anyway, because nature will take its course a lot of times.

The Hon. PENNY SHARPE: Thank you for that.

The CHAIR: We are out of time. Mr Veitch, do you have one question?

The Hon. MICK VEITCH: Yes. About the water-sharing plan, can I quickly ask your view about the process for formulation of a water-sharing plan?

Ms LOWIEN: The process is still underway. We are the most advanced. Obviously, the Gwydir is the pilot, if you have heard it referred to as that. We are still waiting to see how our issues will be assessed under a multi-criteria analysis. I think timeframes are getting to such a point where we decide whether that is the way forward or not. We have a pretty straightforward water-sharing plan. There is not the complexity of stakeholders as there are in some other valleys. A lot of people are looking to us and saying that if the Gwydir cannot get it right, what help do we have?

I am still confident that we can work with what we have. We are actively trying to pursue options within that. I have seen part of the issues assessment process, and coming back with that has been quite good because it actually gave us a transparent opportunity to look at those issues on the table rather than having different groups meeting separately. But we have to start making some movement, and we have to start making some decisions. That is a concern for all water users around the State. There are some big ticket issues that need to be decided as part of the compliance to the basin plan, and some other issues on which we are negotiating with the Murray-Darling Basin Authority. Those have to happen before the Gwydir plan will progress much further.

The Hon. MICK VEITCH: Thank you.

The CHAIR: We are out of time. I thank you for coming and giving your evidence today. This is an information-rich document. By the end of this week we will determine among ourselves the questions that should go to any of the witnesses. Could we get responses back 21 days after you receive the questions? I will try to put together the question I put to you earlier because it would be helpful to have some of those issues spelled out in your view. As you say, you are the pilot study so you might as well be right out in front of the pack. Again, thank you for coming in to see us. We appreciate very much what you have done for us today.

Mr WINTER: Thank you very much for the opportunity.

Ms LOWIEN: Thank you.

The CHAIR: That is okay. Let us hope we get something out of it.

Ms LOWIEN: That is what we are hoping for too.

(The witnesses withdrew)

LILA-JANE FISHER, Project and Development Manager, Moree Plains Shire Council, sworn and examined

DAVID WOLFENDEN, Group Manager, Water and Waste, Moree Plains Shire Council, sworn and examined

The CHAIR: Would either or both of you like to make an opening statement? I note that we do not have a submission from the council.

Mr WOLFENDEN: That is correct.

The CHAIR: If you have anything you wish to say to me it would be helpful to Hansard if it is in writing too.

Mr WOLFENDEN: Thank you for the invitation to present here today. I took the liberty of inviting the engineering department along as well. It was initially focused on me but I believe it is broader than what I could offer—the reason being I am the water manager and very much operational. In regard to other areas, floods and the bigger picture, engineering handles that side of it, so it is a team effort today. My opening statement is one page in length, so I will run through that.

Moree Plains Shire Council as a local water utility manages eight town water supplies. Due to the large geographic distances between our towns and villages the water supplies are operated as individual water supply schemes—lots of separate schemes. The water sources and annual water access licence volumes allocated to council are summarised broadly as follows. We have the Border Rivers regulated water source on the Queensland border—the town there is Boggabilla—which has a 200 megalitre licence; the town of Mungindi has a 300 megalitre allocation plus 20 unit shares; the Lower Gwydir Groundwater Source, where we are here; Moree, which has 3,500 megalitres plus 68 unit shares; and upstream is Pallamallawa, which has a 72 megalitre licence. The groundwater source, the Great Artesian Basin, is at Boomi. It has a 55 megalitre source plus 50 unit shares. There is Garah, which has 50 unit shares. We have the Moree Artesian Aquatic Centre, which has under the licence 420 megalitres, plus another 200 unit shares. Then we have the Gwydir regulated river water source. In that area we have Weemelah, a small village which has 37 megalitres. That gives the big picture. There are a few megalitres in the parks, but that is the big picture.

Let me go back a step. I have been in this position for about eight years. Prior to my time there have been some challenges having sufficient surface water quantities available in the river when required for both Mungindi and Weemelah. Diverging from my notes, the story is that at Mungindi the river went completely dry and the council had to put an excavator in the river to dig into the sand to try to find water to keep the town going. So that is the situation we do not want to get into in the future because it is about water security these days. That is the mantra. Problems with having sufficient water available for extraction have also been experienced in the Macintyre River at Boggabilla. However, plans are in place to relocate the inlet works to a deeper section of the river. The current inlet is in about one metre of water and it does not take much for that to run into trouble. We are moving the inlet works downstream a couple of kilometres or so just upstream of the Boggabilla Weir and the water is about four metres deep there. So that will sort that out over the coming months.

Blue-green algae occurs infrequently in the Macintyre River at Boggabilla but it does occur and we find we have to treat it. We have activated carbon to do that. Further, in the towns of Boggabilla, Pallamallawa and Weemelah, we struggle to stay within the water access licence annual allocations. They are relatively small allocations but we do push the limits on those. The towns in the western area are quite hot. In the middle of summer people use a lot of water in their evaporative coolers. It is a bit hard to say that they should not use it, so it gets used and we need to sort that out. Perhaps we need to look forward just to increase those allocations slightly.

Moree is very dependant on the Lower Gwydir Groundwater Source for survival. Without that water we do not have a water supply. There is a bit in the river but we cannot really depend upon that. The Lower Gwydir Groundwater Source is a large water storage area which over the years has been quite reliable. However, our ongoing water security is an important aspect for all centres of human population—there is no argument about that. Aquifer recharge I believe contributes to some extent in sustaining this valuable water resource and the Lower Gwydir Groundwater Source.

The CHAIR: You are talking about natural recharge?

Mr WOLFENDEN: Natural recharge, yes. The Lower Gwydir Groundwater Source is effectively an underground dam, in simple terms. This dam needs to be protected from both environmental contamination and to ensure that sufficient water is available to the local water utility. I understand there are other demands on it

but it is important to sort it out for the local water utilities and to ensure that we have a reliable water source for the population. That is my statement. I am happy to take questions at any time.

The CHAIR: Perhaps I could start with a few explanations. You referred to shares when you talked about allocations. What are they?

Mr WOLFENDEN: Interesting question. Under the water access licence you can have, say, a 55 megalitre per annum allocation. But then there are shares which are negotiable, as I understand it. If we have, say, 50 unit shares, it could be times two—two megalitres—so you might have another hundred. However, it might get back to times one or it might get back to times 0.5.

The CHAIR: So they are variable. Are they tradeable?

Mr WOLFENDEN: I cannot answer that one. Generally a water utility cannot trade its water.

The CHAIR: I meant between the other water utilities?

Mr WOLFENDEN: No, I do not believe so.

The CHAIR: If you were to increase the allocation for those couple of towns where you think the security is not high enough, you just have to bite the bullet and increase the allocation on the expectation that the water is there to supply that increase?

Mr WOLFENDEN: That is one methodology. At this stage Moree is relatively strong in that it has 3,500 megalitres per annum. We do not quite hit that limit on an annual basis. However, looking towards growth we are looking to expand our water supplies out to Biniguy to the east and to Ashley to the west. I think by the time we do that we will probably use the allocation up pretty well, with a little bit for growth.

The CHAIR: All coming from the Moree allocation?

Mr WOLFENDEN: Possibly, yes. That means you will have another uptake at perhaps Ashley but it is still out of the Lower Gwydir Groundwater Source.

The Hon. RICK COLLESS: So where do they get their water from now?

At Ashley they have tanks and they had some bores themselves. The issue at Ashley is for many years there was a septic system there as well and I think a lot of shallow bores. Even though they installed a vacuum septic system—I suspect, I have not got the latest data—there is a good chance there is still cross-contamination. By having a bore about two kilometres out of Ashley away from everything else and I think we can deliver a good quality water supply

The Hon. RICK COLLESS: And Biniguy?

Mr WOLFENDEN: At Biniguy we are looking to pipe that from Pallamallawa. We have currently got the odd bore and tanks. There is not a good water supply necessarily at Biniguy.

The CHAIR: One of your statements was that you are concerned about the future security of the Moree supply. What other users take from that particular aquifer? Does agriculture use that?

Mr WOLFENDEN: Yes, enormous. The agriculture industry is the main user of the Lower Gwydir Groundwater Source and we are competing very much with that.

The CHAIR: Has there been any hydrological survey done of that source so there is a rough idea of how much is there?

Mr WOLFENDEN: I cannot answer that directly but there is a lot of work being done on that in terms of the water sharing plans that are being developed.

The Hon. PAUL GREEN: Does it recharge quick or is it a slow recharge?

Ms FISHER: The University of Sydney did studies.

Mr WOLFENDEN: I will clarify, Ms Fisher worked in the water area before I came along eight years ago and she is very knowledgeable too in this area.

Ms FISHER: University of Sydney, when they were first looking at the catchment and what they were going to do, identified that we have got a very quick recharge. It is only 50 years coming from the Bingara Hills. They were looking then at overallocation. At that time the water being taken out was under the allocation that the aquifer can hold but the licence as a sleeper licence meant that it was very well overallocated. But because they were sleeper licences they were able to pull a lot of them back in so we were not a stressed aquifer.

The CHAIR: Your concern, Mr Wolfenden, is that development might cause some stress in the system or that currently there is stress in the system?

Mr WOLFENDEN: In accordance with the information paper that has been distributed by the Government in relation to the water sharing plans, there is clear information in that particular document about the stress just downstream of Moree. We need to be very aware of that. Also I think more in Ms Fisher's time than mine we had to actually lower our pumps to compete with the irrigators. It was a bit of a competitive situation. It has not happened lately. I think since controls have come on it has not been such an issue to us.

The CHAIR: Do you have the information at what level your pumps are set now? Perhaps you can take that on notice for us. We visited a facility today and some levels were quoted there.

The Hon. PAUL GREEN: Are you aware of how many sleeper licences are left?

Ms FISHER: No, sorry, because I have been out of that area for seven years.

The Hon. MICK VEITCH: Ms Fisher, do you have a statement you would like to make as well?

Ms FISHER: I am here on behalf of Director of Engineering Ian Dinham, who is the Australian Chair of the Floodplain Management Association and our conference is on this week, so he is an apology. I will be down there in a couple of days with him. As to your point (d) examining the 50 year flood history in New South Wales, floods in New South Wales and Australia kill more people and cost more than any other natural disaster. I have known that from the conference, but just to give you the numbers, 1,859 have died in Australia since 1900 and there have been only 618 bushfire deaths in a longer period of time. Floods kill more. The most recent floods in Moree shire were November 2011 and January 2012. These two floods caused $40 million damage to public assets in this shire alone and the neighbouring shires experienced a very similar damage bill. This does not include the private assets and insurances payouts. In the past 50 years there have been 11 floods in our shire, taking in mind the Border Rivers as well as the Gwydir catchment. I will not go through those dates because there are a lot of them from 1971 onwards. Tweed shire just experienced its one-in-100-year flood event, possibly, and Lismore also experienced a major flood event.

The 2002 Bureau of Transport and Regional Economics report estimated the cost of floods in Australia was $300 million per year on average, year on year. However, since then there has been an increasing number of major flood events in Australia particularly in New South Wales and Queensland. The human cost such as post-traumatic stress disorder, depression, divorce and alcohol abuse is estimated to be a further 50 per cent in dollar terms. That is from the Australian Business Roundtable for Disaster Resilience paper, I have an extract here, from March 2016. Consequently, after more recent research by Deloitte Access Economics, the total annual cost of natural disasters in Australia is expected to increase from $9 billion in 2015 to $33 billion by 2050, according to the roundtable.

Point (e) from your questions is to examine technologies available. Technologies available to mitigate flood damage are far more advanced in recent years thanks to the modern computer modelling for flood events. We have been privy to that ourselves. I have only just recently tabled to the councillors our 2D modelling for the flooding in Moree. Some more accurate flood predictions lead to better design of mitigation assets such as levies and dams. Knowing that levies and dams are the only mitigation measures that can reduce existing risk. Obviously, planning controls can get rid of future risks. Copeton Dam upstream of Moree does provide capacity for mitigating for low events, which our 2D modelling first identified. It was never put in as a flood mitigation dam at all. The previous thought was that it does not do anything but for the lower events it does have some mitigation. Other flood mitigation dams could well be effective in New South Wales. With the 2D modelling becoming very robust and reliable, it is probably worthwhile to have a look at that across the catchments across the State.

The Federal Minister for Justice, the Hon. Michael Keenan, is currently reviewing the natural disaster relief and recovery arrangements in liaison with the States with a view to increasing the proportion spent on mitigation and preventative measures to reduce these impacts over time. New South Wales needs to support this proposal. Flood diversion systems are effective in some circumstances but there needs to be an assessment of adverse impacts on downstream properties, which can now be determined with modern computer modelling. I know that is not just within the council because the OEH looks after the whole catchment-wide flooding. In this area both the Gwydir and the Macintyre have been extensively modelled by OEH. This strategy is more likely to be suitable only in rural and regional areas rather than highly developed urban areas.

Future risk must be addressed by wise land use planning and appropriate development controls. Diversion systems for water supply from one catchment to another have limited scope due to cost and environmental impacts. Successful diversion in recent times has been implemented by the construction of a

pipeline from Kangaroo Creek Dam in the Clarence Valley to Coffs Harbour, but this is only operated when water supply reaches critical levels in Coffs Harbour.

The Hon. MICK VEITCH: What are your views on the process that has been followed for the formulation of the water sharing plan and the consultation mechanisms?

Mr WOLFENDEN: To be honest, I have only just jumped on to it lately. I have read the most recent document, which I found very informative. I did look at the table that sets it out. It seems very logical. We are really waiting for the draft to come out so we can perhaps make some comment. The information I have seen to date—the preparatory work—is well founded.

The CHAIR: That is the method by which you are being consulted: you are given the draft document for your absorption?

Mr WOLFENDEN: There have been earlier ones which we probably have not picked up on. I came across one; there is a lot of paper on my desk. When I pulled it out I saw it closed last week. But when I read through it there was not a lot I could really contribute to it, I must admit.

The CHAIR: But the information was easily read and you thought it was good information?

Mr WOLFENDEN: Yes, easily read and really helpful information. We are having a very close look at the Lower Gwydir Groundwater Source at the moment around this table at a political level. The information provided in there has been very helpful. It basically shows the northern part of the catchment or northern part of the basin has dropped in level but on the southern sides it has actually raised. I am looking to put some bores on the southern side, so it all looks good. I found that very useful information.

The Hon. MICK VEITCH: Ms Fisher, you spoke about flood mitigation. Do the communities within the Moree Shire Plains Council have levee banks?

Ms FISHER: We have one levee bank completely around Mungindi and we have some berms or pushed up earth around the other communities. At Pallamallawa there is one right against the Gwydir River and there is a proposal for a levee bank for a one-in-20-year flood protection because with infrastructure you need to have community consultation and the initial design was for a ring levee around Pallamallawa but the community did not want that because there is a "them" and "us" with a ring levee. Also, where do you put the levee and you start the development as soon as you put the levee somewhere. So they actually asked for a one-in-20 levee bank, which is just two parallel levees, and that was presented to the council just this week because we have a new council. We are very keen to see that happen because there is high ground within the Pallamallawa township so they are going to self-evacuate. It is really important to get those kinds of levees so that the community can look after itself because it is getting very expensive to fly in the State Emergency Service and support services when they can have the capabilities with some prior assistance.

The Hon. MICK VEITCH: Is council funding that?

Ms FISHER: No, we are asking for grant funding. We are fortunate enough to receive one-in-six ratio for grant funding so hopefully that gets off the ground with the Office of Environment and Heritage [OEH]—the grant applications only went in two or three weeks ago and we will get an announcement closer to the end of the year whether we are successful with that one but we think that it is very, very important for communities. They used to be fairly resilient themselves because there was always a lot of tractors and earthmoving equipment around in small towns but there is not so much now; they are merely satellite suburbs of Moree so the level of ability for them to look after themselves has diminished because they are really satellites. Most of the people work in Moree and they are sort of urban dwellers but if we have that levee bank for them that gives them their own peace of mind and the ability to protect themselves.

The Hon. MICK VEITCH: How often do you check the integrity of the existing levee bank?

Ms FISHER: Council staff do formal inspections a couple of times a year but we really need structural engineers and we have endeavoured to get proper levee engineers along. It used to happen way back in the 1970s when there were lots of floods; it was front of mind and OEH had access to resources for levee-bank qualified engineers but there are not many of them around. We do our own inspections.

The Hon. MICK VEITCH: What is the nature of those inspections? Are they visual?

Ms FISHER: No, we do not do any coursing? It is only visual; it is just looking and killing the saplings. We have trees now growing in some of our levee banks. They have been let go from years of neglect of not doing formal works and also from local people thinking the trees help support it because you see a washout when you have a bare bank. We have had the levee engineer up to look at Mungindi. There is a concern that the trees are now so big that removal would cause problems. Mungindi is also in the running to get an

upgrade because the 1 per cent has increased so therefore Mungindi's levee needs to increase as well. It does not have a free board on it, so we are looking at funding for that too.

Mr SCOT MacDONALD: I have a question about the water authority. Do I understand that you do not have the capacity to trade so you cannot buy a temporary allocation and store it in Copeton Dam or groundwater for the highs or lows?

Mr WOLFENDEN: Thank you for that. We can actually buy in components. I do not think we can sell components, particularly as our water licences are fixed components as a water utility. The ones we have as a unit share—I am yet to do the work to see if they are tradable.

Mr SCOT MacDONALD: At the end of the day the Committee makes recommendations but without going to the nitty-gritty, do you need more flexibility to either buy permanent trading or selling permanent? Would that be more useful?

Mr WOLFENDEN: Yes. When you look across our shire, like with Weemelah we struggle a little bit, Boggabilla we struggle but if you move it across it is quite tightly held in terms of "That's Moree's water; that's this water and that's that water". In terms of bringing Ashley on, I believe I need Department of Primary Industries [DPI] water, and to come back and say, "Look, there are so many people in the town. They need so much water. There are so many people in Moree. We have got a bit of excess. Perhaps we can shift a bit across". Within the same valley it is my understanding that with a fair bit of work there is scope to do that. It will be nice to think we could put it all in one big group and say, "Just manage that, Moree council".

Mr SCOT MacDONALD: Irrigators are doing this all the time?

Mr WOLFENDEN: Yes.

Mr SCOT MacDONALD: They are buying and selling entitlements; they are buying and selling temporary trades.

Mr WOLFENDEN: But even if we can group Pallamallawa, Moree and Ashley as one water utility into one organisation, even though it is three separate towns, and just manage that, that suddenly takes away some issues for us. It simplifies it. I guess if we go through the whole process we will get the same result but if we did it in the one go—I am not sure we can trade across valleys; I do not know how that would work.

Mr SCOT MacDONALD: Yes, there are intervalley trades.

Mr WOLFENDEN: Yes, intervalley trades.

Mr SCOT MacDONALD: With limits.

Mr WOLFENDEN: Yes, with limits. At Weemelah, which is a little village with an off-river storage, the river is often dry. And often the river flows and we actually cannot officially pump; the river is fine but we cannot pump so we say, "No, we have reached our limit—

Mr SCOT MacDONALD: So you cannot apply supplementary water, in other words?

Mr WOLFENDEN: We could at that particular time; we take supplementary water now. We are not really struggling for that at this particular point in time.

The Hon. RICK COLLESS: So why can't you take the water. Is it a physical constraint?

Mr WOLFENDEN: No, we have a licence limit, which is 37 megalitres.

The CHAIR: So once you reach the limit, that's it?

Mr WOLFENDEN: That's it. "Turn the pumps off, guys".

The CHAIR: Even though you have off stream storage that you could pump?

Mr WOLFENDEN: The storage is there, only half full, and the river is rushing past—there might be a flood—my understanding is we are still constrained whereas the local water operator at Weemelah is busting to turn the pump on and we say "no", but the community do not really understand what we are on about because you have the water rushing past and the town dam.

Mr SCOT MacDONALD: At the end of the day it is not a big amount of water; it is a small amount?

Mr WOLFENDEN: It is not a big amount of water, no. At the moment because we have stuck by our guns on that perspective, if we do not get a river flow in the next 12 months or so—

Mr SCOT MacDONALD: You will be trucking it in?

Mr WOLFENDEN: All that sort of thing, yes.

The CHAIR: Perhaps that is a recommendation your local government would like to make to this Committee?

Mr WOLFENDEN: Very much so, thank you.

The CHAIR: I will arrange for someone to ask you the questions.

Mr WOLFENDEN: Thank you, maybe Mr MacDonald will put the question on notice to you.

The Hon. RICK COLLESS: It is nice to see you again Mr Wolfenden. Could I ask you the geographical area of the lower Gwydir groundwater source?

Mr WOLFENDEN: It goes out past Pallamallawa to the east. A little heads out to Bingara and then to the west it gets to Ashley and cuts off there; it is a big egg-shaped thing. I guess north and south of Moree you are looking at five or 10 kilometres. I could position that fairly quickly.

The Hon. RICK COLLESS: This morning we were out at Mulligan's place out near Gingham. Would that be part of that water source on the north-western side of town?

Mr SCOT MacDONALD: Woodcourt Road.

Mr WOLFENDEN: I would have to check that. The difficulty with the maps I have in those reports is that it is very hard to work out where the roads go; the information is a little vague. I cannot pin that down.

The Hon. RICK COLLESS: Obviously you just gave us the figures for the town water supply, which is roughly 500 megalitres?

Mr WOLFENDEN: For Moree? Moree is 3,500.

The Hon. RICK COLLESS: Moree, Boomi and Garah.

Mr WOLFENDEN: Garah has got 50 units.

The Hon. RICK COLLESS: If we speak in round figures, there is 500 megalitres in total that comes out of that town water supply, including Moree's water supply—

Mr WOLFENDEN: There is more for Moree. Moree has 3,500.

The Hon. RICK COLLESS: You mentioned a figure of 420 megalitres plus 200—

Mr WOLFENDEN: That is just to make it interesting. That is the hot pools, the swimming pools, which come out of the groundwater source, which is really a separated one.

The Hon. RICK COLLESS: So that is not actually part of the Lower Gwydir—

Mr WOLFENDEN: No.

The CHAIR: That is not in the same aquifer.

Mr WOLFENDEN: I just went through the whole lot; I was not sure what we were focusing on today.

The CHAIR: The other one is about 10 times as deep.

The Hon. RICK COLLESS: The Moree water supply comes out of that Lower Gwydir Groundwater—

Mr WOLFENDEN: That is correct. It is roughly about 50 metres deep.

The Hon. RICK COLLESS: In that case, we are talking about maybe 3,500 in total that comes out of that.

Mr WOLFENDEN: For Moree, yes, plus a little bit of Palli, which has got 72—3,500 plus 72 is 3,572, and we have 68 unit shares for Moree which could be times two.

The Hon. RICK COLLESS: It might be up to 4,000 megalitres.

Mr WOLFENDEN: Maybe, yes.

The Hon. RICK COLLESS: Do you have any figures about what the agricultural licence allocation is for that source?

Mr WOLFENDEN: I do not offhand, no. All I know is there are a lot of bores. When you look at the map of where all the bores are, it is dotted extremely—I can probably go upstairs and get the bore map.

The Hon. RICK COLLESS: We can ask the water people that question anyway. Also, when you say that south of town the levels are better than they are north of town, do you think that indicates that the recharge is coming from the south?

Mr WOLFENDEN: It is an egg-shaped thing and Bingara is over here, so it must come in there. I think it is probably related to the fact that it is pumped harder on the northern side, and there are not many bores on the southern side. I think it relates more to that. What happens when you read that study is that the water can drop, from memory, something like 16 metres when they turn the big pumps on, so you are going to the flows going backwards in the ground under the surface. That needs to be managed carefully. Pollution can be an issue. The last thing we want to see is our water sources polluted, from an environmental perspective, no matter where it comes from. We have an old waste management facility within that area, plus there is a lot of agriculture—a lot of cotton sprays, all sorts of sprays going on, Atrazine—all risks. I am not saying there are any in there, but there are risks: If they happened to get in there, they could potentially make it very difficult.

The Hon. RICK COLLESS: What are the options for augmenting the water supply for this region as a whole? That is a question on notice from Mr Scot MacDonald.

Mr WOLFENDEN: Following on from what Ms Fisher was saying, Copeton Dam is not really a flood mitigation dam. When you look at a flood, there is a lot of water that comes through and it just seems to me that further dams seem to make a lot of sense. You can have half mitigation, half storage—you can do those sorts of things and try to hold that water back, which makes more water available to the valley. To me that seems quite simple. The Lower Gwydir source—this is not an expert opinion—I feel a lot of it comes from the surface on its way in and a lot of that probably comes out of Copeton Dam, if you go back and consider that.

Ms FISHER: My time in that role there searching for further bore supplies was really hard. What Mr Winter said before about the fast-moving floods, and knowing that aquifers have to recharge and it has to percolate through solid rock, it needs to have time to sit there and percolate through but now the water is rushing off everywhere so much more quickly and it is rushing down rivers—a lot of those rivers have been man-made as well in the last 120 years because they were really a chain of ponds; billabongs were a natural environmental that we look at—and now it is flowing very fast down rivers and not having time to percolate through and get down to that ground water. When I was looking, the hydrologist that I rang up in Tamworth to get me some more information—it was really black magic: "Just put the bore down there and see what you'll get." They really did not have the full science because there is not, there was not, enough information because it is only 120 years old.

The CHAIR: Perhaps if you built a mitigation dam you would build it right on top of the recharge area.

Ms FISHER: It makes sense.

Mr WOLFENDEN: Makes sense. Thinking about the hydrographs and what is in the current water surety plans—different name—and the documents that have just been published, if you look at the hydrograph, the water level under the ground is not like that—it goes up and down. People will follow us with boats. I think there is a very close correlation to the river flows and the water recharge. I have not thought about it but while I am sitting here, that is what I see as quite a close correlation. That is referenced in that document.

The Hon. RICK COLLESS: When Copeton Dam was built, it was built purely for irrigation, was it not? There was no flood mitigation or environmental capacity in there.

Ms FISHER: No.

The Hon. RICK COLLESS: Do you know what the environmental capacity of Copeton Dam is now? When it is at full supply level, how much of it is allocated to the environment?

Mr WOLFENDEN: I do not know.

Ms FISHER: No idea.

Mr WOLFENDEN: It is not really my area.

The Hon. RICK COLLESS: We can find that out from the water people anyway.

Mr WOLFENDEN: I am sure there would be some allocation there.

The Hon. RICK COLLESS: You are basically saying that flood mitigation and environmental water is a good justification for extra storages to meet those needs, first and foremost.

Mr WOLFENDEN: As well, yes. Split it a bit both ways. Because the amount of water when the flood comes through here—I think the width is about 16 kilometres. It threads down to 16 kilometres wide through Moree, then it spreads out again. It is an enormous amount of water when you get up in a helicopter and have a look at it—just mind-boggling.

The CHAIR: It threads down because of the man-made—

Ms FISHER: Levee banks and dams, yes.

Mr WOLFENDEN: And the general shape of the land too.

Ms FISHER: The 2D modelling has identified that our 1 per cent has gone up a foot—I should not say that—300 millilitres in this area because of the extra levee banks that have been allowed to be built.

The Hon. RICK COLLESS: What do you mean by 1 per cent?

Ms FISHER: Our houses are built to a one-in-100-year flood event, so that is where we have got to be—500 millilitres above the one-in-100-years—and now overnight the model comes out and everybody has got to build their houses higher. It does change the development in town. It is because of the development—and we are not knocking the development of the irrigators, because we need that, but Mungindi is in exactly the same boat. Mungindi's levee bank was built and would have stood them well but there have been levee banks upstream and downstream that, again, have funnelled the water into a much narrower flood plain. If you think about our flood plain, the PMF at the Hawkesbury—the probable maximum flood—is six metres above the one-in-100. Our probable maximum flood is only eight metres above the one-in-100 because it just keeps on spreading out.

The CHAIR: That is right: The area it covers is 1,000 times greater.

Ms FISHER: Yes. It is quite easy and cheap for us to mitigate with levees but we have to have that connection between the levee banks and what all the irrigators are doing with their water, and that should be the realm of OEH. It is, because OEH is in charge of everything outside of a town but it has been severely reduced over the last couple of decades in terms of its resourcing. I think it has a quarter of its staff numbers compared to 30 years ago. People do not value their job and their position. We are getting resourced out of Dubbo now when there used to be a Tamworth officer. Now there is a Dubbo officer who has to go as far south as he has to go north. It makes it very hard when we have to try to work together for flooding.

The CHAIR: Can the Committee take it that, given the content of your opening statements, the Moree Plains Shire Council either has or would like to have a view placed record regarding on flood mitigation?

Ms FISHER: Yes, absolutely.

The CHAIR: Perhaps you could write us a letter referring to your opening statements and making it clear that your organisation has an interest in flood mitigation. It probably would not hurt if you gave us a few ideas off the top of your heads as to how that could work. For example, should Copeton Dam levels be raised? Should further dams upstream in the recharge area, in the Bingara Hills area, be built? It would be fruitful if we received some information on that.

The Hon. RICK COLLESS: There was a proposal to raise Copeton Dam about 25 years ago.

The CHAIR: It is about time we revisited that, but we cannot do that unless somebody raises it with us. We would be very grateful if you would augment your opening statement with a letter to us. I am sure the secretariat would happily receive that as a late submission.

Mr WOLFENDEN: I think it is think it is worthwhile mentioning that, from my understanding of floods, there is a lot upstream of the Copeton Dam.

The CHAIR: Yes.

Mr WOLFENDEN: But a lot of rain also falls downstream of the Copeton Dam.

The CHAIR: Yes, it does.

Mr WOLFENDEN: Even to south of here, Moree, it comes back through Moree. I am not sure if there are any opportunities for dams in those areas.

The CHAIR: No, but if man-made levies are creating the problem whereby you have a high-level flow-through because of restriction, that should be addressed—probably by the authority that is responsible for

the protection of the citizens, which is the Moree Plains Shire Council. Does any other member have questions for these witnesses? No? We will call it a day, unless there is anything witnesses would like to add?

Mr WOLFENDEN: No, thank you.

Ms FISHER: No.

The CHAIR: Ms Fisher and Mr Wolfenden, I again thank you very much for appearing before the Committee. You have started some very good conversations that we might develop. Some of the questions you could not answer will be taken by the Committee to the authorities: You have given us some thought starters. If Committee members have questions they would like to ask you, they will put them on notice through the secretariat. You will receive them in writing. We would like very much to receive answers within 21 days of your being asked those questions. Please take it as read that I have asked you—we will call it a suggestion—to put in a supplementary submission.

Ms FISHER: Thank you.

Mr WOLFENDEN: I take it we will get those questions in writing at some time?

The CHAIR: Yes, you will. You do not have to worry about that.

Mr WOLFENDEN: Otherwise, I will answer the wrong question. That is all I am worried about.

The CHAIR: No. The secretariat will take care of that.

Mr WOLFENDEN: Thank you.

The CHAIR: Thank you very much also for your hospitality in allowing us to use the chamber. Ladies and gentlemen, the time being approximately 14.45, the Committee will take a break for approximately 15 minutes. The Committee will reconvene at 3 o'clock when we will hear from a local Bingara resident, Mr Alex Lucke.

(The witnesses withdrew)

(Short adjournment)

ALEC EDWARD LUCKE, Bingara resident, sworn and examined

The CHAIR: Mr Lucke, you wish to table some additional documents.

Mr LUCKE: Yes.

Documents tabled.

The CHAIR: Mr Lucke, before we begin questions would you like to make a statement?

Mr LUCKE: Yes, I would like to make a brief opening statement and I would like to walk you through the documents as I go. Copeton Dam was built in the early 1970s and there was no fish ladder. As you know, what happens is that you segregate the upper reaches from the lower reaches and the migration passages. And, of course, like all those dams, there has been a siltation problem because the natural flows have been interrupted. Cold water pollution is an additional problem with Copeton Dam. There are 23 dams affected around New South Wales; 14 of them are moderate and nine of them are severe. Copeton Dam is the second worst in the State under the Government's control for that purpose.

Because Bingara has so many campers, and this is a growing industry, the Gwydir River is to Bingara what the harbour is to Sydney. I would like you to look at your photograph of Sydney where the harbour does not have any water in it. Just think a moment about it. Let us say that somebody pulled the plug on the harbour, it is now 40 years later and you are still making representations to get it back. That is Bingara. In 1981 the authorities recognised that there were problems with the cold water and the failure of fish breeding and they arranged for the Bingara Hatchery. It is a voluntarily operated hatchery and those people operate it on an annual basis wherever they can. There have been some periods where a few years have lapsed and they are trying to breed the desirable fish species, like some Murray cod or yellowbelly—that sort of thing. But it is an ineffective remedy. In the course of my representations today we will go into that.

The environmental flow releases that occur from Copeton Dam—September is always a prime time for environmental flows because this is when it is all warming up—is when the cycle of breeding and all that sort of thing is happening and there are no environmental flows for Bingara. The water that comes from Copeton Dam is too cold. The fish cannot breed and by the time the water exits the Bingara community and goes further downstream it may then become an environmental flow. But it is a negative for Bingara. It is not a positive; it is a negative. This is perpetual and that is how it has always been since the dam was built. What we have is a situation of institutionalised neglect. Governments of both persuasions—we always have to talk about the Coalition and we have to talk about Labor as being in power because that is how our governments have been formulated—are a bit more diverse these days, which is healthy. But it is institutionalised neglect.

Most susceptible of the angler fish species are the Murray cod, the yellowbelly and the catfish. When you get to the other types of animals and things you go to the food fish that they prey on. You go to crayfish, platypus, water rats, turtles, frogs, mussels, yabbies and shrimps and all those are basically disadvantaged by the cold water. They are not being eliminated; they have been reduced to such a level that they just manage to hold a presence. In your correspondence there is a recent letter from Adam Marshall, which came last week. Attached to Adam Marshall's correspondence is a letter also from Niall Blair, the Minister. That response puts the official "Where it is at" in relation to any remedy for cold water pollution in Copeton Dam. That is disappointing because I have been writing to Niall Blair since before the last election. Adam Marshall was the member for the local electorate for 18 months before I made overtures to him and that was the first he had ever heard of cold water pollution. So it just was not on the radar. There is a diagram towards the rear.

Mr SCOT MacDONALD: I wish to ask a question at this point.

The CHAIR: I take it that it is a point of clarification?

Mr SCOT MacDONALD: It is a point of clarification. You just talked about making representations to Adam Marshall. Environmental water is the responsibility of the Commonwealth Government. Have you made any representations to the Commonwealth? I know we are talking about State infrastructure.

Mr LUCKE: In that letter that Niall Blair has recently read it makes reference to the Murray-Darling Basin Authority and that sort of thing. I have come to meetings here and had correspondence and submissions to the Murray-Darling Basin. As he identifies, cold water pollution has been recognised in the Murray-Darling Basin and the Northern Rivers region as an issue that needs to be addressed. So I do not know. I mean, my involvement in this goes back a couple of years now. I know it was not entirely neglected and that people had concerns about it but in 2014, the moment they put a thermal curtain at Burrendong Dam, from my perspective it changed the nature of the debate. It was no longer an argument that we cannot do anything because that won

an award and it was considered to be an environmental world first. It was considered to be a positive and a benefit. For as long as it was operational there were some measurable benefits.

Just to wrap up this opening address, there is a diagram at the back of your material which shows you the thermal curtain which they installed at Burrendong Dam. The curtain is quite simple. The tower sits there, the curtain comes up around the tower, the warm surface water is drawn over the top, runs down the inside and is discharged from the normal discharge point. What that does effectively is improve the temperature of the water. I have seen at a meeting attended by various departmental people a graph of that showing about a four degree improvement in water temperature downstream. Hopefully later on we might talk a bit about what has happened with that curtain.

There is an expert's recommendation at the very back relating to the Gwydir River foreshore plan of Gwydir Shire Council. Submissions have just closed. This was an attachment to that study. It was done in 2013 or thereabouts and the expert's recommendation was made after having briefly categorised the problems associated with cold water pollution. In his report he identified about half a dozen potential remedies. It is not like you throw your hands in the air and you say, "We cannot do anything." That is my opening address.

The CHAIR: Thank you. We will ask the secretariat to obtain that whole paper. We have sufficient information to get it either from Gwydir Shire Council or form the original source. We will do that.

The Hon. MICK VEITCH: Thank you, Mr Lucke, for your submission and your supplementary submission. I refer to a sentence on the second page of the Minister's letter, which reads:

> A thorough investigation of the feasibility and costs of infrastructure works of the scale anticipated to mitigate cold water pollution from Copeton Dam is required before a funding commitment can be made.

That is fair enough. You need to know the scale and scope of works before you can put money towards it. Has that feasibility study and the cost of the infrastructure work been done, or is it being done?

Mr LUCKE: A year ago people referred in their submissions to a lack of cohesion in government departments. They had a fish and flow seminar at Bingara, probably last year or in 2015, and three or four government departments attended. It was obvious that there was no cohesion. I refer to your question as to whether anything has been done about the feasibility study. In 2014 the Government called for tenders for a thermal curtain. To all intents and purposes the tenderers were required to quote for construction costs and all that sort of thing.

The CHAIR: At Copeton?

Mr LUCKE: Yes. Also there was money that was allocated, something like $19 million at one stage, a couple of years back. I think it may have been the Independent Pricing and Regulatory Tribunal recommended it be transferred for some other purpose. I remember some of the government agencies actually wrote at the time and said that this is just not on, we have got pressing issues here, they are not dealt with. As I said in my opening address, this is institutionalised neglect. It is not like they do not know what the issues are. In my submission I have been very careful to use a government department report. There are many of those which identify the problem and recognise that there is an economic benefit in dealing with the problems.

For communities like Bingara, as I said, the river is what the harbour is to Sydney. I come from the Gladstone area, a little place called Mount Larcom. We have all that industry, all the heavy industrial industry. I came down here. Up there in our rivers and even in the coastal narrows between Curtis Island and the mainland the fishing is not what it used to be. The trawlers may have some blame for that. But when I get down here and I walk down to the river, and I frequent the river a lot, where are the little fish, the little tiny food fish that should be there in plenty? They are just not there. The rivers up in central Queensland, despite all the industry and despite all sorts of things that go on that shouldn't, that have a detriment, they are in better shape than the Gwydir River. That is really sad.

The Hon. MICK VEITCH: I come from a little place called Tumut in the Snowy Mountains. When this inquiry sat at Griffith we heard about cold water pollution into the Murrumbidgee from the Tumut River. With the release of irrigation water we have reversed the breeding cycles for the fish, essentially. When it should be cold water it is now warm water and when it is meant to be warm water it is now cold water. We have swapped it around. In your submission you talk about the eradication of European carp. Your view is before that occurs we should put this curtain in?

Mr LUCKE: Yes. The Minister is suggesting in his letter that a curtain may not be the best solution for Copeton Dam. Regardless of what the solution is, let us just suggest that around New South Wales if they actually remedied the cold water pollution in those 23 dams and then they stocked those downstream of the dam with fingerlings you would then have these fish actually acclimatising and surviving. When you release the carp

virus—the difficulty at the moment is you have got something like possibly 3,000 kilometres of river downstream of dams which is affected by cold water pollution, when the native fish cannot thrive, cannot really effectively breed and fingerlings do not really survive beyond about a 20 per cent survival rate. You are just going to seed up all the Murray-Darling system again because carp is not going to be effected to the same degree. You are not going to kill all the carp. Like the rabbits with the calicivirus you are going to kill maybe most of them but those that survive are going to breed like hell. If these areas of these rivers are not corrected and made more natural you will just seed up the system again. It is a matter of getting the right sequence of events and getting the timing right.

I fear, and this is probably no reflection on Barnaby Joyce, the Minister, but we did have a meeting with Barnaby Joyce and he was frustrated in a variety of ways and so we were, I might add. My fear is that he may go down in history as being the Minister who released the carp virus. That may be more important to him politically than getting the timing right. When you get involved in representations in an issue like this there are just so many people and so many interest groups and all this horse trading going on behind the scenes. There are so many people with a stake in it. It becomes very difficult for anybody to make a decision and to implement it. It becomes an inertia situation. I suppose if you look at the history of the Murray-Darling you know how long that inertia existed with the Murray-Darling. It is only in recent years since the Howard Government actually managed to gain some momentum. Even now we are in danger of bogging down because it just takes so long. There are so many interest groups.

The Hon. MICK VEITCH: As a matter of interest, is there a fish ladder at Copeton?

Mr LUCKE: No. The real problem about Copeton is that Copeton is a big, deep dam. It draws the water off at something like the 20 metre mark from the bottom. It is something like 90 metres or maybe more deeper than that. Effectively, not only does it draw out the cold water and that water is likely to be dead and it may be anaerobic, but it also draws the sediment off the bottom. That goes down and helps silt up the river. Yet I also read in one of the professional reports that the sediment is necessary to create the biota and things like that within the river and for the health of the river.

You were asking today about the wetlands and whether the wetlands are prospering. The Murray-Darling Basin Authority is very focused upon the wetlands and the bird breeding. But think about it with this cold water pollution. It sterilises your river. It takes away all your food sources. You have got basically sterile water with a very low component of anything that is going to feed these birds that are nesting. It just does not add up. I remember one time seeing a little ant cartoon. It showed you private enterprise. They had all these little tunnels. Everything was linked up and everything was working. Then over here you had the government cartoon and they were holding a meeting and all the underground tunnels did not quite match up. Nothing was cohesive. It is a little bit like that. We just have not got our priorities in the right order. It is tragic because we are dealing with a statewide situation.

Mr SCOT MacDONALD: Is the Murray-Darling Basin Authority prioritising this?

Mr LUCKE: What happened with the Murray-Darling Basin Authority is in the first instance when I came to a meeting here at Moree and they were looking at the northern basin, which was fairly new, and there was going to be a draft report which subsequently came out, according to them—and I have to commend the people that we negotiated with who attended. I believe that they were very faithful and they were very genuine and they took those representations back. When they got back to the scientists they said that we cannot do anything about cold water pollution; the terms of reference only permit us to deal with environmental flows.

Subsequently, there were overtures to try to get the terms of reference adjusted so they could broaden their interest, because the Murray-Darling Basin Authority itself actually recognises that the gains that they have made to some extent are being frustrated by the fact that the river health is so poor in this respect and the fact that the eco has been taken out of the tourism. In Cunningham's time when he came through, his journals record that there was an abundance of fish and all this sort of thing in the rivers. You cannot go back to how it was before the dam. So the eco part of the tourism would have disappeared within a number of years. We do not see that now. I have read some publications where they say that Bingara is a hidden jewel and for people who come here there is great fishing and all that sort of thing. That is a whole heap of crap. That is not so.

Mr SCOT MacDONALD: What I am trying to ask is if the Murray-Darling Basin Authority is on its way to getting all the environmental water it wants and it has a huge bucket of money to do all of this, even aside from that northern basin inquiry, why are they not putting it on their list of priorities? If you are getting the volume of water and getting the timing or the mimicking right but the water quality and the ecosystem is still poor in part because of this, why are they not prioritising it?

Mr LUCKE: I think it is pretty simple really. Traditionally the State has carriage and the State has responsibility for rectification of the problem with the dams. It is a State issue. Always has been. I think the State is holding back and hanging off in the expectation that maybe the Murray-Darling Basin Authority will allocate some funds and there may be a bucket of money which may be able to go towards this type of contribution. The Premier recently came out and said that we made a couple more billion out of the sale of our electricity. I would like to see a ring run around Sydney. Let Sydney become like the Australian Capital Territory and let the rest of us in New South Wales do our own thing and see whether we can survive or whether we are going to perish, because we are perishing slowly.

Mr SCOT MacDONALD: So it is a straight out resourcing issue in your mind?

Mr LUCKE: Absolutely. Of course it is a funding issue. There is not the political will. It is only in the last 12 or 18 months that this issue started to come into the public consciousness and that is what it takes. It is not entirely the fault of the politicians because until I started raising matters about it in Bingara—there were people who knew about it but nobody raised the issue; nobody took a public stance on it. I think the reason for that was that the problem has gone on for more than four decades and people have become resigned. Until they did something at Burrendong Dam I think people thought there was no way that you could rectify the problem.

Mr SCOT MacDONALD: So if you had a recommendation for this Committee it would be to resolve this funding issue?

Mr LUCKE: Well obviously. They say it is feasibility but I have applied for freedom of information and I am still waiting to obtain that. I am asking for what correspondence has occurred in this present term of government about matters relating to Copeton Dam and cold water pollution. Who knows what the exact set of circumstances are? A letter from the Minister can be couched in very general terms and give you no real insights. If, for instance, there are negotiations going on between the State and the Murray-Darling Basin Authority, as the Minister has implied and as Phillip Glide from the Murray-Darling Basin Authority himself has also confirmed, then hopefully something positive may come out of next month's Murray-Darling Basin report but people have said to me—and this was Gwydir Shire Council and Adam Marshall at different stages—"You are going to get this curtain up at Copeton Dam" and I only had one word in response and that is "When?" I have seen these sorts of things.

You were talking about feasibility. Coming out of the Mount Larcom community, we have an open-cut limestone mine owned by the world's largest cement company. Since 1995 there have been 40 hydrology reports conducted on that east-end mine and after 40 hydrology reports there is still no common agreement as to the extent of the mine's liability on underground water. What I am saying to you is that when government departments say to me, "Look, we've got to do the research and we've got to develop all the feasibility" that can be just a mechanism to delay and defer. I am very sceptical that that is not case.

The CHAIR: Do you know the missing two words—after "delay" and "defer", "deplete" and "delete". Sorry, Mr MacDonald.

Mr SCOT MacDONALD: No, I am done.

The Hon. RICK COLLESS: I would like some information about your statement that $19 million was allocated to Copeton; tenders were called, is that the case?

Mr LUCKE: Tenders were called for a grout curtain—it is on the internet as well; google it—and a feasibility study for a grout curtain or something of that nature and also all the costings, with the expectation that this was going to proceed. I am told that round about the time the safety mitigation expenses of around $80 million or whatever were spent at Copeton to ensure the safety—

The Hon. RICK COLLESS: That was for the fuse plug spillway?

Mr LUCKE: Yes, a few years ago, that that was round about the time and that did not proceed. I think that that $19 million probably was in some manner a potential source of funding but obviously did not proceed. Funding for what and how, I do not know.

The Hon. RICK COLLESS: You have obviously done a fair bit of research on this.

Mr LUCKE: I have done a lot of research and I need to do a lot of research because quite frankly I have been involved in lots of environmental issues up there in Central Queensland and the first lesson is: Do your homework; get it right. When somebody tries to shoot you down, you need to know. In other words, it is a self-protection mechanism.

The Hon. RICK COLLESS: Was the original spillway at Burrendong the same design as the spillway at Copeton?

Mr LUCKE: Apparently not, but how it differs I do not know.

The Hon. RICK COLLESS: My information is that the original spillway at Burrendong was of a morning glory type.

Mr LUCKE: Okay.

The Hon. RICK COLLESS: And Copeton's is completely different.

Mr LUCKE: I believe they are different but the thing about the curtain at Burrendong, it got hit by lightning in 2015; it had not been operating all that long and it commenced in 2014. The dam was something like 18 or 19 per cent at that stage. Over time they could still operate the curtain but once it was hit by lightning, one of the pulley sets was not functional and they operated it manually, which meant that it did not operate as well as it had done. But then when the flood occurred there were some engineering defects within the design and the curtain fell down to the bottom of the dam and the dam filled up. I do not know if any of you gentlemen know at the moment whether the curtain has been gathered up from the bottom and brought back up so that it can become functional again; maybe I might find out when I get my freedom of information material because obviously if they are relying upon gathering information from Burrendong Dam and the curtain is residing down at the bottom like socks around your ankle, this is not going to help a lot with the information.

The Hon. RICK COLLESS: As I understand it, the intake at Burrendong was a multi-level offtake; it already had the capacity to take water from different levels.

Mr LUCKE: Okay.

The Hon. RICK COLLESS: But Copeton does not.

Mr LUCKE: I gather not, no.

The Hon. RICK COLLESS: My information now is that it would be a lot more expensive to put that type of structure on Copeton than it would be to do it at Burrendong; I think that is why they are waiting to see what the short- to medium-term results are from the Burrendong experiment before they expend the money on Copeton.

Mr LUCKE: All that is fair enough but then again how long does everything take? I said to them when they started saying, "Oh well, we have only got 18 per cent of water in Lake Burrendong; we need to know what happens when it fills up." Things can take forever and at that stage I said, "Some of these dams only refill once in a decade. Do we wait a decade for it to fill?" Fortunately it did not take that long but it could have done.

The Hon. RICK COLLESS: I understand all those concerns and I completely understand the reason for your concerns. I am just wondering, though, if they went ahead and spent however many millions of dollars on improving the spillway at Copeton, that is going to add substantially to the cost of water?

Mr LUCKE: Well, yes.

The Hon. RICK COLLESS: According to the Independent Pricing and Regulatory Tribunal [IPART] rules; this is not a Government decision, this is an IPART decision?

Mr LUCKE: Yes.

The Hon. RICK COLLESS: That is something that needs to be taken into consideration; if it is going to be money well spent, that is working towards it but if it is not money that is going to be well spent, then all it will do is increase the price of water for all the irrigators downstream, and that is something we need to be very aware of?

Mr LUCKE: Okay, but where the irrigators are concerned, the irrigators have said at a meeting here with the Murray-Darling Basin, that if it is going to cost something like $3.5 million or $4 million for Burrendong Dam with the thermal curtain, there was talk here that it could be $30 million or something like that sort of cost for Copeton Dam. The irrigators said at this meeting with the Murray-Darling Basin, "Look, we are prepared to support rectification of the problem and if it is going to cost that sort of money, so what?" If you are going to really achieve things, you are going to put them in the right order and you are going to change the nature of the problem, it isn't any good just saying, "Well, it's too expensive" because when they did this economic assessment study, they found that whatever the costs, they would be justified and there would be an economic benefit over and above the investments. That is the Government's own report. Part of it is quoted in my submission. There are many reports out there, and lots of them are available publicly.

When it comes to things like, for instance, this year with the Bingara hatchery, they went through all the processes, voluntary operated. Last year there were at least 28,000 yellowbelly fingerlings; this time the breeding program failed absolutely. It went through all the exercises, all the trouble, all expenses—achieved nothing. It is the old story about not counting your chickens before they are hatched, but when they do hatch the Government ends up with the various government departments coming along and saying, "Look, we'll take the majority of the fingerlings", which they do—but they do not put them in the Gwydir River because they know and the studies say that they will only have a 20 per cent survival rate, whereas if they put them in normal unaffected streams it will be almost 100 per cent, but they will not go into other waterways, so we are not really achieving anything. They have not got the food sources when you release the fingerlings. They are sluggish. They get eaten. Yet the fishermen tell me that the Murray cod and the yellowbelly actually eat the carp. They said, "If you can get the order of size right and all that sort of thing, given a reasonable chance, the Murray cod and that may well keep the carp down", but not when they have one hand tied behind their back. They just cannot do it. We really have an environmental disaster. If you asked yourself after 40 years when you still did not have any water in the harbour of Sydney, what would you be doing?

The CHAIR: I have not read your submission. In your submission, did you list the 24 dams that are—

Mr LUCKE: Yes, I think I did. I imagine I did. I do not know—it is too long for me to—

The CHAIR: We will get that information. Do you have any questions, Mr Green?

The Hon. PAUL GREEN: No, I think I get the gist of it. You want to know where the Government is up to, whether it is going to fund it or not and whether the material is on the bottom of the lake.

Mr LUCKE: Let me put it this way: If there is enough public demand and people are prepared to push the envelope and say, "This is unacceptable"—and I think it is unconscionable and I think it is unacceptable—all it needs at this time is sufficient momentum within the public arena. One of the things I did to start with was take out an electronic petition. In case you do not know this—and this is not really part of the presentation—when you take out a community-run petition with, say, GetUp!, which I did, GetUp! has about one million email addresses and I had probably 100. I sent this email out to 100 email addresses, and it got about 100 people to sign the petition. GetUp! did not use its email addresses to endorse what I did; it just let me fly on my own. But its took my email addresses and included them in is database. There is a bit of scepticism—

The Hon. RICK COLLESS: Horse trading.

Mr LUCKE: Yes, there is a bit of scepticism going on here and you can see how difficult it is, but if you get an organisation like GetUp! that gets behind you and suddenly makes its database available, and it turns up on your inbox and you can just push the button and you have endorsed it, that is the way you get your signatures. On the day I am talking about, with cold water pollution and the electronic petition, where it is front-page news on the *Bingara Advocate* that comes out every Thursday, there was not a single petition signed—not a single signature—as a consequence of a leading page story. What I am saying is that it is all within the electronic media and if you are not able to tap into that, if you are not able to get that to work for you, it is not going to happen.

Mr SCOT MacDONALD: Nancy Capel says the *Advocate* is read in Moscow, though.

Mr LUCKE: Yes, but none of us are immune to what is going on on the internet.

The Hon. PAUL GREEN: For the record, it was not the sale of electricity assets but the lease.

Mr LUCKE: It was not the sale of what?

The Hon. PAUL GREEN: The Government leased, not sold, the electricity assets.

Mr LUCKE: Oh, okay.

The CHAIR: Let us not get on that subject.

The Hon. MICK VEITCH: I gather from your submission, your supplementary submission and your introductory remarks today that you are essentially saying that the environmental flows out of the Copeton Dam are having an adverse environmental impact at Bingara.

Mr LUCKE: Absolutely. There is no environmental benefit to the Bingara community. The literature tells you that 200 to 300 kilometres downstream of the dams you will have this cold water pollution effect. They talked today and made mention of the fact that maybe it does warm up when it gets to Moree, but it does not. It goes further than that before it warms up sufficiently. This is the interesting thing: There was some environmental crowd that came from Canberra, and they wanted to talk about environmental flows. I turned up and another fella turned up from Barraba, only two of us. Anyway, we had to go through the motions. There was

a white sheet and they said, "Now, let's list the positives of environmental flow." He lived between two dams, and one discharges cold water to the other dam and he tries to farm, so he had the same problem but not from the Copeton. We ended up with two positive dot points. When we came to the negative, we ended up going to the second page of white paper. There are no environmental benefits for Bingara; it is all detrimental.

The CHAIR: We will wrap it up.

Mr LUCKE: I thank you for the opportunity to make the submission and also for the opportunity to make a presentation today.

The CHAIR: There may be some questions that Committee members would like to direct to you. If so, the secretary will put those in writing to you and we would like your responses within 21 days of you receiving those, if possible. Thank you very much for your evidence today.

You asked a question of me privately before as to whether there were any other issues along this line in any of the other hearings. The Hon. Mick Veitch confirmed that exactly the same issues were raised by the South West Anglers Association. The recreational fishers definitely have their eyes on the problem. I mentioned to you that I had had some correspondence from a recreation angling journalist at Dubbo with the same problem with the South Dubbo weir. It is not just Copeton Dam. You are quite right: it is all over the State. Thank you for your evidence.

(The witness withdrew)

HAYLEY GREENHAM, Consultant, W. J. & A Seery Partnership, affirmed and examined

MICHAEL SEERY, W. J. & A. Seery Partnership, affirmed and examined

Ms GREENHAM: I am an environmental consultant for SMK Consultants, and I am here today to represent W. J. & A. Seery Partnership.

The CHAIR: The Committee has received your submission, submission number 26 on the website. Before we begin with Committee members asking questions would either or both of you like to make an opening statement?

Mr SEERY: We will both make an opening statement. I will start off. W. J. & A. Seery Partnership has been a family operated business based in Moree since 1974 and has employed an average of 55 people over the past few years. This number is well down on previous employment levels of up to 150 staff. This reduction is directly related to water restrictions. To combat reductions in water availability we have been working with SMK Consultants for over 40 years on innovative, sustainable and efficient projects aimed at maximising our water use effectively. These projects have covered all aspects of our business, including design, then redesign of irrigation systems augmentation in operational practices. We have invested $600,000 in 100 hectares of drip irrigation, which has proven to be financially disastrous.

Despite implementation of all economically reasonable water efficiency measures our farming business has become increasingly less financially sustainable. Furthermore, in the past season we have used 8.6 megalitres a hectare on crops which have produced lower yields than previous years. This is due to the increased heat experienced in this region. This trend will not stop; as average temperatures rise we will be required to use more water simply to maintain present production levels. Currently our business is being sandwiched between this and increased water restrictions. Because of this we have been forced to change our business model. In 1988 we started ginning operations to try to counteract financial impacts of the impending water sharing plan. We then started warehousing, which led to direct export out of Moree allowing us to recover some job losses. Logistically we are now capable of exporting cotton anywhere in the world. Each of these additional operations aims to value-add to our primary production. Unfortunately, these additional business units all rely on the farming operation, which is consistently becoming less financially viable.

Due to the unavailability of sufficient water around 35 per cent of our land sits idle each year. Insufficient water for cropping this land results in less jobs being offered and various detrimental knock-on effects each job loss entails. For every job loss on farm up to three jobs are at risk within the local community. This might sound insignificant but when we are having tough times so are the neighbours, and those job losses add up. In this area alone 10 per cent of irrigation farms will go out of business in the next 50 years. The agricultural workforce around Moree has decreased by 19 per cent between the years 2001 and 2011 with the loss of 405 full-time employment positions. This downward trend is continuing. It cannot be stressed enough that these economic impacts are a direct result of the management of water under the water sharing plan and the effects of climate change.

When Copeton Dam was constructed in 1976 it was built to provide a reliable supply of irrigation water. Over the past 10 to 15 years we have been receiving an average of 30 to 40 per cent of our normal entitlements. This year our allocation was 77 per cent of our entitlement and the highest since 2011-12. The water sharing plan was supposed to manage the water to ensure the allocations existing in 1993 were supposed to be maintained. This did not happen and currently allocations are down approximately 20 per cent of what they were in 1993. If the water was properly managed embargoes would not happen. However, since the water sharing plan was introduced temporarily embargoes have continued occurring in 2006, 2007 and 2015, further limiting already restrictive allocations. Essentially, the system has failed to maintain a reliable water supply for its users.

The resources we have ploughed into water efficiency have not been rewarded but have been thwarted by reducing allocations and the removal of access to supplementary water. Unfortunately, we are no longer in a position where further investment in water saving programs is commercially viable. There has been a significant breakdown in communications between government organisations and water users. The relationship has become a combative "us versus them" mentality, as opposed to a collaborative approach working towards a common goal. The Seery Partnership has made every effort to participate in consultation in relation to equitable management of water; however, whilst there appears to be progress, there is considerable lack of follow through. We question whether this current review will really be any different. Thank you for your time.

The CHAIR: For the sake of clarity, would you allow us to take a photocopy of your opening statements for the Hansard reporters?

Mr SEERY: Yes, absolutely.

Ms GREENHAM: SMK Consultants have been working closely with the Seery Partnership since 1974 to design and redesign efficient irrigation systems and whilst also providing advice on the constantly evolving environmental legislation and regulations. I grew up in the region. I was educated here and have returned upon graduation with hopes of settling down. I am, however, apprehensive about the longevity of local secondary and tertiary industries within the region due to the continued strain placed on our primary industry by the tightening of water sharing rules. When you travel the region you see vast areas of developed but unutilised land. This is directly related to the lack of reliability in water allocations under the management of the water sharing plans.

Moree recently made the national news with our record breaking summer. We endured 54 days above 35 degrees, many of those greater than 40. It was rough. It was rough on crops, rough on machinery and rough on people. These temperatures were unprecedented in this area. This highlights one of the topics we would like to discuss with the board—which I feel is purposely left off the criteria—climate change. Water planning should not be determined by politics; it should simply be based upon supply and demand. We support the development of water equation; however, the supporting information should not be based upon assumptions. We cannot necessarily predict the future but if history has taught us anything it is clear that water scarcity is only going to get worse. Any supply calculations that do not effectively incorporate increased climate variability will undermine the integrity of the equation over the next 10, 20 or 50 years. We could be left in a position without water—water which underpins the productivity of our region and the survival of this town.

Regarding the demand side of the equation, a triple bottom line approach must be adopted. The critical needs of drinking water, stock and domestic uses, irrigation for food and fibre production, should be considered as equally high a priority as the environment. This should see the economic and social impacts considered equally as important as the environmental impacts when allocating and managing water. In dry periods the burden should be shared between users, including the environment. We would like to see more research which considers multipurpose flows, non-flow options and the corresponding impacts on all users. Any water equation needs to allow for greater flexibility in the management of water.

Environmental demand should be based upon comprehensive, scientifically sound information on actual ecosystem requirements. The departments responsible for managing environmental water should be held accountable for assessing the outcomes for each environmental release. Economic demand data should be sourced directly from irrigators and producers. It should be compared with desired achievable yields and available area. Strategies should be implemented to achieve environmental goals through well-timed delivery of irrigation water, acknowledging that water upstream is environmental water up until the point of extraction.

The combative relationship between water users and government agencies stems from the environment being considered a higher priority water user than people or primary producers. These needs should be given equal priority and share the responsibility of efficient water use. This was recommended by the 2013 Standing Committee and yet there appears to have been no follow through.

Finally, we would like to highlight concerns over coal seam gas production in this region. We need to be particularly careful in protecting our most valuable natural resource, water. There is a significant lack of knowledge when it comes to our local aquifers and their boundaries. Many of these systems are not closed systems. If any incident of contamination were to affect our groundwater supplies it would render this entire water augmentation process as worthless. We believe DPI Water should be advocating against coal seam gas extraction within and adjacent to highly productive agricultural land, especially biophysical strategic agricultural land which the Department of Planning acknowledges is vital for our food security. Thank you for the opportunity to speak and for your time today.

The CHAIR: It appears as though you know your subject, with one minor exception. I will not take offence to that because I wrote these terms of reference.

Ms GREENHAM: Is there a reason climate change was left out then?

The CHAIR: We are looking for end results, for absolutes. We are not necessarily looking for reasons other than to assess for ourselves whether the reasons are reasonable, if you will excuse that fumbled phrase. We simply want people to give us a set of potential solutions which we can put to the Government and, hopefully, it will adopt and act on some of those solutions. We all know that, unfortunately, governments react on a two-year cycle, not a four-year cycle. Of course, you cannot fix a problem like this in two years.

Ms GREENHAM: That is what we are looking at too.

The CHAIR: Thank you very much for your submission. It made very clear what your consultancy and the partnership feels. I am not allowed to take a position on these sorts of things, but I thought it was good. I am very impartial.

The Hon. PAUL GREEN: If we are talking about becoming the food and fibre bowl of the world by 2050 all solutions will need to be considered, not just the limited terms of reference of this inquiry. Mr Seery, you talked about your yield. You did not state it per megalitre but earlier witnesses said they are seeing an increase of yield from one bale to one megalitre to 1.5 bales to one megalitre. Why are you not seeing that increase? Are you using different technologies or different systems or do you have different access to water?

The CHAIR: The first question probably should be what is your product? Do you produce cotton?

Mr SEERY: Mainly cotton. We have our own ginning facility. We are heavy investors in technology and all things cotton. We achieve the same water efficiencies as everyone else but what happens is the more water you put into cotton the more fibre you will get out of it, with certain limitations. The way the plant works, if you have extreme heat circumstances like we have had most of that water is being used to cool, so the plant is actually cooling itself down. It is evaporating water through its system to cool itself down. Therefore you are using more water and stressing the plant out. Therefore its metabolism will not react the same way as it would in a beneficial climate or a slightly cooler climate.

The Hon. PAUL GREEN: We are comparing apples with apples. Earlier witnesses were saying they are getting 1.5 bales to one megalitre. You made a couple of comments that your experiments and initiatives are not working, they are not producing, it is failing. I do not know exactly where you sit in geographical terms.

The Hon. RICK COLLESS: You were only referring to drip irrigation, were you not?

Mr SEERY: No, across the board.

The Hon. PAUL GREEN: I am just trying to work out why they are saying they are maximising production and getting a better result in the same climate, I would imagine, as Ms Greenham. In light of your conversation about the extreme heat, I am trying to gauge where the earlier witnesses were compared with you. Were they not in the same environment with the same restraints, same water issues and same product?

Mr SEERY: No, I think you would find across the board in this whole valley in all the cotton growing areas that yields are down this year because of the excessive heat. They are the same. In the two years previous to this one we were showing increases in yield up until this point. But it is a purely a climate-related thing.

The Hon. PAUL GREEN: What I got from them is they were saying that even though there is less water they are managing it better and getting a better yield. They were getting a 1.5 as opposed to a one to one.

Mr SEERY: That is right.

The Hon. PAUL GREEN: Are you not getting 1.5 to one?

Mr SEERY: We are up until this year when you have extreme heat periods.

The Hon. PAUL GREEN: You are saying your investment in water saving has failed. That is what I heard.

Mr SEERY: Because looking forward because of climate change you would expect temperatures to continue to rise. If this year becomes the normal then you would expect yields to be down across the board.

The CHAIR: Unless, of course, you can increase your water. Is that right?

Mr SEERY: That is exactly right.

The CHAIR: If you could increase your water you could combat the increased temperature?

Mr SEERY: Exactly right, because we would be able to supply the water to the plant within reason so it can cool itself down more effectively.

The Hon. PAUL GREEN: Your restriction on water is exactly what?

Mr SEERY: Ours is more supply to sustain growth, which means sustaining our viability, which means sustaining the community.

The Hon. PAUL GREEN: You cannot buy any more or you cannot have any more?

Mr SEERY: If it came up for sale, but you have only got 40 per cent reliability out of this dam. Our land use is also limited. Therefore, we have got 30 per cent of our investment sitting there idle, doing nothing.

The CHAIR: Is the land suitable for irrigation if you can get the water?

Mr SEERY: Absolutely.

The CHAIR: It is fallow because you do not have the water, not because the land form or the gradient is not suitable for irrigation?

Mr SEERY: No, I am talking about fully developed irrigation country.

The Hon. PAUL GREEN: It is crazy. We talk about being the food bowl but we cannot get enough water.

Ms GREENHAM: And this is not an isolated incident either.

Mr SEERY: To add to that, we are large holders of water licences. People who are not in such a position as us would obviously be in a worse position across the board.

The CHAIR: It is not so much what you hold in licences; it is what water allocation is available to you?

Mr SEERY: That is right.

The Hon. PAUL GREEN: You talked about development and said nothing is happening there.

Ms GREENHAM: By development do you mean land?

The Hon. PAUL GREEN: I do not know. You said it in your statement.

Ms GREENHAM: I spoke about when you travel across the land, particularly when you go west, you drive around and it is literally developed, as Mr Seery was saying, ready for irrigation. They do not have the water so they do not do it.

The Hon. PAUL GREEN: It is secured paddocks ready to go but they do not have the water allocation. It is not because of housing, industry or commercial needs?

Ms GREENHAM: No, it is simply not having the water.

The Hon. PAUL GREEN: Do you have a comment on whether the water is available for growth in the area?

Ms GREENHAM: Based on the past few years I have a little percentage of allocations that have been allowed—and we have been in a drought—so many years have been zero; sometimes it has been 4.6 and sometimes it has been 30 per cent. As Mr Seery said, it has been average of 40 per cent getting your allocation in the first place and then only in the last few years have they got 100 per cent and that has been taken away again. I believe at the moment Mr Seery is at 70 per cent again?

Mr SEERY: Yes, with the crop just past we had 77 per cent allocation.

Ms GREENHAM: It is just a lack of reliability really and one cannot plan for it.

The Hon. RICK COLLESS: Is there any indication about what your allocation will be going forward for the next season?

Ms GREENHAM: Not at this stage, no.

Mr SEERY: Because it is continuous security, with the water entitlement that we still hold in Copeton Dam—I am just working it out—

Ms GREENHAM: Is it 46 per cent of your limit?

Mr SEERY: Yes, but we would grow 50 per cent of our area with that.

The CHAIR: So 50 per cent still lays unable to be used because of that?

Mr SEERY: That is right.

The Hon. MICK VEITCH: In your opening comments you spoke about aquifer mapping. How important is aquifer mapping for our future decision-making around water?

Ms GREENHAM: Extremely important.

The Hon. MICK VEITCH: Secondly, who should do it?

Ms GREENHAM: That is a difficult question. Mr Seery and I have been to the groundwater mapping stuff when they were developing the new stuff for the water sharing plans for the groundwater system. We had a hydrogeologist come out to show us all the different stuff they have for where they have bores located, their monitoring, watching recharge, et cetera.

The Hon. RICK COLLESS: Was that a Department of Water officer?

Ms GREENHAM: Yes, he came from Newcastle, I believe, and the Tamworth people organised it; I am sorry, I do not remember his name. He was great. He came out and explained quite a bit of stuff. He even did a few models for if we got additional rain in the next couple of years, et cetera, but we heard nothing after that. Even when they were talking there was a lot of uncertainty about the location of boundaries. They would see less than a kilometre difference—one bore here and it is getting plenty of recharge and then over here it is just dropping. They were not entirely sure where there was a boundary. Obviously there is something but no-one is sure what. Especially when we are talking about coal seam gas, when we do not even know aquifer boundaries, how on earth can we decide where coal seam gas will be okay and where it will be sustainable. I am sorry, I did not answer who should do it. I feel it must be the Department of Water but I doubt whether they would want to take it on.

The Hon. MICK VEITCH: I might put on notice my other questions about aquifers. Page 4 of your submissions states: "Saving water through a rehabilitation of the system can be just as powerful a solution to the problem as the development of a new dam or reservoir. There clearly should not be any modelling or financial bias on any water equation or policy towards new supply solutions alone."

Ms GREENHAM: Yes.

The Hon. MICK VEITCH: Could you elaborate on that, please?

Ms GREENHAM: Certainly. This will actually touch on what Mr Alex Lucke said earlier. We thought a lot more could be done with the environmental water rather than just flooding the system with water. When you are not getting certain benefits, what is the point?

The CHAIR: You mean multiple uses of that water?

Ms GREENHAM: Yes, multiple uses. If you tee it up with irrigation water you can certainly get those environmental flows coming through the system but you are only getting certain benefits when you are not fixing all these other things. You have banks eroding, sedimentation issues, cold water pollution obviously, and we feel more could be done. We actually feel that if environmental water was used properly or even sold back when it is not necessary you could fund the thermal curtain that Mr Lucke was talking about.

The CHAIR: Do you see the issue that Mr Colless raised with an earlier witness about the uncontrolled percentage of environmental water in empowerments like Copeton—not necessarily just that—as a problem that needs to be rectified? Do you think there should be some way to try to make sure you do not just continue to build and build on environmental water in a storage simply because you have natural inflows?

Mr SEERY: Supplement.

Ms GREENHAM: Yes, certainly. I feel like if you have had a decent amount of water in the year or two beforehand, why would you keep storing that environmental water? It is productive water.

The Hon. RICK COLLESS: I think you used the term, Mr Seery, "continuous accounting"?

Mr SEERY: That's it.

The Hon. RICK COLLESS: So that is what should happen with the balance between environmental and productive water, is it not?

Ms GREENHAM: Yes.

Mr SEERY: Yes, that is what happens in Copeton now; it is continuous accounting so once their account is full, it then starts spilling into the other accounts but when their supplementary flow is below the dam, they also get a percentage of that. Because of their disconnect from the region, they might not ask for their supplementary event in the correct manner that will be beneficial to the environment. Also, because they do hold such a large amount—I think between State and Federal government they hold about 30 per cent of Copeton Dam—we are not saying to sell 50 per cent of that back but a reasonable amount, 30 per cent, back to the community.

The Hon. RICK COLLESS: There needs to be a balance?

Mr SEERY: That is right.

Ms GREENHAM: Some sort of flexibility.

The Hon. RICK COLLESS: There needs to be an adjustment somewhere, doesn't there?

Mr SEERY: And then that can fund ongoing development of the dam and other environmental issues.

The Hon. MICK VEITCH: I have one last question to do with the water sharing plan. What are your views on the effectiveness of the water sharing plan and how would you improve it?

Ms GREENHAM: The last one was terrible; we have a new one. We are only just dabbling in it at the moment. As Ms Lowien said earlier, we cannot speak too much about the effect of it at the moment because it is brand-new; it only came out towards the end of 2016. The previous one was awful but by the looks of it we have had slight improvements with this one and we did at least get some consultation in developing this one, which was good.

The CHAIR: When is your next opportunity to comment on that, or is that it?

Ms GREENHAM: I do not think we have been approached since maybe August last year so I doubt they will ask us again.

The CHAIR: Do you always wait to be asked?

Ms GREENHAM: No, we do send in things. We even send things in a bit late sometimes, just to push it but you do not always hear back and I do not think they always appreciate that.

The Hon. RICK COLLESS: I return to your comments about the drip irrigation trial that you said was an abysmal failure. What do you attribute that to—not supplying enough water?

Mr SEERY: No, because you have got to utilise the field continuously. You are talking $6,000 a hectare investment upfront whereas furrow irrigation is about $2,000 a hectare. I just cannot remember those numbers off the top of my head. Our drip irrigation system is a high pressure system. It is capable of delivering 18 millimetres of water to the ground every day so the plant would use the maximum of 15, like those temperatures that we had so we have got the ability to catch up on water. It is just the amount of use that you have got in the life of that drip irrigation tape; they tell you seven years but 15 years is its real life. To pay the investment off for that in real terms is probably 100 years. There is a disconnect in the economics.

The Hon. RICK COLLESS: Production-wise was there any substantial difference?

Mr SEERY: It is down. We only picked it just the other day. It has always been slightly off compared to furrow irrigation.

The CHAIR: The tape you talked about, is that subterranean or on the surface?

Mr SEERY: Subterranean.

The CHAIR: At what depth?

Mr SEERY: At 400 millimetres. I am fully aware this is an experiment; we've got some at three.

The Hon. RICK COLLESS: So when you are working you work on the same hills every year and leave the tape there?

Mr SEERY: Yes, that is right.

The CHAIR: In fact, we saw a field being worked today that must have had tapes down it; I do not think it was yours?

Mr SEERY: No.

The Hon. RICK COLLESS: I ask you about the Great Artesian Basin. Does that overlap the shallow aquifers where the irrigation is?

Ms GREENHAM: It underlies it?

The Hon. RICK COLLESS: But there is an overlap?

Ms GREENHAM: In certain places, definitely.

The Hon. RICK COLLESS: Are there bores into the Great Artesian Basin through those aquifers that are used for irrigation?

Ms GREENHAM: I do not know if Mr Seery would use that for irrigation.

Mr SEERY: No.

The Hon. RICK COLLESS: I am not suggesting you use it for irrigation but are there artesian bores in the areas where there are shallow aquifers for irrigation?

Ms GREENHAM: I am not aware of that being—

Mr SEERY: Not aware of it. Could not answer that.

Ms GREENHAM: I know that they need to have, all the way down to the Great Artesian Basin when you go further west, so past Mungindi, just because they do not have that shallow aquifer at all—so if they want any type of water you are going the whole way down.

The Hon. RICK COLLESS: The reason for my question is that surely those artesian bores would go through any of those coal seams that are down there as well.

Ms GREENHAM: Yes, and when you do a coal seam gas well it can be up to 1,000 metres depth as well, so it can be in that Great Artesian Basin.

The Hon. RICK COLLESS: Is there a leakage issue with Great Artesian Basin bores?

Ms GREENHAM: Not that we are aware of. It is only that we have this Pilliga stuff coming up. I do not know if you have heard about it, but there has been a development application put in. That is actually relatively close to a lot of our basins, and when we are talking about uncertainty in these boundaries it is very concerning—and these are highly productive agricultural lands. We are not against coal seam gas. It is just that we think we need to be very careful, especially with reliability. Out here you would depend a lot on your groundwater when the surface water is not running, and if that were to go—

The Hon. MICK VEITCH: You are saying it is almost essential that at some stage soon we undertake a mapping exercise of the aquifers.

Ms GREENHAM: It would have to be essential. Even when we were listening to the council before, we are highly dependent on our groundwater and we do not know enough about it.

The CHAIR: Not only that, you need to know the sort of information that the previous witness was talking about. When they do the work, they need to be able to try to map the permeability of the aquifer—in other words, what rate does it replenish—

Ms GREENHAM: How far it replenishes.

The CHAIR: —is it a 50-year, 10-year or 100-year replenishment?

Ms GREENHAM: After the 2011 and 2012 floods, we did see a bit of a recharge. It was not even 12 months later. When we were looking at all the stuff the hydrogeologist brought out, you could see it come back up—

The CHAIR: In height?

Ms GREENHAM: Yes. It does not take that long when you get significant flood events.

The CHAIR: It was mentioned that the recharge area for this basin that the town water draws from, which also includes some irrigators—I am not sure whether it is all of them—is recharged from the Bingara side.

Ms GREENHAM: A lot of it, yes. The way ours works is pretty much gravity, I believe, coming from up-slope down. It is the same with water and it is the same in aquifers.

The Hon. RICK COLLESS: I return to your comments about climate and the unprecedented summer we had this year. Can you tell me what was unprecedented about it? Was it the quantum—

Ms GREENHAM: The duration.

The Hon. RICK COLLESS: It was the duration rather than the actual temperature.

Ms GREENHAM: We have definitely hit 40 degrees and above before. It is the extent of it. We had no break.

The Hon. RICK COLLESS: In the executive summary, you refer to the "current 'first up' priority approach". I gather that statement refers to the focus on the environment rather than the triple bottom line problem.

Ms GREENHAM: Definitely. We feel it should be a triple bottom line approach. We feel that economic benefits, such as irrigation and other productive uses of water; that social impacts, so the town's supply—and everyone needs to have drinking water and that was obviously evident at Broken Hill where they failed—and environment should all be given equal uses under the water sharing plan and then all those burdens should be shared. I think that just makes sense. That applies to everything else when you are talking about supply and demand: Why should it not apply to water?

Mr SCOT MacDONALD: On page 6 of your submission it says:

> Overall the needs of industry, high-security licence holders and the environment need to be balanced so as to not unreasonably discount the concerns of any individual water use.

Is that saying high-security water is a brake on your irrigation around here? Is it out of balance? What is the point?

Ms GREENHAM: When you say "a brake", I would say it is out of balance and that they are getting 30 per cent of that Copeton Dam water plus all the supplementary that is coming down.

Mr SCOT MacDONALD: High-security gets 30 per cent—

Ms GREENHAM: No, environmental water. What do you mean by your "brake" with high-security?

Mr SCOT MacDONALD: Sorry, I thought it was a brake against high-security licence holders, but is this not the case?

The CHAIR: No, it is a comment against the environmental water.

Mr SCOT MacDONALD: Okay, sorry.

Ms GREENHAM: We would feel that irrigation is often the one that gets cut first.

Mr SCOT MacDONALD: Cut from the priority list?

Ms GREENHAM: Yes.

Mr SCOT MacDONALD: My other question is along the lines of what the Hon. Rick Colless was talking about with coal seam gas. This Committee has held two inquiries into CSG in the last four or five years.

The CHAIR: The first inquiry was in 2011. Mr Buckingham asked for it and he got it. Boy, did he get it!

Mr SCOT MacDONALD: We deferred a lot to the New South Wales Chief Scientist to inform us, because we were starting from scratch. Does someone like the Chief Scientist need to be here explaining more?

Ms GREENHAM: We would love that.

Mr SCOT MacDONALD: She did an interim report, then a final report. She went into a lot of detail and talked about a lot of the issues you have raised and talked about. NSW Resources and Energy or the NSW Department of Primary Industries can talk about it, but the Chief Scientist is independent. Should they be out here trying to inform? They do not take a yes or a no either, but they do try to inform.

Ms GREENHAM: We would certainly welcome that. We wish that more people would come out and explain stuff.

The CHAIR: You would probably like to recommend that, would you?

Ms GREENHAM: We would like to recommend that.

The CHAIR: An earlier witness presented a lot of data about the output of the valley and this part of the basin. I do not think you were here to hear it. We talked about what percentage of the output was on irrigated land but it was only 10 per cent of the total land. In your evidence today, Mr Seery is saying half your land is alienated and you cannot use it because you do not have water.

Mr SEERY: Correct.

The CHAIR: Ms Greenham, in your capacity as a professional consultant to this business, would you have a crack at giving this Committee some idea of what you believe the potential output would be in dollars, tonnes or however you would like to express agricultural output if the water equation were solved for you? I do not want you to answer it now.

Ms GREENHAM: I could take it on consideration, but I think Mike might be able to give a rough estimate of how much they could double or triple theirs.

Mr SEERY: You have already touched on it.

The CHAIR: You have already intimated that you believe you could double your production because half your land is already alienated.

Mr SEERY: Yes.

The CHAIR: Ms Greenham, I ask you on a broader basis, because you are involved with not only this business—

Ms GREENHAM: Yes. No worries.

The CHAIR: —and you would probably have a better understanding valleywide. Could you take it on notice to give us an indication of what you believe would be the potential upside for solving the water problem? When I say "solving the water problem", I mean if the water were equal to the task of production, what would you be able to do?

Ms GREENHAM: If we had unlimited.

The CHAIR: If you had whatever you needed, assuming unlimited water. I know it is not unlimited and I know this is a bit pie in the sky, but we talked before about trying to find economic reasons for governments to do things. We need some sort of idea from the producers themselves—not the bureaucrats in the Department of Primary Industries—admittedly in a small area, as to what they think they could get out of it.

Ms GREENHAM: Yes, we can do that.

The CHAIR: Great. We will arrange to have that question sent to you so that it will be the same question we ask the other witness. As there are no further questions, I thank you both for your evidence. Ms Greenham, thank you for the amount of detail you have provided.

Ms GREENHAM: Thank you for having us.

The CHAIR: This is the sort of stuff we need. Committees like this need people to be proffering solutions. What would you do? What do you want us to do? It is no good us just thinking about what we would do because we are not cotton growers or hydrologists and we do not necessarily know. Thank you very much. Any questions on notice will be sent to you in writing, and we request answers to them within 21 days of their receipt.

Mr SEERY: Thank you for your time.

(The witnesses withdrew)

KERRY WATTS, Managing Director, Growth Agriculture, sworn

DANIEL KAHL, Wee Waa farmer, sworn

The CHAIR: Before we proceed with questions—and it is probably a good idea anyway because two members are missing—would either or both of you like to make an opening statement?

Mr WATTS: I have a few things I would like to say, Mr Chairman.

The CHAIR: Go right ahead.

Mr WATTS: I hope to take not too much time. First, I am not qualified to give evidence of a technical nature in respect of this water supply issue. I have lived in the Namoi Valley at Wee Waa since 1981. I live on a small property which has approximately a 1,500 metre frontage to the Namoi River. I have owned and operated my own business since 1992, both at a retail and wholesale level in agriculture. Our businesses have been totally reliant on agriculture and predominantly reliant on irrigated agriculture. In conjunction with a farming family from the north-west of New South Wales we have developed from start to finish a new insecticide, which was launched in Wee Waa on Friday last week. The chemistry behind this insecticide has the potential to change pest control and human health outcomes for decades to come.

The CHAIR: For the betterment I hope.

Mr WATTS: For the betterment—and that is not a wasted boast, I can assure you. We could not have and would not have invested that many millions of dollars required to develop this chemistry if it had not been for the security offered by irrigation water. Irrigators and the businesses reliant on them, like my own, can survive through drought brought about by climate but we need the assurance of irrigation water to provide the back-up. Environmental outcomes are important but they have to be real, not perceived, and cultural outcomes should be considered, not specifically based on one culture over another. That is all I would like to say at this point.

The CHAIR: Mr Kahl, would you like to make a comment?

Mr KAHL: Sure. I do not have anything prepared but by way of further introduction I am 27 years old and I have been back home on our family irrigation farm for three years now. My grandfather came to the region in the 1960s to begin growing cotton there—so it is his fault that we are all here, but anyway it worked out all right. Having just returned to the farm I have two younger brothers, so water security is something that plays a pretty big role in our future plans and it is something I have started participating in. I guess for us what is really important is that—and a previous witness said this earlier—agricultural needs for water are not put last.

By all means they cannot be put first either. But, frankly, from what we have seen from the MDBA, the northern basin review was conducted. Our overall recovery target was reduced by three gigalitres but in fact our in-river requirement was doubled, and that was not based on any new scientific work done in our valley, which is not acceptable to me and I do not think it should be acceptable to anyone. That is probably my biggest concern. We are willing to participate in the conversation about water sharing and water security but a lot of the time it seems like it is not. The work is not being done behind the recovery targets we have been given.

The CHAIR: To further inform us, you say your family is in cotton?

Mr KAHL: Yes

The CHAIR: What percentage of your production is irrigated?

Mr KAHL: We have got about 4,500 hectares of cropping land and 3,500 of that is irrigated, or has the potential to be irrigated.

The CHAIR: It has the potential to be irrigated. So the other 1,000 probably could not be irrigated anyway. Is that what you are saying?

Mr KAHL: It is predominantly in floodways—areas that are not flood protected. It has the potential to be developed for irrigation, yes.

The CHAIR: Of the 3,500 hectares that is capable of being irrigated how much is under irrigation?

Mr KAHL: This season?

The CHAIR: Yes.

Mr KAHL: Half of it was in cotton this summer, which is full production for us. We do not grow more than half the farm in cotton in any year, due to our crop rotation. But that is the first time in a very long time that we have been able to do that.

The CHAIR: As far as you are concerned 50 per cent of the usage of the irrigated land is your maximum that you entertain for cotton only?

Mr KAHL: For cotton only, yes. That does not mean we would not grow other irrigated crops. We grow winter cereals, we grow corn when water availability allows it, and beans as well. In a year our crop rotation allows for all of that area to be irrigated.

The CHAIR: Do you have a shortage of water to match your maximum output capability?

Mr KAHL: This year we were fortunate that we did not. We were able to have a go at full production for the first time since I have been home. In years prior to that, yes. Last year we grew about 600 hectares of cotton. That was the only crop we had water available to irrigate. That is 30 per cent of our cotton production, and no other rotation crops were irrigated.

The CHAIR: That would be the norm, rather than your last year's production, which was full production?

Mr KAHL: Yes, in recent times.

The CHAIR: Thank you both for coming here. I will now open to questions.

The Hon. RICK COLLESS: Following on from your comments about crop production, what is your total allocation of water?

Mr KAHL: It is similar to what the previous witness was saying; we have got continuous accounting. That depends on the price.

The Hon. RICK COLLESS: But if you were to get 100 per cent, what is the 100 per cent?

Mr KAHL: Okay, so our licence entitlement?

The Hon. RICK COLLESS: Yes, entitlement.

Mr KAHL: For general security water is about 10,000 megalitres. We have supplementary licences attached to that, which would be about 3,500.

The Hon. RICK COLLESS: Which may or may not come in, depending on the flow in the rivers?

Mr KAHL: Correct.

The Hon. RICK COLLESS: Just go back to the 10,000 of your entitlement. What proportion of that have you been getting in the longer term? I know you said in the last couple of years it has been very low, but do you have any figures over the past 10 years?

Mr KAHL: No, I do not. I can take that on notice if you would like. Prior to the last winter when we did get good inflows into Keepit, which is our main dam on the Namoi, as well as Split Rock, I think it was at about 14 per cent. The way it works is Keepit effectively has to be at 20 per cent to allow the environmental account, the evaporation account, the transmission account and all that kind of thing—all those accounts need to be fully allocated before any of the inflows are allocated to irrigators' accounts.

The Hon. RICK COLLESS: When all the Murray-Darling Basin transfers to the environment occurred and there were cutbacks in the entitlements, how much was yours reduced by?

Mr KAHL: Ours was not. We did not participate in any buybacks.

The Hon. RICK COLLESS: Your entitlement has not been affected by the whole Murray-Darling Basin—

Mr KAHL: Not directly.

The Hon. RICK COLLESS: Is all your water surface water or do you have a groundwater entitlement as well?

Mr KAHL: We have the aquifer as well, which is what we used to use to sort of drought proof ourselves at times. This year we have got good surface water. We do not use our bores, which gives us opportunities to top that account up so when we do not have surface water we are able to use that groundwater to maintain that lower level of production that I mentioned earlier.

The Hon. RICK COLLESS: Are those entitlements accounted for separately or jointly?

Mr KAHL: Separately.

The Hon. RICK COLLESS: Mr Watts, tell me about the development of your insecticide. What is it?

Mr WATTS: It is a long road. It has been 10 years with us. It is an insecticide based on a plant. It is a plant extract. The plant is called Clitoria ternatea. The original discovery of this came out of the cooperative research centre [CRC] at Myall Vale, which is halfway between Narrabri and Wee Waa. You would know where that is. The discovery of its insecticidal properties was by a New South Wales DPI chief scientist called Dr Robert Mensah. We became a commercial partner with the CRC in 2007 and we eventually bought out the technology in 2011.

We discovered the properties of the plant in collaboration with the University of Queensland. It has been a collaboration between lots and lots of people—it not just us, of course—but we had to fund the research. From the University of Queensland a Professor David Craik found that our plant contains cyclotides. I am neither a chemist nor very clever when it comes to these things but basically cyclotides are circular peptides. If you listen to the news at all you will understand that peptides are used by some drug cheats in sport to enhance their performance. Basically, the plant exudes these peptides or produces these cyclotides. We have worked out how to extract those cyclotides. The plant protects itself from insects but we have been able to work out how to extract that, put those cyclotides to work in a liquid form and to spray it onto crops, not just cotton but cotton was obviously our first target.

The Hon. RICK COLLESS: Is it bollworm that it controls?

Mr WATTS: It controls lots and lots of insects. It controls heliothis species, whitefly, mirids and green veggie bugs. It also is being now used in macadamias under permit for the control of fruit spotting bug. It has a wide-ranging activity against lots of pests. A seriously important thing is that it does not impact against bees, so it has no impact whatsoever against bees, and it has no impact against any of the predatory pests that we have studied. I will not say it will not take out any predatory pest but everything that we have looked at it does not take out. We have recently signed up an international investor in the company who has taken 25 per cent. We maintain 75 per cent within Australia. The product will be manufactured in Goondiwindi only because the New South Wales Government would not come to the party.

The CHAIR: Tight bastards.

Mr WATTS: Mind you, neither would the Queensland ones, so do not worry about it too much. We will manufacture the product in Goondiwindi and we will export the active constituents from here to the world. The investor we have in it is a biological products company called Bi-PA and they are based out of Belgium. They have allowed us to pay ourselves back some of the investment we put into the company. More importantly than that, they have allowed us to continue the development with organisations such as the University of Queensland.

The Hon. RICK COLLESS: And its toxicity to animals?

Mr WATTS: It is the only insecticide that I am aware of that does not have a poison scheduling. It is not poison scheduled. That is through the Australian Pesticides and Veterinary Medicines Authority [APVMA] of course. All these things go through the Office of Chemical Health and Safety out of Canberra.

Mr SCOT MacDONALD: Soon to be Armidale.

Mr WATTS: No, the Office of Chemical Health and Safety will stay in Canberra. The reality is I have been in the ag-chem industry since 1972 and I have never been made aware of an insecticide that is registered for control of insects that is not poison scheduled. It is seriously exciting stuff. You should have all been in Wee Waa on Friday to listen to the professor who really knows about it. It is exciting stuff. We could not have done it, honestly, as I said. We would not have been able to invest that sort of money. And it was millions. It was significant money. We did get some assistance through the Commercialisation Australia Grant but of course those grants are a 50:50 thing. You have got to put the money up up-front. That was roughly about a third of what our total development costs were. We put in a substantial amount of money and we would not have been able to do it without knowing that we were going to be able to get some money back at some point in time.

The Hon. RICK COLLESS: And you would not have been able to do it without irrigated agriculture. That is the other point.

Mr WATTS: Absolutely not. Obviously, our business does not rely on just the Namoi Valley but it is one of our major parties. But our other partner is north-west New South Wales. I can tell you his name now. I was allowed to let them out of the closet on Friday. They are Swansbell partnership. They are a farming family.

They have operations near Mungindi and two operations in the Namoi Valley. They supported us into this operation but they would not have done it unless they had known they were going to be able to continue to produce cotton in times when there were not droughts. We all know what droughts are down there. I live on that river and I love that river dearly. I know what it is like when it is empty and I know what it is like when it is full. I much prefer to see it full than empty. Droughts cause it to be empty and there is nothing we can do.

Mr SCOT MacDONALD: Firstly, a general question: What is the greatest threat to the irrigation side of your business? Second, what would you change in the way the State Government interacts with your business in terms of the timing of your irrigation allocations or anything else you would care to name?

Mr KAHL: The biggest threat is that reliability of water and the potential lack of flexibility around how we get access to that water. We are pretty fortunate at the moment we are under a trial of the 90:10 rule when comes to supplementary water at the moment as opposed to 50:50. I mentioned before that we got to finally have a crack at full production this summer. We would not have been able to do that under the previous supplementary water access rules because we would not have had access to that water. We had a minor flood go through the river in August and that allowed everyone in our valley pretty well to fill their storages and know they had water to start the season with. If we had not had access to that water at that time—

Mr SCOT MacDONALD: Summer would have been very different?

Mr KAHL: Very different—planning decisions could not have been made.

Mr SCOT MacDONALD: When you talk to your bank about finances or whatever, do they say, "We are happy to talk to you but tell us about the reliability?" How does that conversation go?

Mr KAHL: Yes, they keep a pretty close eye on it themselves. They do not rely on me to tell them too much.

Mr SCOT MacDONALD: So they are pretty switched on about volumes of water, the reliability, general security and allocations?

Mr KAHL: They are, yes, and part of our annual review would be to look at what water we have available within our licence entitlement, what we have in our account at Keepit and our cropping decisions around that. Often the discussion is about return per megalitre rather than return per hectare. With our business, in order to farm we need five things: we need people, equipment, capital, land and water, and generally what we do each year is based around what we have got the least of, and nine years out of 10 that one is water.

Mr SCOT MacDONALD: And what would you change from the State Government perspective; I know that is a bit general?

Mr KAHL: It is a bit general. A great source of frustration is—I don't know how many different water reforms are going on at the moment when you list them all—we go through processes of consultation. We will sit around a table like this, talk and give suggestions. Things will be agreed to and at the eleventh hour someone sneaks something in, right from consultation to "Here is the document" and we say, "That's not what was discussed". There is not a great deal of trust.

The Hon. MICK VEITCH: You are saying that new stuff is inserted between the consultation and—

Mr KAHL: Things will be tweaked or changed at the eleventh hour and we have to go through another round of saying, "No, that wasn't what we agreed to" and fighting to get it back, which is harder now because it is in black and white. If I were to change anything it would be that level of trust and being able to work with them.

The CHAIR: That is a very good point. I had that problem with the Natural Resources Commission.

The Hon. PENNY SHARPE: Can you give us some examples of what you would like to see happen with environmental water, where it could get multiple use or it could be more efficiently used?

Mr KAHL: Definitely. I imagine you have heard about it a few times now but cold water pollution is one. We have environmental water that is being labelled as environmental water that does not have any environmental benefit. We obviously have the possibility of eradicating carp; that would be a huge environmental win—and fishways. There are lots of things. In the Namoi, the irrigators have participated in installing the fishway at the Mollee weir. There are endless numbers of projects that this funding could be going towards. Just throwing water down the river is not going to achieve anything. It is trying to appease or achieve a black-and-white number; an ecosystem does not run on black and white written down targets.

The Hon. PENNY SHARPE: When you raise these issues what is the response from the various environmental water holders?

Mr KAHL: I have only been participating in these conversations for a short time now. The response at the Murray-Darling Basin Authority [MDBA] meeting we had in Wee Waa from one environmental side of the argument was that fish cannot grow in trees. That was a pretty mature response. When we were saying there were different ways that this environmental water could be used, that carp was a big one and eradicating them would surely improve instances of ideal environmental conditions for fish populations rather than just adding more water, the response was "Well, fish can't grow in trees. You have to add more water."

Mr WATTS: One of the often repeated statement to get out of these discussions with the MDBA is "We will look into that and provide you with the science behind it". I have been participating in it for 15 or so years pre-the MDBA—and I am still waiting to see the real science that they are going to come up with. It keeps changing.

The CHAIR: You are right because I think I stepped in a bit of MDBA science when we are out there this morning.

Mr WATTS: My problem with it is that the science keeps changing and whilst I believe strongly in science, we also have to remember that once upon a time scientists thought the world was flat and that is where I believe we are at with the environmental situation in the Namoi River. The other thing with environmental flows is that it is all well and good to have environmental flows—and I do not know anybody who does not support good environmental outcomes—but the reality is that environmental flows disappear past our doors into other parts of the Murray-Darling Basin and get either swallowed up by unregulated use or get swallowed up by evaporation. Neither of those are good environmental outcomes.

The CHAIR: Do either of you have a figure in your head or an idea of how much of the closed system work—as the northern basin is essentially a closed system although not quite—is used in the lower Murray-Darling, bugger all?

Mr WATTS: I certainly cannot comment but I would think not very much.

The CHAIR: So any environmental considerations for the northern basin should probably be centred around environmental outcomes in the northern basin, would you agree with that?

Mr KAHL: Wholeheartedly.

The CHAIR: Nowhere else?

Mr WATTS: No. I do not see any point.

The Hon. MICK VEITCH: Essentially what you are talking about here is competing environmental priorities. Do you think the equations and the needs around the competing environmental requirements have been settled?

Mr WATTS: I am not sure that competing environmental requirements is exactly right.

The Hon. MICK VEITCH: Okay.

Mr WATTS: We have an environmental requirement right along the Murray-Darling system; where ever you are, we need to have that. But if we run out of water in the Upper Namoi, for instance, it will not matter a dash what goes downstream. This is a personal opinion, it is not technical, but the faster you deplete the water out of the Upper Namoi by sending it downstream to outcomes that are not yet proven, then all you are doing is creating an issue for both ends of the system, and that is where my real concern is.

Mr KAHL: I would agree. The Namoi is part of the northern basin review, the solicitors having met three out of three environmental targeted outcomes. Part of the northern basin review is the work done in the Condamine, Balonne and Barwon-Darling, which with the Condamine had not achieved three out of nine, and with the Barwon-Darling was four out of 11 environmental outcomes. The Namoi's in-stream requirement went from 10 to 20 gigalitres as far as water from the Namoi for environmental assets. I guess you could call it competing environmental requirements, but it is environmental requirements based on science that has not been done on the ground at those places.

The Hon. RICK COLLESS: Are we talking about something based on ideology rather than science?

Mr KAHL: Yes. They are looking at anabranch environments in those valleys and going, "We'll apply that same logic, all that we think that works, to this site that we know is in the Namoi but we haven't actually got time to go and have a look at."

The Hon. MICK VEITCH: I may not have the correct phrase but I would like to discuss the water sharing plan. As we have been travelling around New South Wales I have asked witnesses a very similar set of

questions around water sharing plans. What is your view of the process that has been followed to formulate the water sharing plan? Do you have suggestions for improvements?

Mr KAHL: As far as the process goes, I have not been involved in or aware of the process well enough to really make too much comment but, as far as any improvement, I think the key word is "flexibility" when it comes to water sharing. We need it to be flexible so it can meet the needs of all three—we are talking about that triple bottom line—so that when there is water available it can meet multiple needs to go back to that supplementary access we had in August. That possibility is key so that all three—social, economic, environmental—can benefit when we do have water, and obviously, like Mr Watts said, when there are droughts. There is not much we can do about it.

Mr WATTS: I do not know that I am well enough involved except to say that it is a little bit of an enigma to me that we have an environmental water holder that holds a lot of water and then sells it off at large profits when he can and does not do anything with it as far as assisting the environment. That might be a little bit glib to say that but I think it is true. It really is an enigma to me that we have got a Federal body that exists outside the MDBA, I believe, but certainly still operates within the function of the MDBA, that actually holds large quantities of water.

The CHAIR: On that point, we heard evidence earlier anything up to 30 per cent of the total capacity of, say, Copeton Dam was being held by the environmental holders: the Commonwealth water holder and the State water holder. A suggestion was made that it does no-one any good sitting there and perhaps at times that environmental should be sold so it can be used rather than simply accumulating. If high inflows continue, the environmental keeps increasing as a percentage of the total amount of water that is held, particularly in Copeton Dam, which was originally designed to be an irrigation dam. What are your thoughts on that?

Mr WATTS: I do not know the specific numbers that you have quoted but the reality is that, when the environmental water holders purchased a large volume of irrigation water from large irrigation farms west of here around the Collarenebri area, it simply killed that town. When those big properties, like Colly Farms, decided to shut up shop, they shut up shop around the fact that they were able to get a lot of money for their water. A large amount of that money would have probably gone overseas, I might suggest—I do not know specifically. What we ended up with was a doubtful environmental outcome and an absolutely catastrophic social and economic outcome for the people of Collarenebri.

The CHAIR: Fair enough.

The Hon. RICK COLLESS: It is not just Collarenebri, is it?

Mr WATTS: No.

The Hon. RICK COLLESS: It is all down the river.

Mr WATTS: It is all down the river. One of the things I might say is that businesses like mine in small country towns will fight to keep Wee Waa alive. I absolutely want to fight to see little towns survive—and I have said this plenty of times—but if we lose electricians, plumbers, chippies and all those people out of towns like Wee Waa, Wee Waa dies, because people like us cannot continue to operate out of there. We have to move to a larger centre, and that is the very last thing that I believe is sensible for an economy.

The CHAIR: Do you believe the Northern Basin Review has come to that realisation? Do you believe that its report accurately describes the damage that has been done to rural economies in the Northern Basin?

Mr WATTS: I doubt it.

Mr KAHL: It acknowledges it but I am not sure that it recognises the full extent of it.

Mr SCOT MacDONALD: On that theme, there have been inquiries on the northern basin. People have told me that even if places like Wee Waa, Collarenebri and others are not depopulating, they are very much changing their make-up. They are now described as Centrelink towns. Whereas before they had people who were productive, going out to the cotton farm or doing whatever they were doing, they have become welfare towns. That it has is how it has been described to me.

Mr WATTS: To a degree that is true. However, what came first in that situation, the chicken or the egg? My office is right next to the Centrelink office, best employment in Wee Waa, and certainly a large volume of traffic goes through there. But my office is certainly not Centrelink and we just employed two more people based on the ability for us to generate income based on irrigated water. As I said, we will try to stick with little towns like Wee Waa but we cannot do it if we lose our core tradespeople. Modern irrigated agriculture is far different to what it was 20 years ago—or reality even 10 years ago. The change in the way in which cotton is picked, the change in the way in which cotton is planted and the change in the way in which we control weeds

and insect is different. There is less reliance on people, but that does not mean that communities like Wee Waa have to do be pure Centrelink towns. We will be if governments drive us that way, there is no doubt about that, and governments are the ones that have got the opportunity to either stop driving us that way or not.

The CHAIR: Congratulations: It is fantastic to hear success stories. Australian success stories lift everybody up, not just you, your families and your towns. I just saw something on Facebook about you, so a lot of people know about your success. The Committee may wish to ask some questions of you on notice. Those questions will be sent to you in writing, and we would like answers to any such questions within 21 days of receipt. Thank you very much for giving us your time, as we know how busy you are.

(The witnesses withdrew)

(The Committee adjourned at 17:02.)