

REPORT ON PROCEEDINGS BEFORE

**PORTFOLIO COMMITTEE NO. 5 – INDUSTRY AND
TRANSPORT**

**WATER AUGMENTATION
UNCORRECTED PROOF**

At Macquarie Room, Parliament House, Sydney on Tuesday, 19 September 2017

The Committee met at 12:20 pm

PRESENT

The Hon. R. Brown (Chair)

Mr J. Buckingham

The Hon. R. Colless

The Hon. P. Green

Mr S. MacDonald

The Hon. M. Mason-Cox

The Hon. D. Mookhey

The Hon. P. Sharpe

The Hon. M. Veitch

The CHAIR: Welcome to this eleventh hearing of Portfolio Committee No. 5—Industry and Transport inquiry into the augmentation of water supply in rural and regional New South Wales. The inquiry is examining water demand and supply, and suitability of existing water storages, flood history and technologies to mitigate flood damage and water management practices, including that for environmental water. Before I commence, I acknowledge the Gadigal people who are the traditional custodians of this land and I pay respects to the elders past and present of the Eora nation, and extend that respect to other Aboriginal people present. Today we will hear from Dr Peter Dillon and Dr Wendy Timms from the International Association of Hydrogeologists. We will later hear from Mr Mark Taylor from the Commonwealth Environmental Water Office.

Today's hearing is open to the public and is being broadcast live via the Parliament's website. A transcript of today's hearing will be placed on the Committee's website when it becomes available. In accordance with broadcasting guidelines, while members of the media may film or record Committee members or witnesses, people in the public gallery should not be the primary focus of filming or photography. I also remind media representatives that they must take responsibility for what they publish about the Committee's proceedings.

It is important to remember that parliamentary privilege does not apply to what witnesses may say outside of their evidence to the hearing. I urge witnesses to be careful about any comments they may make to the media or to others after they complete their evidence as such comments would not be protected by parliamentary privilege if another person decided to take an action for defamation, for example. The guidelines for broadcast of proceedings are available from the secretariat. The same advice about making statements applies to those in the gallery. They are not covered by parliamentary privilege.

There may be some questions that a witness can only answer if they had more time or with certain documents to hand. In those circumstances witnesses are advised that they can take questions on notice and provide answers within 21 days. Witnesses are advised that any messages should be delivered to the Committee members through the Committee staff. To aid the audibility of this hearing, I remind both Committee members and witnesses to speak into the microphones. In addition, several seats have been reserved near the loud speakers for persons in the public gallery who have hearing difficulties. Finally, I ask everyone to turn off or turn their mobile phones to silent during the hearing.

PETER DILLON, Co-Chair, International Association of Hydrogeologists Commission on Managing Aquifer Recharge, sworn and examined

WENDY TIMMS, Vice-President, International Association of Hydrogeologists, Australasia, affirmed and examined

The CHAIR: We received your co-written submission No. 27. All Committee members, who will clearly identify themselves to you when they ask a question, have copies of the submission. Before I proceed with questions from the Committee, would either of you or both of you in turn like to make an opening statement to the Committee?

Dr DILLON: We provided the Committee, through the secretariat, with a copy of the media release that was made by the International Association of Hydrogeologists [IAH] and the National Centre for Groundwater Research and Training on 4 August this year. Has the Committee got a copy of that media release?

The CHAIR: We believe we have it and will print it out for Committee members. Would you like to continue, Dr Dillon?

Dr DILLON: Our submission focused on the Broken Hill water supply and, in part, on section 1 (b) and groundwater recharge. We noted that New South Wales is lagging Australia in the application of managed aquifer recharge. We commented on both of those scores, but our primary comment was about the Broken Hill water supply. Our submission and the press release focused on the option that was identified by Geoscience Australia and the Commonwealth Scientific and Industrial Research Organisation [CSIRO], which was made available as a public report in 2013. It appears that the option was not considered, or if it was considered the reasons for its dismissal are not at all clear in the business case for the water supply of Broken Hill. Our concern was that the option that was identified was substantially deeper than the option that is being proceeded with. We wanted to understand and gain some clarity around why the option that was proposed, which involved the use of groundwater supplemented by managed aquifer recharge to continue supplies from the Menindee, was rejected.

The information on the website that is publicly available and that claims to be transparent and complete is far from it. It does not address this issue at all. In fact, the investigation that is reported as the groundwater option from Menindee discusses a site that is 20 kilometres away and is in a deep saline aquifer. The case that we were looking at was in a fresh, relatively shallow aquifer and is one that is in intermittent hydrologic connection with the Darling River at the Talyawalka site on the floodplain. Our concern was that as scientists we saw good science being done in the investigations report that went into the exploration of that groundwater option, and that for some reason it seemed that work has been backed off or forgotten about. That comes with a very considerable cost that is several hundred billion dollars more for the option that is being proceeded with.

Dr TIMMS: Dr Dillon has covered most of my points, but I would add and emphasise that the large fresh groundwater supplies that were identified by the investigations by Geoscience Australia, CSIRO, and others are quite different to the saline water that has been looked at from another aquifer. They are also quite different to the groundwater that is found directly underneath Broken Hill itself.

I regularly go out there for mining engineering student trips. The groundwater underneath Broken Hill itself and in some of the local saline aquifers is poor quality for drinking. However, the sites that have been investigated closer to the river are very good fresh groundwater that is naturally filtered, so it would not require such a large treatment. It is well known in water resources that having a more local groundwater supply is always going to be less expensive overall than piping water from very great distances. That is a principle that we work to in engineering and in mining engineering. Thank you.

The CHAIR: Just before I hand over to the Deputy Chair, Mick Veitch, who represents the Opposition, can I ask you this: Those studies to which you refer, did they find that the Tallywalker shallow aquifer site would meet the quantity and reliability needs?

Dr DILLON: I will answer that. Yes, they did. There is a body there that, at the point of investigations, was the minimum estimate of 60 gegalitres of storage of very fresh water and the upper bound estimate was several hundred gegalitres of water. We recognise that if you want a long-term supply we need to know what the rate of replenishment of the freshwater is. There was not enough evidence to say what that rate of replenishment is, but what we do know is that we have managed aquifer recharge. From the flow histories that were available from the Darling River, the natural replenishment was taking place during flood flows when the banks were scoured and the water was able to infiltrate the aquifers. But at low flows the semipermeable lining re-establishes and there is no recharge.

The advantage of this is that when you are pumping from that groundwater resource there is very little impact on any water that is in the river at the time. But what we can do is supplement the natural recharge in years of moderate flows so we do not have to rely on having high flows. Years of moderate flow are much more frequent and we could be completely confident that, with groundwater replenishment that is managed aquifer recharge during those moderate flowing years, the freshwater groundwater resource could be sustained without adverse impacts on ecosystems in the area and on the river.

The CHAIR: Thank you for that.

Dr DILLON: Water quality was also good and much better than the quality of water that was being provided to Broken Hill direct from the river.

The CHAIR: Thank you for that, Dr Dillon. I will now pass questioning to Mr Veitch, who is the Deputy Chair and who represents the Opposition.

The Hon. MICK VEITCH: Thank you, Chair, and thank you, Dr Dillon and Dr Timms, for participating. What are the environmental impacts from managed aquifer recharge?

Dr DILLON: Managed aquifer recharge is as its name implies—managed—so that the quality and quantity of water is managed to ensure that adverse impacts do not occur and that the water quality requirements and the water volume requirements of the targeted uses are met. We are fortunate in Australia that we have the National Water Quality Management Strategy. There are guidelines that were produced in 2009 under the Australian water recycling guidelines but they cover all sources of water. They are risk-based guidelines and they address all of the possible consequences. They require that the proponent examine what the potential risks are to the environment and to human health and to address those in the design of the project.

What had been done up until 2013 when I was last involved with the Geoscience Australia project is that all of the questions that we could ask and for which there is data available were answered in the affirmative at that point. What I understand is that there have been subsequent investigations. I have been told, but I do not have access to the information, that all of the outcomes of that have been very positive, and in some cases more

positive than we had predicted that they might be. However, there has not been a design of a scheme to my knowledge that enables a complete risk assessment to be undertaken. That will depend on specific configuration and that would be the next stage. It is a stage, just like when you are building a pipeline, you have to go out and do some investigations and chase things through. The same would have to be done with a managed aquifer recharge scheme.

We put in quite high estimates of costs for doing that but even so, the costs are very much lower than for any pipeline. We talking about a 27-kilometre pipeline to this well field compared to 270 kilometres from the River Murray to Broken Hill, as proposed, so that is 10 per cent of the length. The water treatment plant that exists now would certainly meet, from a human health perspective, the requirements but there was a supplemental treatment that was recommended called granular activated carbon filtration to prevent clogging taking place during the injection to the aquifers. The advantage of this system is that, if the infrastructure is designed to accommodate managed aquifer recharge, it does not actually need to be operated as a managed aquifer recharge scheme for some years because of the existing groundwater supply capability that the aquifer already holds. There is time to do the design and gain the information that would be necessary to have a very high degree of confidence that all those criteria could be met.

The CHAIR: Thank you, Dr Dillon. Mr Veitch may have another question that he will put on notice, and the secretariat will send any questions on notice to you. Mr Buckingham has a question.

Mr JEREMY BUCKINGHAM: My question relates to water quality from that Tallywalker site. The concern in the community was that there were salinity issues with the groundwater out there and that was a problem for them. The first question I have is: How comprehensive are those reports? How confident are you that there is a significant and viable ongoing freshwater groundwater source out there at Tallywalker? The second aspect of my question is—and I will not pin you down to an exact figure, of course—back of the beer coaster, what sort of money are you talking about for your bore fields, pipeline and infrastructure upgrades at Menindee for the Tallywalker groundwater managed aquifer recharge scheme that you have outlined?

Dr DILLON: In answer to the first part of your question about salinity, the Geoscience Australia report contains information from a number of wells. I think there were more than 30 wells drilled, and a number of them were in the location of this site. Therefore airborne geophysics measurements were also undertaken, and the airborne electromagnetics give some indication of the salinity of the groundwater. They were able to use the bores to provide ground-truthing for the electromagnetic surveys and, on the basis of the drilling and of the geophysics, they have made estimates of the volume of fresh water available in storage. As I said, there is quite a considerable range from 60 to more than 200 gigalitres, which is six to 20 years of supply for Broken Hill. It was the rate of replenishment that was unknown, and it may be that there is no need for managed aquifer recharge because floods will continue with such frequency.

If there were a flood every 10 years or so then perhaps there is no need for a managed aquifer recharge scheme, but we want to make the Broken Hill water supply climate independent. The way to do that was to build in a managed aquifer recharge project that would have you not relying on infrequent high events to maintain supplies. The quality of the water in this aquifer is very good. Generally, the salinity of the river water is lowest in floods, and that is the water that has been recharging the aquifer. That means on average it is of better median quality than in the river. Your question was: Is it a viable resource? Yes, it is a viable resource. We can be confident that it is a viable resource with managed aquifer recharge. There is doubt about whether it would be a viable resource without managed aquifer recharge. Further investigations would be required to explore that, but it would be a simple matter to do the managed aquifer recharge and then take away the uncertainty.

On the matter of dollars, this work was done by people in Geoscience Australia and the CSIRO. I was involved in the costing element. I understand the costing element was taken out of the final report that was produced and made public. That report was done for the Commonwealth under the now Department of Agriculture, so permission for those exact figures and the costings would have to come from them. From my recollection, I can give you order of magnitude. It was about \$30 million to do the groundwater supply alone and about \$160 million with full-blown groundwater plus managed aquifer recharge plus investigations required in order to design that managed aquifer recharge and to meet the requirements for the risk assessments required under the National Water Quality Management Strategy.

The CHAIR: Dr Timms, could you add anything to that answer?

Dr TIMMS: Just briefly, the dataset on which this is based is very strong compared to many underground investigations. The dataset for water quality for the volume of water storage is a very strong

dataset. Dr Dillon mentioned the geophysics, the remote sensing-type techniques, but there have been more than 7½ kilometres worth of drilling. There have been 100 monitoring bores and more than 1,600 samples for the water quality in the aquifer and in the river. It is a very strong dataset. There are some elements of uncertainty around part of it, which could be resolved. I just wanted to add it is, relatively speaking, a very strong investigation on which these proposals were put.

The Hon. RICK COLLESS: You mentioned the saline water in some of the bore fields. We have your map in front of us with the GWRs identified. Which groundwater resource [GWR] did the saline water you refer to come out of? On the map we have GWR 1 up to GWR13.

Dr DILLON: I do not know which of the GWR sites. It looks like it could be GWR2, which looks like it is at the northern end of Lake Menindee.

The Hon. RICK COLLESS: Within Lake Menindee, yes. I was wondering if that was the water you were referring to.

Dr DILLON: Yes, that is the one that is recorded on the website of the department as being the groundwater investigation in which the groundwater was shown to be non-viable. I assume it is GWR1; I only have small maps. It is either GWR1 or GWR3, where Talyawalka is. I do not have the full set of maps.

Dr TIMMS: I can confirm that GWR1 is the Talyawalka area.

The Hon. RICK COLLESS: GWR1 is in the Talyawalka area, which is about 25 or 30 kilometres from Copi Hollow. Would that be correct?

Dr DILLON: Yes.

The Hon. RICK COLLESS: That means that the Talyawalka bore fields would be around 130 kilometres from Broken Hill?

Dr TIMMS: It is around an extra 20 kilometres from Menindee—the current pipeline from Menindee, and about the 20 kilometre mark from Menindee itself.

The Hon. RICK COLLESS: We took evidence when we were there that the current pipeline from Menindee to Broken Hill is approaching its use-by date. When they are pumping hard, there are consistent blow-outs happening on a regular basis that take three to five days to fix. Surely included in this cost should be the cost of reconstructing the pipeline from Menindee to Broken Hill, which has reached its use-by date?

Dr DILLON: I am not able to comment on that. However, if that was required then you would be talking about 110 kilometres of pipeline instead of the 270 under the current proposal.

The Hon. RICK COLLESS: Correct, plus the extra 20 kilometres from the Talyawalka bore fields to the current pipeline.

Dr DILLON: That is right.

The Hon. RICK COLLESS: About half the distance, in fact. The other question I have is about reliability of the recharge. It is no secret that the Darling River is a much less reliable supply than the Murray. How confident are you when you say we may be able to get away with this natural recharge if the Darling River floods once every 10 years—and I am sure there is some conjecture about that? Surely the reliability coming from the Murray River would be much greater than if we were to rely on ephemeral floods of the Darling River?

Dr DILLON: I guess the answer to that question relates to the Murray-Darling Basin water management plans. So long as the plans are adhered to and take into account climate change, the reliability can be taken out of the equation. We would have similar reliability, no matter whether the Darling or the Murray. The Murray has many other water users along its length. I think if you are looking at run-of-river supplies, a groundwater supply is far more reliable because you have at least a couple of years supply banked already whereas in the River Murray when there is a drought and everybody wants water from the river and it is very difficult to give, there is considerable stress. Having an additional supply from that river would then reduce the availability of water for sharing amongst other users. Having a groundwater supply does some buffering so that you have increased reliability in dry years. That is one of the key objectives that this water supply project wants to improve: the security of supply for Broken Hill.

The Hon. RICK COLLESS: I have one more question. How do you see managed aquifer recharge working? Would there need to be some deliberate diversions from Lake Tandure, or would all those diversions come down the anabranch known as the Talyawalka Creek?

Dr DILLON: There are a number of options available for doing that recharge. The one we were considering, and certainly one that has been done in many other places and was less dependent on having such a detailed knowledge of surface processes, was to do recharge via wells. When the wells are drilled to form a network to provide the water first to Menindee to the water treatment plant and then off to Broken Hill, a number of those wells would be equipped as being able to recharge the aquifer as well so that you can reverse the flow into those wells. In times of high and moderate flow the water can be recharged into wells, and that would increase the buffer of fresh water within the aquifer so there is a greater time period of reliable supplies in storage within the aquifer.

The CHAIR: Sorry, Dr Dillon, but we are out of time. We will send you any questions on notice and ask that you reply to the Committee within 21 days of receiving those questions. Is that acceptable to you?

Dr DILLON: Yes.

Dr TIMMS: Yes. We would be happy to follow up.

The CHAIR: Dr Dillon and Dr Timms, thank you for your time. We will be in touch.

(The witnesses withdrew)

MARK TAYLOR, Assistant Secretary, Commonwealth Environmental Water Office, sworn and examined

The CHAIR: I welcome Mark Taylor of the Commonwealth Environmental Water Office. We have received a submission from your office and numbered it 49. Would you like to make an opening statement?

Mr TAYLOR: No, thank you.

The Hon. PAUL GREEN: I am happy to start the questions. I refer to the issue of carryover on page 2 of your submission. Can you give us some insight on how you see carryover happening?

Mr TAYLOR: Carryover is an interesting issue for us. Like many other entitlement holders and, I think, many sensible and practical users of water, carryover is one of a set of things that we can do. It helps us to plan. I never like to assume that people know water—I started relatively recently and it is a complicated thing—so I will use an analogy. If you know it already, let me know—I do not want to be patronising. It is useful to think of carryover almost as putting money in the bank. It enables us to plan. It is so that we can effectively, if we have good allocations in good years, put water into dams and use it in future years that might be drier. In simple terms, that is it. Every entitlement holder has the capacity to store water in dams to carry over. We are no different from everybody else in that regard. We use it effectively in that way.

The Hon. PAUL GREEN: Is that held both privately and publicly?

Mr TAYLOR: Not privately, no. We have no Commonwealth environmental water in private storage at the moment. It is something we might do in the future, but we are not doing it at the moment.

Mr JEREMY BUCKINGHAM: Your submission refers to the basin plan section 7.15 and arrangements for dealing with State Government rules and regulations. A key part of that is accounting. How does the Commonwealth account for its environmental water? How is it audited? How does it account? What is the system for making sure you have that water and are delivering the outcomes that you expect?

Mr TAYLOR: Mr Buckingham, good question. It is particularly pertinent at the moment. As the Commonwealth Environmental Water Holder we work with our State colleagues, both in terms of the delivery of water and in terms of its management. We do not actually own or manage or deliver any of the infrastructure that supports the use of water in rivers through the State systems themselves. We have to depend upon, and we do, and work with WaterNSW in relation to monitoring and metering. We work with the Office of Environment and Heritage in terms of delivery. We need to have a works licence to be able to deliver water to any particular part of the river, particularly if we are ordering from storages as well. In that sense we rely on the State and the State systems, including WaterNSW, to tell us about water releases. That is broadly how it happens. Occasionally we do put in place our own monitoring devices. That is around what we call a short-term monitoring program. We did a release in the Macquarie in autumn this year and we wanted to track to see how that went. We put in place stream gauges on a temporary basis, and we had approvals to do that. That is the sort of thing we do on a temporary basis, and they were taken out after the event ran through. It gave us at least a pretty good sense of how it works.

Mr JEREMY BUCKINGHAM: Or not.

Mr TAYLOR: Or not. It worked all right. But, yes, that is right. By and large, it is not our infrastructure, they are not our systems, we pay for the water we use, we pay for entitlements, so we use the infrastructure that is supported through those payments.

Mr JEREMY BUCKINGHAM: The Commonwealth owns \$3 billion worth of water. How is that audited? Is there a national audit of that regarding delivery outcome? Is there a formal process for auditing where that water went and when, and how effective it was?

Mr TAYLOR: We monitor all of the water that we have in the system through carryover, for example, so we know where that is. We know what entitlements we have and we know what allocations we have and where they are when we can access them. We also know when we make water orders. That is a simple thing to do in the southern connected system because that is easy to monitor and manage. We have a pretty high confidence in those sorts of environments. When we order water, say 10 gigalitres, from a particular storage and we want to order it to a certain point, that will happen. We have high confidence in that because we have good relationships with the State river operators, and with WaterNSW and other regulators.

It becomes more complex when we are talking about accessing unregulated water. Unregulated water through the system is essentially water that is coming from natural flows. It is not coming from a dam, it is actually in the system because of rain events or it is just there already. We have got rights to some of that, and that is more complex in terms of being able to track and monitor it. We operate not just in, say New South

Wales, but we have different systems in Victoria and in South Australia. It is pretty complex to get an absolute sense of exactly where every last litre has gone. We know where the order has been put in and we know where the water should have gone. We monitor that to a certain degree through the State systems, but there is no absolute auditing of where every single last litre has gone. That is partly because some of it goes in in losses to the system; it soaks into wetlands, it evaporates.

Mr JEREMY BUCKINGHAM: Or it ends up being pumped out by irrigators.

Mr TAYLOR: Or in some cases pumped out.

Mr JEREMY BUCKINGHAM: I have some questions regarding a release plan by the Commonwealth Environmental Water Holder from Burrendong in the Central West to coincide with a rainfall event in March this year for the purpose of getting golden perch into the Macquarie River by connecting the Macquarie to the Barwon through the Macquarie Marshes system. I understand there was no formal embargo on pumping for the three irrigators in the lower Macquarie who cover the relevant 14-kilometre stretch of the river, but there was a gentleman's agreement that there would be no pumping while the environmental water was released. Is that correct? Is that your understanding of what was supposed to happen?

Mr TAYLOR: Yes, that is correct. A little bit of background: As I said before, we work with State partners, and in this case with irrigators, to try to get an event happening in this system. We worked with Fisheries NSW, the Office of Environment and Heritage [OEH], plus local landowners and we had a discussion around wanting to bring this flow through that would connect up the Macquarie Marshes through to the Barwon, the multiple river systems there. Our colleagues from Fisheries NSW had a discussion with three irrigators along the river and said, "For this 10-day period we are trying to achieve this particular outcome. So you are entitled to pump, but would you please not do so." And they agreed that would happen. I was actually up there at the time. I do not get out very much, but I was fortunate to be up there. It was wonderful, and I watched what happened. In that particular event officers on the ground tracked what was happening through the gauges at different points and they knew that there were, I think, two or three doing the right thing, and one had not done the right thing.

Mr JEREMY BUCKINGHAM: When you say "had not done the right thing", one of the irrigators had not met the obligation of the gentleman's agreement not to pump and basically shepherd the Commonwealth's environmental water through?

Mr TAYLOR: They were pumping at the time.

Mr JEREMY BUCKINGHAM: They were pumping at the time, despite an agreement with—I assume from your evidence—Fisheries NSW, to that effect?

Mr TAYLOR: And the Office of Environment and Heritage. I should say that officers from OEH called the people involved and said, "You're pumping. You shouldn't be." And they said, "Sorry, didn't realise." The message might not have got through, and it stopped thereafter.

Mr JEREMY BUCKINGHAM: It stopped thereafter?

Mr TAYLOR: That is right.

Mr JEREMY BUCKINGHAM: But a significant amount of water was pumped. I understand, correct me if I am wrong, the irrigator who was pumping in contravention of this agreement with the State was Mr Peter Harris, or someone associated with Mr Peter Harris, is that correct?

Mr TAYLOR: I understand that is so. I do not know exactly, but I understand that is the case.

Mr JEREMY BUCKINGHAM: What do you mean you do not know exactly?

Mr TAYLOR: Because I do not know which farm it was. I have it in an anecdotal sense, but yes.

Mr JEREMY BUCKINGHAM: But there was an effort by the State to contact the relevant parties?

Mr TAYLOR: Absolutely.

Mr JEREMY BUCKINGHAM: And say, "You are irrigating. Stop. You are undermining the agreement."

Mr TAYLOR: Yes, that is right.

Mr JEREMY BUCKINGHAM: Was the effect of that pumping significant? Did it undermine the effect of the release and what the Commonwealth and the State were trying to do?

Mr TAYLOR: It did not totally stop the benefit. We still got a good flow coming through, but it certainly lessened the impact. We are looking to connect flows, so we want volume and connectivity and it just meant the longer the flow comes through the system the more it soaks out. It certainly had an impact.

Mr JEREMY BUCKINGHAM: But this was our water, was it not? This was the Commonwealth's water that was being released, and some may argue that the water was lost due to the pumping and was stolen. We have paid for that water and we release it at certain times to get an impact. We do not get that water back. That was a significant impact and there was a financial cost to the Commonwealth, was there not?

Mr TAYLOR: It is a complex issue. There was a cost, absolutely, because we paid for the delivery of the water as well as for the water itself.

Mr JEREMY BUCKINGHAM: How much?

Mr TAYLOR: I do not know exactly how much that particular cost is.

Mr JEREMY BUCKINGHAM: Could you take that on notice?

Mr TAYLOR: Yes, we will have a look at that.

Mr JEREMY BUCKINGHAM: Are we talking about \$10,000, \$20,000, tens of thousands or hundreds of thousands of dollars?

Mr TAYLOR: I do not know. It will be more than that. If I could make one point, because I think it is an important point, it is important to understand that even though the water that may have been released was Commonwealth water at a certain point, when it crossed the catchment it becomes open-source water. The irrigators who were pumping were entitled to do so.

Mr JEREMY BUCKINGHAM: Yes.

Mr TAYLOR: There was nothing illegal about it. It is just unfortunate in this particular case.

Mr JEREMY BUCKINGHAM: There is no provision to recover that water? That opportunity was lost?

Mr TAYLOR: Yes.

Mr JEREMY BUCKINGHAM: What is your view on that? Should we have provisions for irrigators to make good that loss to then forego water at another time? In effect restore that water?

Mr TAYLOR: I would say no. I would say a retrospective pathway that is about punishment is not the way that we need to go. I think we need to see a future where there is both a regulatory response, which provides us a sound footing to work forward with, and some of those responses about protection of environmental water have been flagged as possible. We would really encourage that and be happy to work with State agencies to see that happen.

Mr JEREMY BUCKINGHAM: In future you want gentlemen's agreements with gentlemen.

Mr TAYLOR: I agree. I think that the Commonwealth Environmental Water Office [CEWO] works very effectively with agricultural businesses and irrigators across the basin. We have put in place agreements, and they are honoured by and large. I think everyone is interested in seeing environmental water work well. That is also what we would want to see in the future.

Mr JEREMY BUCKINGHAM: I agree. Why did they not apply for a formal embargo at that time?

Mr TAYLOR: In all honesty, I do not think they could given the timeframe we had. I am not sure what the position of Department of Primary Industries—Water would have been. It is the policy owner in that space. However, it was not something that was pursued.

Mr JEREMY BUCKINGHAM: Was it raised in any way?

Mr TAYLOR: Not that I am aware of. Because there are a small number of irrigators involved, if we have discussions with those people and get them to agree for a short period, say 10 days, not to take A-class flow—which they did not—then that would work out really well for us. It did not work out quite so well, but that is alright.

Mr SCOT MacDONALD: I have a couple of general questions. You talk about banking the water as carryover. Are there limits to how much can be held in those dams? I am asking from the perspective of the point at which it pushes out the productive water or put restraints on it.

Mr TAYLOR: That is a good question. There are absolute limits in all of the dams across the basin in regard to what can be carried over. They vary from dam to dam. Some are quite high, depending on the size and scale. The limits apply to us as they do to everyone else. It is probably a good general point. All the water that we hold was previously owned by productive users in the system, and they sold it to us. It is not as though all this environmental water is filling up the dams, because there is more of it around. There is the same amount of water in the system as there ever was. Our entitlements fill up the space in dams as much as anyone else's do. It is worthwhile noting that we use carryover and our storages in a different way because our need for environmental water comes at different times of the year. We water in winter and early spring. That means the pressures on the system are lessened when agricultural users want to take up those channel capacities and use their storage in early summer.

Mr SCOT MacDONALD: We hear about anecdotal concerns in the Murrumbidgee and the Murray areas, including that it is slowing the start of the season in terms of the general percentage and high-security percentage if a large amount of environmental water is sitting up there.

Mr TAYLOR: I know this point is put out a fair bit, and there is a little misunderstanding. The water that the Commonwealth holds takes up only 3.4 per cent of total storage capacity across the basin at the moment. In storages like that at Copeton, for example, we have only 6.6 per cent of the total storage capacity. We really take up a very small proportion. Currently, in the very big storages we could have something like 40 per cent, 50 per cent or 60 per cent of our capacity, but we are carrying only 20 per cent. We are a very small user in the system carryover-wise.

Mr SCOT MacDONALD: You had a trial of trading environmental water. From memory, that was in the northern basin.

Mr TAYLOR: Yes.

Mr SCOT MacDONALD: How did that go? Do you see more of that happening in the future? Was it useful to both the Commonwealth and to the productive community?

Mr TAYLOR: We sold water in the Gwydir in 2014. We got about \$6 million for that.

Mr SCOT MacDONALD: That is temporary trade?

Mr TAYLOR: Yes. We have never sold permanent entitlements, and we would not do that. That was very useful and it was welcomed at the time. The fact that we got so much for it indicated that the value of the water was high and there was high demand. It was very useful for chickpea growers and they welcomed it. We still have the money. I do not want to spruik—

Mr SCOT MacDONALD: To where is it predicated—the environment or future purchases?

Mr TAYLOR: The law changed recently, and that happened before the changes were made. We can use that water for future purchases, either as more entitlements, more allocations or more options to give us access to water. The Water Act was changed last year and as of now, as we sell water we can use that money to invest in complementary activities and things like natural resource management [NRM] activity. NRM includes, for example, revegetating rivers, dealing with feral pests and those sorts of things.

Mr SCOT MacDONALD: We are talking about flexibility with environmental water across the Murray-Darling Basin where it has been subsequently used legally for production and irrigation. We are now at the point where we have good flexibility across the system. Do you see more of that happening to help both the environment and water trading communities?

Mr TAYLOR: The Commonwealth Environmental Water Holder is generally cautious. We are a very big owner of water, but we have traded very few times. We will use the water for the purpose that was intended; that is, watering environmental assets. We will also transfer it and move it around to avoid forfeiting those sorts of things. We will sell it only when we do not have a better use for it. That said, I think we will see CEWO being a bit more active in this space in the future. There are plenty of people who are interested in buying temporary water. If we cannot use the water in any better way then we can certainly invest in projects with local communities, which I think would see value returned to the basin communities. I think there will be more of that.

The Hon. MICK VEITCH: I want to spend some time focusing on environmental water flows. This inquiry has had a number of submissions and has heard testimony about the need for greater accountability with regard to the environmental outcomes being pursued using water flows. I must declare my interest in that I live in Tumut.

Mr TAYLOR: It is a wonderful place.

The Hon. MICK VEITCH: The good folk in Tumut say they feel that the upstream environment is being killed off for the downstream rivers. They say that they have issues with bank slumping because of high volumes of water being pushed down the Tumut River. How do we publicly account for the environmental outcomes you are trying to achieve with each of your environmental flows?

Mr TAYLOR: That is a good question. We do a lot of reporting at the moment, but I think we could be more effective at building a better understanding about the benefits of environmental water across the general community. That is clear and understood. I want to be frank about that. We are certainly getting outcomes. We report through the Parliament and through the Murray-Darling Basin Authority itself. You will see plenty of information on our websites about the monitoring we are doing. We have a serious investment in long-term monitoring. I suspect that they are not the sorts of things your community is thinking about. There is a lot of that information, and I can provide it to the Committee if it will be of any use.

The Hon. MICK VEITCH: Please take that on notice.

Mr TAYLOR: By all means. We can certainly provide that. I can talk a little more about the sorts of outcomes we get if that would be useful.

The Hon. MICK VEITCH: Perhaps we can see where I go with my questioning. Things like bank slumping and cold water pollution are often raised by the Tumut community. We hear those concerns when environmental water is released for fish, for example. Where in the accounting process do we say that you have achieved your goal to move the Macquarie perch or to increase the fish numbers in the lower Darling River? Where is the hard evidence indicating that it worked?

Mr TAYLOR: That is in the long-term monitoring reports that I was talking about. We have, I think, about \$30 million invested over a 10-year period with a number of universities. We look at the specific outcomes in each catchment area. We now have something like three to four years' worth of reports, which are starting to indicate that there are some real outcomes coming from the environmental watering that we are doing. So, that is there. I am confident we are starting to see that happen, now. That is a good place to look, but I would like to come around to talking about not the question of monitoring but the question of working with communities. We want to work with communities.

Across the basin in different places there are very good examples of that—they are called different things: environmental water reference groups or advisory groups—where we sit down with community members, agriculturalists, fish people and environmental folk, and we talk about planning for the year. I have seen that model work. It is terrific because it means we can start to take into account the concerns of people about the use of environmental water. It means the outcomes we get are much more accepted and understood, and we can report back to those groups. I am sorry, I do not know what happens in the general Tumut region. I am not so familiar with that, but we should be doing more, anyway.

The Hon. MICK VEITCH: I was just using that as an example, but we have heard this across the State.

Mr TAYLOR: Cold water pollution is an example. That is something that affects agriculturalists as well as everyone else. They care about not pumping freezing cold water onto their fields because it affects crop generation. It is something we all try to work towards. We like to look at doing releases from dams at times when natural flows are coming through to try to mitigate that. There is also investment that can be done through things like thermal curtains. I think the State is looking at that. Depending on what happens with the northern basin review outcomes—and whether they pass through the Parliament—there will be money available for infrastructure as well. That might go towards those sorts of things.

On the question of bank slumping, we always want to know if what we are doing is resulting in that because we do not want to have that happen. It is a bad outcome for everybody. I am sorry, I do not know the circumstances. A colleague of mine was down in the south about two months ago. They went out and looked at a river section. They looked at exactly that issue; I know that. Year on year we change our practice so that we can mitigate that sort of thing because it is not good for anybody. It is not good for the river system. It is not good for us, reputationally. So if it is happening it should not be.

The Hon. MICK VEITCH: In the reporting of the outcomes that would be a negative.

Mr TAYLOR: Sure.

The Hon. MICK VEITCH: Is that reported anywhere? Is it reported that on this release of environmental water there was bank slumping, or whatever? Do you report the negative—the lessons that you should learn?

Mr TAYLOR: We do report the outcome. We are absolutely all about adaptive management. We are very honest about where there have been problems. I do not know whether we would report bank slumping, but in a scientific sense we would say, "We have tried to get this outcome for these particular fish"—or for this sort of bird-breeding event—"It didn't work in this particular circumstance. Here's why it might not have worked; here's what you can think about doing a bit better next time." We are very honest about that. We are only five years into this game. The Commonwealth Environmental Water Holder is a unique model around the world. There is nowhere else that is doing this. No-one else has created an entity to try to deal with managing environmental water across multiple jurisdictions. I always say that we are in the business of learning, and that is a successful model for us going ahead. We have to listen to people. We have to take local issues on board and we have to learn from what we are doing. If we do not do that then we have no chance of success.

The Hon. MICK VEITCH: We have also taken testimony from people who say that the environmental water—State or Commonwealth—has pushed water across the top of an already flooding river. What would be the scenario or situations where you would do that? What would be the reasons behind it and have you ever done that?

Mr TAYLOR: That is a very good question. I want to say, first of all, that we maintain the "good neighbour" policy. That means that we will never create a third party impact unless we have the express agreement and authority of the landholders involved. The third party impact in this particular case is flooding. We will not do it. So we are constrained in the way we release water for the environment by river operators through the system. In New South Wales, WaterNSW will very precisely and exactly tell us what and where, and to what level, we can release and manage water through the system.

The CHAIR: I want to clarify this. The operator has a right of veto over an order you may place—is that correct?

Mr TAYLOR: Yes, absolutely. It is not just a theoretical right of veto. It happens all the time.

The Hon. MATTHEW MASON-COX: You are not involved in that process of determining—?

Mr TAYLOR: No, we are not.

The Hon. MATTHEW MASON-COX: You just take the advice.

Mr TAYLOR: We take the advice. We cannot determine, and nor should we. Running the rivers is a complex business. Those people know what they are doing. We might place an order but they say, "Sorry, we cannot fill it." Or they may say, "We can only think about doing it at this point."

The CHAIR: I have another point of clarification. What triggers you to place an order? Do you have some incoming research from somewhere that says, for the environmental water holder, "You need to do X." Or is it a long-term planning process that says, "We will do a Macquarie perch thing this year"? How do you determine when you will place an order?

Mr TAYLOR: Great question. We do annual planning. Every year we plan what we will try to do in each of the catchments that we look after. There are 12 or so of those. We look at what has happened in the previous year—were things drying or was it a terrifically wet year—and at what makes sense for us to do across this year. We do not know how the climate is going to be, so we will plan for dry, medium and quite wet scenarios. Each time, we look at trying to protect the environment and the environmental assets that we are trying to look after in the best way that we can depending upon the circumstances. We might say, "It has been three years since this particular wetlands had a drink. Let's see if we can try to get some water to it. What is the best time to do that?" The planning process is quite comprehensive.

The CHAIR: Is that planning process done within the office of the Commonwealth Environmental Water Holder or do you have external bodies such as universities or Department of Primary Industries-Water or anybody else doing the planning for you? What is the input of the various stakeholders into the planning process?

Mr TAYLOR: Those are good questions also. They are our plans, so we advise the Commonwealth Environmental Water Holder, but we have lots of input. We have input from the long-term monitoring process. We have input from short-term monitoring that we do on specific events. We look at whether it worked last time and if not why not; what can we do better? We also get input from the environmental water advisory groups and

reference groups—those community groups that we work with. There is a group in the Macquarie. I met with them earlier this year. That is a terrific group. With that group we planned the fish pulse that Mr Buckingham was talking about. We planned it exactly—down to whether it could be moved back a week. It was a terrific process. That is what goes into the planning, and I am able to say to the Commonwealth Environmental Water Holder, "This is a very solid event. We have planned it. We have had input from all of these people." That is a microcosm, but it is what happens all across the basin. You can find the plans on the website.

The Hon. MICK VEITCH: Just to clarify, you would not put environmental water over the top of a flooding river?

Mr TAYLOR: No, we would not. It would depend on the circumstances. We would never do it if it was going to have a third party impact. We might do it if the river is running high because we are trying to get over the bank into a wetland area, but in that case we would be quite specific about it, and quite purposeful. We work with the river operators to ensure that we are not impacting anybody else. If it would impact anybody else we would not do it.

The Hon. MATTHEW MASON-COX: Thank you, Mr Taylor; this has been very interesting. I want to pick up on a couple of aspects of your submission, in particular where you talked about the importance of accurate accounting to ensure that the objectives of the system are being met. I wanted to get your thoughts on the level of confidence you have in the accounting system in place and where you see gaps being more prevalent. Do you have any thoughts about how we might improve the current accounting system?

Mr TAYLOR: That is a good question. Across what is known as the southern-connected basin, we have got high confidence in accounting. That is because the rivers and the systems are highly managed. There are lots of storages, monitoring points, and gages and we can say with a high degree of confidence what has happened to water that we have released. We know that. Across the north, it is a different story and it is much more complex. There are gages and systems but it has proven to be more complex for us to get good readings on that. I think the State agency itself has faced some difficulties in maintaining systems. I will not comment too much on that, but we have lower confidence in our accounting there, particular in relation to the use of water that is unregulated, for example the water in streams. We are seeking connectivity of flows. We think we know what has happened, but we do not quite know what has happened. We cannot always explain it either.

Mr SCOT MacDONALD: Can you put southern versus northern in the context of volume?

Mr TAYLOR: Volumes that we hold across the north are much smaller and the volumes in the south are very large in comparison. The Commonwealth Environmental Water Holder [CEWH] currently holds something like 1,780 gigalitres of long-term average annual yield, and maybe 300 gigalitres of that is coming through the north; the rest of it is in the south. What I would say is that that does not mean it is any less significant environmentally. It is still very important. Smaller rivers and more peripheral rivers still need water and those volumes are useful and valuable. It does not mean it is not important for us. Back to Mr Mason-Cox's original point of what can be done, we are talking to WaterNSW at the moment. We know that WaterNSW wants to do a bit more and it is working with us. We are also talking to the Murray-Darling Basin Authority. I think that more could be done to find smarter ways of doing it that have less of an impact on hard infrastructure. We are providing good information, for example the use of satellites, remote telemetry, and improved gage points. In that sort of way, we would be keen to see something along those lines happening and we are keen to work with State agencies to try to see what we can do collectively to improve that.

The Hon. MATTHEW MASON-COX: Have you used those sorts of measures on the Goulburn River in Victoria? What experiences could perhaps be useful to New South Wales in your submission?

Mr TAYLOR: We tend to shy a little bit away from it because as a Federal agency there is always a discussion around who pays for State infrastructure. The work we have done in the Goulburn has been on a trial basis. They are the sorts of things I was talking about beforehand in relation to using temporary gages. We will do more of that sort of thing. We would want to see ourselves working in partnership with and supporting the State agency to improve the monitoring, which will help us but will also help the State agency build public assurance that the system is working strongly.

Mr JEREMY BUCKINGHAM: There was an expression-of-interest process for the Nimmie-Caira project, and it has been awarded to Palladium, which is overseeing the management of that significant area of Lowbidgee on the Murrumbidgee. That is one of the largest water buy backs in Australian history, with \$180 million spent to get 380 gigalitres, with a total of 170 gigalitres of water, on your accounts.

Mr TAYLOR: That is right.

Mr JEREMY BUCKINGHAM: It was the process to bridge the gap, in terms of sustainable diversion limits [SDLs] in the southern basin. It was the big project—was it not?

Mr TAYLOR: Yes.

Mr JEREMY BUCKINGHAM: Are we going to get that water? You have not filled me with confidence because you are relying on State infrastructure and State monitoring to oversee these projects. It is a very complex area there, with how the geology and hydrology works. Are we going to get the water that the people of Australia have paid for in the Nimmie-Caira project and are the environmental outcomes going to be delivered? Can we be confident that we are going to get it year on year?

Mr TAYLOR: We have got the water. When the Nimmie-Caira project went through, the Commonwealth would have got those entitlements. We now hold those entitlements as part of the 780 gigalitres that we have at the moment. Then there is a question of annual allocations but those allocations come as they come for everybody else. We have got the water; the issue is more around how we can get the water onto the site and how we can get the site working in the way that it would have been designed to work in the first place. I have not been to the site myself—

Mr JEREMY BUCKINGHAM: I am very familiar with it. I have been there so I understand the bays and the flooding and all of it. There is a process of retiring an element of it and the agreement of the State is to keep some of it productive.

Mr TAYLOR: That is right.

Mr JEREMY BUCKINGHAM: To be clear, my concern is for the water that we have got that is not going to productive agriculture in the Nimmie-Caira system. What certainty have we got that there is actually going to be water delivered by that buy back to other environmental assets in the Murrumbidgee-Murray system? What confidence have we got that it is going to get there?

Mr TAYLOR: We have some confidence that it is going to get there. This is the issue that we were talking about beforehand, around the extent to which we can be confident that water is travelling through the system. This is the shepherding issue in that sense. Right now we are confident that we can water specific assets in specific areas. We can get water into Nimmie-Caira, but we do not know what happens on the other side of it. The State notionally has requirements under the basin plan to put in place what are called prerequisite policy measures. One of those is about crediting for environmental water downstream. In this particular case in Nimmie-Caira we can get water in. We can and are getting outcomes in Nimmie-Caira. The 6,000 pelicans is a terrific outcome there. But what happens beyond that we have no say about.

Mr JEREMY BUCKINGHAM: This is the key. You are part of a Commonwealth agency and you are there to basically oversee the Murray-Darling Basin—

Mr TAYLOR: No.

Mr JEREMY BUCKINGHAM: Well, you are there to deliver a key component of the basin plan. Would we not benefit from a series of amendments to State statutes to ensure that if an agency or individual failed to monitor or accurately record and administer this precious resource, then they would be subject to penalties and fines and the like? My understanding is that you have no recourse to law with the situation in Macquarie. In a hypothetical situation where a State agency said that the water was going down the system and that you just had to take their word for it and it was not, there is no penalty for them doing the wrong thing—is there?

Mr TAYLOR: I have two responses for you, one of which is a response around compliance. We know the issues are very public and live at the moment in this State. I would say that we would strongly encourage better compliance systems within the State. I will not make a comment around penalties because I do not think I should. But stronger compliance gives better assurance for everybody in the system, including communities and other water entitlement holders, that the water that has been recovered for the environment is being used in the way that it was intended in our particular context and that water for stock and domestic is also available for communities in the way in which it was intended. It is a common sense thing. On the second part, which was how effective we are at using our water through the systems of State, the deal around the Murray-Darling Basin Plan was that States would put in place a set of regulatory and other measures that would help Commonwealth Environmental Water Holder be more effective through the system. That was part of the arrangement that lead to the figure of 2750 being arrived at.

Mr JEREMY BUCKINGHAM: Has that happened?

Mr TAYLOR: Those things have not yet happened in the way that we would have wanted. There are no current arrangements in place for shepherding the water through the systems or for the protection of environmental water in that sense. There have been some trials, but there is nothing fixed yet in terms of the regulatory response around the credit for return flow.

Mr JEREMY BUCKINGHAM: I know a lot of the water is in the south in the Murrumbidgee-Murray area. Is it better in Victoria than in New South Wales? I know you are in New South Wales and you want to get out with your skin, but is it different in different jurisdictions?

Mr TAYLOR: It is different, necessarily so. The rivers in Victoria are much more highly regulated and in the north we have the problem of seriously large levels of unregulated flow, which is difficult to manage. That creates a problem for everybody. It is a problem for us and for everybody.

Mr JEREMY BUCKINGHAM: The Murray is the border.

Mr TAYLOR: Yes.

Mr JEREMY BUCKINGHAM: Do State authorities share monitoring data?

Mr TAYLOR: Yes, they do, particularly around the main stem of the Murray. That is managed by the Murray-Darling Basin Authority [MDBA], which is the river operator there. Data is shared and management is shared across the border at that particular point. Yes, it is.

Mr JEREMY BUCKINGHAM: But throughout the system of water shepherding, do you have to talk to different agencies about your water going down through the system?

Mr TAYLOR: Yes, we do. Water regulation is incredibly complex. I have worked in some complex areas; this is Kafkaesque. It is really very complex. The rules change from catchment to catchment and they change from State to State. They are called different things. It is managed but in some cases—

The CHAIR: Excuse me, was that Kafkaesque?

Mr TAYLOR: Yes.

Mr JEREMY BUCKINGHAM: Impossible?

Mr TAYLOR: Very hard. We have to work really hard with lots of different people and government agencies to try to get an event happening.

Mr JEREMY BUCKINGHAM: Can I have one more question?

The CHAIR: No. We have to move on.

Mr JEREMY BUCKINGHAM: Thank you, Mr Taylor. I appreciate that.

Mr TAYLOR: I am happy to take more questions on notice, if you would like to. We will certainly respond in writing.

Mr JEREMY BUCKINGHAM: We certainly will, thank you.

The CHAIR: Questioning will now pass to Ms Sharpe.

The Hon. PENNY SHARPE: Thank you. Mr Buckingham is going where I was going to go.

Mr TAYLOR: All right.

The CHAIR: There you go. That was easy.

The Hon. PENNY SHARPE: Thank you for your submission. I am interested particularly in the comments in your submission that talk about the failure to deal with undermining legal overextraction before we even get to illegal overextraction.

Mr TAYLOR: Sure.

The Hon. PENNY SHARPE: Obviously your submission was done quite a while ago, but it states that these things were not in place and that that limits the scope and the potential for the sustainable diversion limit adjustment mechanism.

Mr TAYLOR: Yes.

The Hon. PENNY SHARPE: Can you tell me where that is up to? Listening to you then, can you confirm that it has not occurred in New South Wales, and it is by June 2019? What is the impact of that?

Mr TAYLOR: It is hugely complex, this stuff.

The Hon. PENNY SHARPE: Yes, I know.

Mr TAYLOR: There is so much going on. New South Wales has now introduced what is termed as a PPM implementation plan—a prerequisite policy measures implementation plan—and it starts to talk about what might happen in relation to those two things I was talking about beforehand. Some of those measures that we were not really consulted on, we would want to have further discussions for. They are not really anywhere close to an implementation mode yet.

The Hon. PENNY SHARPE: That was supposed to be done by June 2019.

Mr TAYLOR: It was supposed to be done.

The Hon. PENNY SHARPE: So we have time.

Mr TAYLOR: That is right, yes. There is time and we are always hopeful. I know it is complex and that the politics are very different around this, but the Commonwealth Environmental Water Holder [CEWH] is always pragmatic in this space. We always want to work with State agencies to try to get the best outcome. I do not mean that as some sort of platitude. It is a necessary truth. We will always want to do that. You asked about SDLAM, the sustainable diversion limit adjustment mechanism.

The Hon. PENNY SHARPE: Yes.

Mr TAYLOR: Do you really want to know about that?

The Hon. PENNY SHARPE: I do. Briefly, if you can.

Mr TAYLOR: Briefly, if I can. Well, okay.

The CHAIR: You may take the question on notice.

The Hon. PENNY SHARPE: You may take it on notice, that is fine. I do not want chapter and verse on it.

Mr TAYLOR: I will give you a quick characterisation, if I could. We do not run it, so I am not going to give you all.

The Hon. PENNY SHARPE: Yes.

Mr TAYLOR: But I will tell you what I do understand, which is that there is now a group of projects that have been agreed by the basin water Ministers to start going ahead. Those projects essentially will provide an environmental benefit that will outline probably something like 600 gigalitres or so worth of water, in theory. That will reduce the standard template library [STL] target from 2,750 to a number which is yet to be finalised. They will be implemented across the next five years, and that is after 2024, so they will now start to really do them. They will model them, they will work them, and they will try to trial them.

Across that period of time we can stay engaged with that to make sure that what actually happens with those projects does deliver the environmental water outcomes they are supposed to because a lot of water has been given up for that. We will track it, but the truth is that I can see a long and difficult process there. We will work in good faith with all of our partners to get there but 2024 is when the accounting happens. So this is the beginning of the process. There is a lot of project involved.

The CHAIR: Just on the point of clarification: Are all the States involved in a cooperative effort to try to find that, or are only what I will call the supply States, not the receiving States?

Mr TAYLOR: I know what you mean. All States are involved because all Ministers are involved. It is a decision of the basin water Ministers, which includes South Australia, Victoria and believe it or not the Australian Capital Territory [ACT].

The CHAIR: Is someone tasked with managing the projects or the totality of those?

Mr TAYLOR: Yes, they are.

The CHAIR: Is it the MDBA, or who?

Mr TAYLOR: Yes, the Murray-Darling Basin Authority and it is the Department of Agriculture and Water Resources, which is in the Deputy Prime Minister's portfolio.

The CHAIR: Federal, okay.

Mr TAYLOR: That federally manages the project. It is an interesting space.

The Hon. PENNY SHARPE: I know. I actually want to move to something different.

Mr TAYLOR: Please.

The Hon. PENNY SHARPE: It is about environmental water flow and some of the evidence that we have had through this Committee, which is about cold water pollution. Has anyone asked about this?

The CHAIR: We have already, but go ahead and ask anyway.

The Hon. PENNY SHARPE: I am sorry. I apologise for not having been here earlier. I am just wondering—obviously, you hold a lot of water but not all the environment water.

Mr TAYLOR: Correct.

The Hon. PENNY SHARPE: A lot of the criticism about some of the use of the environmental water has been around the idea that we are trying to rehabilitate and put in native fish. All of a sudden there is a release and it is too cold and that basically kills the fingerlings.

Mr TAYLOR: Yes.

The Hon. PENNY SHARPE: What is your role in that? Who is the scientific group that is holding all of the environmental water where people can raise these issues? Is there a discussion about how that might be mitigated, or is it all still very siloed and everyone just looks after their bit?

Mr TAYLOR: Again, that is a really interesting question. We do some of that. We have got a long program of scientific monitoring of the way in which we do our watering.

The Hon. PENNY SHARPE: That is just your water?

Mr TAYLOR: That is our stuff because we are responsible for it, so we have to regulate back on it.

The Hon. PENNY SHARPE: Yes.

Mr TAYLOR: But we work with the Office of Environment and Heritage in New South Wales. It also has the same thing. We also work in a whole-of-system way with the Murray-Darling Basing Authority. The MDBA also is concerned about these sorts of impacts. At a State level it is not just us and environmentalists who are concerned about cold water pollution but also irrigators. They care about cold water coming from dams on their crops as well, so I think everybody is concerned about it and trying to do something about it.

The Hon. PENNY SHARPE: Where does it get resolved, then?

Mr TAYLOR: It depends on the solution, which is an interesting thing. We believe that by releasing water from dams at a time in which there are good flows coming into the system—something that is called piggybacking—can actually be a way of trying to deal with cold water pollution in a way that is non-infrastructural. We have tried to do that for the past three years and we have not been allowed to do that.

The Hon. PENNY SHARPE: Why not?

Mr TAYLOR: Because we cannot deliver water by ourselves and because in this particular case State agencies have said that they would not support it, so we cannot deliver it in that context.

The Hon. PENNY SHARPE: Is that because of the fear of flooding?

Mr TAYLOR: Yes, I think it is.

The Hon. PENNY SHARPE: There is too much going on?

Mr TAYLOR: Because of concern about third party impacts.

The CHAIR: Volumes.

The Hon. PENNY SHARPE: Yes, that is what I am assuming.

Mr TAYLOR: Although I have never seen evidence around that, it has just been a flat no. The second response is an infrastructural one and there has been lots of support for that—thermal curtains, blah, blah, blah.

The Hon. PENNY SHARPE: We have heard evidence about that.

Mr TAYLOR: We would support that too. That is really something that needs to be addressed, principally by the agencies responsible for managing the storages because it is not just the environment that notionally benefits. I have to say here that the environment is not just us; the environment is in fact the whole State and everybody's concerns and everybody's interests. There are discussions coming through, depending on the Northern Basin Review outcomes. If the amendment goes through, there will be Federal funding available through the Department of Agriculture and Water Resources for a range of infrastructural measures. Some of that might well go towards thermal curtains and other sort of infrastructure ways of dealing with cold water pollution, and we welcome that.

The CHAIR: If members have other questions that they wish to put on notice, the secretariat will send them to you.

Mr TAYLOR: Please do.

The CHAIR: What we would like is to receive answers to those questions within 21 days of you receiving them.

Mr TAYLOR: Yes.

The CHAIR: Give our regards to Mr Papps. Thank you very much for appearing in his stead. Your evidence has been very, very valuable. Thank you, Mr Taylor.

Mr TAYLOR: Thank you very much indeed. All the best everybody.

(The witness withdrew)

The Committee adjourned at 14:00.