Australian Government

Inspector-General of Water Compliance

WATER'S EDGE: TRANSCRIPT

S3, Episode 6: 'A climate for change? What Australia's environment report means for the Murray-Darling Basin'

Speaker 1: *Water's Edge* Podcast acknowledges the traditional owners of country throughout the Murray-Darling Basin in Australia and recognizes the continuing connection to lands, waters, and community. Coming up in this episode of *Water's Edge:*

Alison Dance: Nine years of research confirmed there's work to be done in climate and water, with the latest Australia's Environment Report released by the Australian National University.

Albert Van Dijk: Australia's got an extremely variable environment, but also very resilient environment, but it is starting to fray at the seams, and we see that very clearly.

AD: Inspector-General of Water Compliance Troy Grant takes the report off the page and into the Murray-Darling Basin.

Troy Grant: As I've travelled throughout the Basin, you can see the dramatic change to the landscape and then some attitudes to how people are managing their water resources.

AD: And a word from the people putting this into practice, on the ground.

Tim: From a farming aspect, you need to make sure you're doing well enough, and putting enough away, in the good years that you can survive the hard years, which can be tricky.

Speaker 2: You are listening to *Water's Edge* with your host, Alison Dance.

AD: Troy, thanks for making time, while you're chair of the regulatory leaders forum in Canberra - part of the Murray-Darling Basin. The ANU released its 2023 Australia's Environment Report, including the Basin, and it's talking about climate extremes. What are you seeing when you're traveling around the basin?

TG: When we started in this role, we'd come off the back of historic drought conditions, and when I started in December 2020, as the interim Inspector-General, it hasn't stopped raining essentially. So, we've had multiple wet years on wet years, and there's been drying periods. As I've travelled throughout the Basin, you can see the dramatic change to the landscape, and then some attitudes to how people are managing their water resources across the Basin when those dry periods happen. Without doubt, climate change is a major factor, and I know the Murray Darling Basin Authority (MDBA) was taking that climate change information seriously, and

it's right at the top of their agenda to factor into future decision makings around the design of the new Basin plan and how things are to be modelled and measured into the future. As the Inspector General, it's not our role to design what it looks like. It's our role to ensure that what is designed and agreed upon by all partners is adhered to, and that the legislative framework that supports it is sound, that it works, and then compliance is enforced, education is delivered, and improvements are constantly sought to make sure that the best efforts are going into protecting what is a significant resource for our nation. It's now a $40 billion contribution to the economy per annum. $32b of that is in agricultural exports, and $8 billion is in tourism value. So, it's such a critical part of our nation's economy and our nation overall. That's why we're in pursuit of excellence and best practice at all times, and we hold people's feet to the fire if they fall short of that effort.

AVD: Australia's environment report is a bit of a synthesis, a summary, if you like, of everything to do with our natural environment. So, not just our nature, but also our agriculture and our living environment.

AD: That's Albert Van Dijk, professor of Water Science and Management at the Fenner School of Environment and Society at ANU in Canberra. He also worked for the CSIRO for almost a decade and has authored more than 200 publications.

AVD: What we do is we pull together a whole bunch of data sources, from climate to water availability to things like river flows, vegetation growth also and vegetation condition, but also things like fire and biodiversity and how the oceans are faring. So, the whole full picture, if you like, of our environment,

AD: Obviously, we're from the Inspector-General of Water Compliance. I was very interested when I turned over to the page and saw the section on water. I noticed straight away the first paragraph is saying that river flows, wetlands and water reservoirs declined from the high of 2022 levels - but remained well above average. Can you talk us through what that actually means?

AVD: We had a few very wet years prior to last year, with La Nina, right? That meant a lot of river flows, a lot of inflows into our dams, a lot of flows into our wetlands, and with soils generally as well - kind of almost looking at water access problems, rather than lack of water over the period. Certainly, there's been some bad flooding in places, and I guess in 2023 we've started to come down a bit from those very wet conditions. But they were still pretty good in most of Australia and most of the Murray-Darling Basin. But it started, particularly during the colder months, to get quite dry in places. On the basis of that, we saw wetlands shrink, but they were still above average typically, and we saw river flows decline as well. They're still pretty good - but less wet than the previous year.

AD: I really like that this report covers the whole country, but it is still able to go into the Basin. River inflows were below average in the Darling River tributaries - so, those are the rivers flowing into larger streams or lakes. And I had a look at the map of Australia. It ranges from dark blue to the reds, and this section of the Murray-Darling Basin is very much in the light oranges and the dark oranges - so low and very low. Can you expand on what that map's saying to us when we're seeing that, and why that's happening?

AVD: You are right that, in some indicators, in the Murray-Darling Basin, conditions were below average. I suppose, again, that's got to do with the fact that 2023 - particularly the middle part of 2023 - was quite dry, and particularly in areas that normally get most of their rain and most of the river flows in winter, such as parts of Victoria, for instance, but also some other parts in New South Wales's Northern Basin, saw relatively low inflows and as a consequence the wetlands and dams and reservoirs started falling.

AD: Exactly. So, we're seeing in that other area that's dropped is the storage in the Murray-Darling Basin's water reservoirs. That went from 96% to 86%. What did your research find in that space?

AVD: That particular number refers to reservoir storages. There's a whole lot of public dams and almost every river in the Murray-Darling Basin has its own reservoirs. So, that number you were quoting there looks at the combined storage of all those storages together. You can find that information for the year in our report, but you can find it for any day of the year. So, what is happening there is once again because of the relatively lower inflows - and, of course, water is still being released for irrigation and for environmental flows, so water levels start falling - but you know, it's still pretty good compared to what we were looking at in 2019, for instance. That's when several towns in the Murray-Darling Basin ran out of water in their dams. I wouldn't want to suggest any cause for alarm.

AD: As you said, earlier, that year earlier was full of floods and very wet, so we've already started at a higher place, seeing this decrease. Moving over to the biodiversity space, that did get a mention for the Darling River as well. Can you talk a little bit about why that appeared in the biodiversity section?

AVD: What we're seeing there, clearly, is an imprint of climate change on top of what you would expect potentially after a wet year. You do expect these sort of things to happen - but they're getting more common and worse. There were mass fish deaths in the Darling River in 2023. Partly, that had to do with a lot of nutrients being washed down the river during those floods. And, as the organic matter in those floods starts to break down, it uses up a lot of oxygen and, if you combine that with high temperatures, then you tend to see fish deaths because there's no oxygen for them to survive on. You could always argue that it is a natural event - up to a point. Of course, after a flood, these events can occur. But what we're seeing on top of that is that we now have more heat waves and we have hotter heat waves. These events are more likely to occur and, if these events occur more often, then these fish populations have less ability to recover from these kinds of events.

AD: This was out at Menindee Lakes when we're talking about the Darling River. But, just in general, it did mention that biodiversity had a record number of species added to the threatened species list last year. So that's something to be aware of.

AVD: Absolutely, yes. Biodiversity is still very much in decline and, in 2023, we saw no less than 130 species added to that list. That's in one year. Now, typically for any given year, it's about 29 species that get added and, of course, this year

it was a lot more. Partly, half of those species were impacted by the Black Summer fires and haven't recovered and are now having been assessed as 'in trouble', basically. That's how they ended up on that list. So, in terms of biodiversity, we absolutely have not been able to solve or address or start to reverse the problem at all. It's a difficult challenge, though, because climate change has a role in it, but there are also other pressures. We destroy their habitats, and we have invasive species and diseases - cats, foxes and so forth, carp in the rivers. So, it's a problem of a beast with many heads, if you like. It's not easily solved.

AD: The Murray-Darling Basin got a 6.4 out of 10. This was down from 9.8 in 2022. I feel a bit like a teacher, which is relevant when we're sitting at a uni! What does that mean?

AVD: It's not a mark that is being given to the people managing our environment because, by and large, they don't have that much direct influence on this. It'd be wrong to say, 'Those who manage the Basin in our government get marked 6.3 this year, they need to improve their efforts.' I mean, they do need to improve their efforts! But that is regardless of the score. So, I wouldn't want to put it in those terms, but what it does do is give you a quick idea of where the conditions are above average. So, they're above 5, basically - a pass, if you like - and, on the scale of things, they're not fantastic, they're not horrible, they're a bit better than average, and not too bad overall in the Basin. It's around 6 and, nationally, it's 7.5. The way to interpret that is that our weather, our climate, our water availability, our rivers, our growing conditions for vegetation and agriculture and nature, they were okay. They were not too bad.

AD: I was curious about that. How does the Murray-Darling Basin compare to some of the other basins across the country?

AVD: Nationally, that score was a bit higher - so it was a little bit lower. Some of that has to do with the pretty dry, cool season conditions in Northern New South Wales, where they had the fire season start in August, which is really quite early. It was only thanks to the rains coming back in November that it didn't get worse than it could have. In other places, it was a bit variable. Northern Australia fared quite well, in 2022-23. They finally got a really good monsoon. Parts of Western Australia and Tasmania didn't get that kind of uptick at the end of the year. So, it's a bit of a mixed picture, as it usually is, of course, on a big continent. You're going to get variations like that.

AD: Even in itself, the Murray-Darling Basin's huge. It's 1m square kilometres. Was there anything for that particular area that surprised you in the report, or was it tracking how you thought it would?

AVD: One thing we had to look into a bit deeper was the relationship between what we could see in a satellite imagery, in terms of wetlands, and what the University of New South Wales researchers do every year, which is they fly over the Basin and they count water birds breeding. So, whilst we saw that - on the whole - there was less wetland flooding in the basin, it wasn't too bad, what the people counting the birds saw was that there was not nearly as much breeding as the previous year. So, that begs for a bit of analysis as to why that is the case. I

think it's partly to do with the particular wetlands that they fly over, and I think it's partly to do with the natural ecology of those water birds and maybe the timing of the imagery as well. So, that was a bit of a head stretcher.

AD: You answer some questions only to find a heap more! Putting a pin in that one. Keep an eye on *Water's Edge* for more on wetlands in an upcoming episode.

Speaker 1: You are listening to *Water's Edge*. Thanks for being a part of the conversation.

AD: Now, just recently as well, you released a global water report. So, this is taking a very broad look. Obviously, the Murray-Darling Basin is a speck when we're talking globally. Can you talk a little bit about how Australia's sitting on an international level?

AVD: Yes. So, after having done the Australia's Environment Report for the ninth year, we figured that we can also do globally and that gives us a better picture of where Australia's sitting globally. That report looks more specifically at climate and water only, and what we found there was that 2023 was, in terms of global warming, quite a shocking year. It was the hottest year on record. We found that 77 countries had record heat in 2023. The oceans were warmer than ever. The atmosphere was warmer than ever. The sea ice was less than ever. So, from a whole raft of statistics in a way - except for Australia, and a handful of other countries, but there was no suggestion that we're going keep dodging that bullet. I guess it was good while it lasted.

AD: Good to have the baseline, too, when we keep doing this report and we'll see how we keep sitting?

AVD: That’s the idea. We already know that Australia is prone to far more ups and downs than the many other countries in the world. And so, we will probably keep shooting up and down those rankings in future. That's a reasonably safe prediction, I think.

AD: Oh, good. I was about to ask you about predictions. Do you have any educated guesses for us of what we could be looking at for the coming year in terms of water cycle, in terms of the environment report? Whether you want to talk broadly about Australia, or if you do have any thoughts about the Murray-Darling Basin specifically?

AVD: I can make some very safe predictions and they will sound almost trivial. The temperature will keep going up. For now, emissions are not going down. So, we are emitting greenhouse gases at pretty much the same rate the past few years. It's been going down since Covid, but last year it went up again thanks to people getting in airplanes. So, it's a reasonably safe prediction and that's not going to change instantly. But other countries are showing it can be done. So, there's reason to be hopeful that Australia will follow their lead. Beyond that, biodiversity will keep declining. Our threatened species will not quickly recover. I think that's also a pretty safe prediction, because their problems are manifold. Beyond that, you start to get into educated guesses. We know that El Nino is already waning, and it looks like another La Nina is around the corner. So, it looks like more rain for Australia in that sense.

AD: It's hard, when we roll them off like this, because it can sound quite depressing and almost like we can't do anything, or make some changes. But I would hope that we can. So, what is the benefit of knowing this information ahead of time or now?

AVD: The old adage is that you can't manage what you can't measure. The principal idea is to provide information to know what is going well, or what is going poorly, what is not a huge problem, what is a big problem. I guess that, throughout these nine years of reporting, it's pretty obvious that our biggest challenge - and the one, fortunately, that we can manage, at least internationally, as a community - is climate change. Australia's got an extremely variable environment, but also very resilient environment. But it is starting to fray at the seams. We see that very clearly as well. The Great Barrier Reef is going through yet another mass bleaching event at the moment. Global climate change is really starting to wear down our environment. I'm not just talking about our natural environment, but also our ability to graze and to grow crops and our comfort of living and so forth. So, we really need to get more serious about reducing our emissions and, when we do it, we can pressure other countries in doing the same. But we've got no right to speak at the moment because our own emissions are, once again, amongst the highest in the world. Australia can do far better in that regard and of course there's a role for government there. But as individuals there's also a lot we can do.

AD: And speaking of individuals, for those people who are living and working in the Murray-Darling Basin, we'll pop the links to these reports in our episode description. Why would they want to jump on and have a read of those? What sort of information could they get out of them and hopefully apply to support their futures?

AVD: Various things I suppose. We do work with quite a few catchment authorities and other land management groups. They use our data in the annual reporting and to inform them. For instance, your question might be, 'I've heard about climate change, but what's actually happening in my council or in my catchment?' You can go to our website, and you can search for your own address and get that information. From there on, you can decide if there are particular things that you should be more worried about or less worried about than you are.

AD: The Inspector-General has staff living and working across the Basin. So, we know to look beyond the written page. Research and data can be powerful knowledge in the hands of individuals like Tim.

Tim: I'm a born and bred Narromine, a fifth-generation farmer. I grew up in Narromine, boarding schooled for the last few years in Sydney, then at uni in Wollongong. And I spent a lot of time in the Hunter Valley in a different professional endeavour.

AD: I'll be a bit presumptuous here. I'm assuming you're around my age - so, in our thirties, which would mean you were on the farm in the thick of the millennium drought. How has seeing the landscape like that, and compared to

what it is now, played into your plans for farming and your view on water compliance and you sharing the water?

Tim: Everyone knows that the Australian climate is a little bit boom and bust when it comes to floods and droughts. You know, it's wet for a period of time. It's dry for a period of time. A lot of the history and the science will tell us that that's how it is. From a farming aspect, you need to make sure you're doing well enough, and putting enough away, in the good years that you can survive the hard years. Which can be tricky, because we've had three of the driest years into three of the wettest years. And three years is a long time to be generating minimal or no income, and it really hurts. I've heard someone say recently that you need as much time out of it as you were in it to be able to come out the other side. I think with water compliance, from an irrigator's perspective, my understanding is that there are rules, there are water sharing plans, there are water resource plans. If everyone plays to those rules, and everyone gets their water, and uses it how they should, then there shouldn't be an issue. I think whether it's the political footballers has come into it - where there's changes being made that are making things harder, that are making it more expensive to operate.

AD: So, no regrets coming back to the farm then. Is it worth it, all the challenges?

Tim: Yes, it is. I've been home for nearly seven years. I definitely feel like I belong. I have a big belief in what we're doing, and that it's a positive contributor to the world. I really feel as though, being someone who produces food and fibre for the global economy, it makes me feel good that I'm doing that.

AD: We can all appreciate that farming is a science and a skill and has been no matter what the tech has been. But have you seen any changes, do you think, for your generation coming through?

Tim: For family farms in particular, I think we've seen a natural progression to farms being much more of a business. It's become harder to generate income from farms. I think scalability has played a lot. Cost of inputs, the developments with machinery - all of these things have pushed farms along to be very much a numbers game, from a financial sense. And, to survive as a farmer, you need to have a real economical aspect or outlook on what you're trying to do. You can still do that and you can still have that and very much enjoy what you're doing and have the freedoms to do it your way.

Speaker 1: The Inspector-General of Water Compliance has a network of field officers located through the Murray-Darling Basin. To make contact with your nearest field officer, call 13 IG WC - or 13 44 92.

AD: Back at ANU, water compliance is also a hot topic. The Inspector-General of Water Compliance isn't so much looking at individual compliance and individual irrigators. It's more so at the agencies and the larger government bodies sitting under the Water Act and under the Murray-Darling Basin Plan. So, in terms of compliance at that level, do you think that that plays a role in Australian's environment report? Do we have any impact, in making sure that the compliance is there?

AVD: I suppose it's possible, but I think that maybe the way that we look at environment is a bit more broadbrush than you would immediately see. I'm hesitating because I know that one big purpose of increased water compliance is to safeguard environmental flows. You can't sit back, looking at the map of Australia, and deciding when these environmental flows should be released, for instance, and you might not see it at that level. That's a far more kind of local river management issue. So, that's why I'm hesitating a little bit, but that doesn't mean the benefit isn't there. It just means that we cannot necessarily measure that at national scale.

AVD: I would like to take you outside of the report, for a moment, and draw on your experience in in the water and environment sphere. Do you have any questions from your neck of the woods for the Inspector-General?

AVD: One thing that maybe interests me particularly: we are working with certain state agencies in compliance to use satellite imagery to make sure that everyone sticks to the rules. I think that that has got great potential to be implemented across the Basin. My question would be, *Does that sound interesting?*

AD: Troy, I'm putting this question to you before you get back to chairing the regulatory leaders forum in Canberra.

TG: We've just had a presentation from NRAR (the New South Wales Natural Resource Access Regulator) on some recent work being undertaken with their satellite imagery and prosecution that was taken to the Land and Environment Court. So, it has a place. At the moment, it's probably a complementary place to the metering reform that's out there. There's some way to go in the legislative space for the technology to be understood and adopted as other technologies are, in the law courts environment to understand the power of it, to prove beyond a reasonable doubt the prosecutions using that technology. So, there's some work there that as the Inspector-General, we will be helping the jurisdictions prosecute within their own jurisdictions to be adopted inside their own legal frameworks. And, yes, there's an opportunity for us to adopt a lot more technology into our operations. Legislative changes recently in the water trade market have given us new roles and responsibilities that are very heavily data-related to the water trade market. So, we are building our capacity in that area - not just in IT capability, but also the people that can critically analyse the data, report on it, and then hold people to account on the back of the data. It's certainly something that we're looking at future recruitment into, as well. So, these are all the emerging and growing opportunities that the office has to embrace and we're very open to embracing them all.

Speaker 1: Got a question that you would like answered on *Water's Edge*? You can email us via contact@iwc.gov au. Make sure you put *Water's Edge* podcast in the subject line.

AD: Still to come on this season of *Water's Edge:* the Inspector-General takes the Pakistan High Commissioner to Australia through the Macquarie Castle Ray Catchment.

PHC: We are learning from how well you are doing it here, and there are so many things that we can replicate in Pakistan as well.

AD: How a water treatment facility looks to drought proof a major inland city's drinking water.

Speaker 2: Water is critical to the survival of the town and a community. This is stuff we are putting into people's mouths.

AD: And how landholders around Warren are sharing their deep understanding of land and water management's impact on wetlands.

Speaker 3: We'd been involved in the water debate that's raged over the last few decades. We decided that, if we were allegedly part of the problem, we better understand the problem.

AD: Plus, the Murray-Darling Basin's regulatory leaders unite in Canberra.

TG: This is a great opportunity to bring them together, to share best practice ideas, to learn from each other, but also to get more consistency about the application of water theft regulatory practices and other compliance measures - to get them more consistent across the Basin, which was one of the things that the community were crying out for.

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