## WATER’s EDGE: TRANSCRIPT

**Episode 1: Water information hub: The role of the Bureau of Meteorology in collecting vital water information**

Speaker: Water's Edge podcast acknowledges the traditional owners of country throughout the Murray-Darling basin and Australia, and recognises the continuing connections to lands, waters and community. We pay our respects to aboriginal and Torres Straits Islander cultures, and to the elders past, present and emerging.

Annabelle Hudson: Coming up, how water management has been difficult to navigate for decades.

Matthew Coulton: In 2006, John Howard got together a bunch of smart people in his office when he's planning the national plan for water, and he said, 'How much water do we have in this country?' and no one could answer him the question.

AH: Plus, is it possible to predict when the next drought will be?

MC: And really, looking back at historical cycles of floods and droughts, I know there's something about human nature that makes us do that, but it's quite unhelpful.

AH: In the first episode of season 2 of Water's Edge, we speak to Matthew Coulton, who is the general manager of water and agriculture at the Bureau of Meteorology. Good afternoon Matthew, how are you?

MC: Good thank you, how are you?

AH: I'm fantastic, thank you so much for joining us on the first episode of season 2 of Water's Edge. We might just kick things off with a bit of an introduction to who you are and what you do with the bureau.

MC: Yes, as you mentioned, I'm the general manager of the agriculture and water program and in short what that means is I'm responsible for the things that the bureau contributes to the agriculture and water sectors, so my KPI and the KPI of my team is essentially how much value impact we can provide the Australian water sector and the Australian Ag sector. So who we consider our key customers, I guess from an Ag perspective is ultimately farmers but we also work through a lot of those industry agencies to deliver value through them and from a water perspective, really our role, fundamentally is fulfilling our responsibilities under the water act to provide national water information to inform both policy making, water management and water use, but then also providing as many services we can to the likes of water management agencies so they can operate dams and rivers efficiently.

AH: The Inspector-General is responsible for providing independent oversight and monitoring of commonwealth and basin state compliance to help increase trust and transparency in water management. So what exactly is the bureau responsible for in the water act?

MC: It's probably a bit of the bureau that's not that well known but I'm obviously very passionate about. In 2007 when the commonwealth introduced the water act, it was sort of realised that there was no nationally consistent water information. The anecdote I've been heard and you know, I can't verify but I've heard it from multiple sources is in 2006, John Howard got a bunch of smart people in his office when he was planning the national plan for water, and he said, "how much water do we have in this country?" and no one could answer him the question.

AH: A key challenge for water management is that there are so many inconsistencies. That's something found in Des Pearson's review which we talked about in Season 1. Here's a little snippet in case you forgotten.

Des Pearson: Yeah, look it is a, certainly more pronounced in water. I've worked in a range of policy areas, and this is gotta be at one extreme but I'm hopeful people see the benefit of collaboration. I was a bit put back by the number of times, privacy, confidentiality were called and they're holding to their particular terminology, I think that's a bit of a socialising challenge we've got as Troy said in Inspector-General in the leader's forum. We're beginning to address that and I think if we get a few wins where they benefit from the experience of others, and see that's a smarter way ahead is to learn from the experience of others, and to work cooperatively with others, I think that's a good outcome.

AH: Ensuring there's consistency is a key challenge the bureau is tackling with its national water hub.

MC: At that stage, you know, water was very much managed at the state level or the substate level and data sat in so many different places in different organisations in different formats. And a decision was made at the time that if we're going to have a national plan for water, then we're going to need a national water data and information to underpin those decisions. So the bureau was given a job as Australia's water information agency.

AH: Under the power of the water regulation, that means the bureau collects about 15,000 data files a day from 236 different agencies in Australia, where it's then standardised. It's a big task to tackle further highlighting the challenges of water management.

MC: For the big agencies it's largely all automated. Data goes into their systems, get spat out, comes into ours and appears somewhere on the bureau website as part of a national dataset, but then for more niche data or smaller agencies, there's some manual provision of data as well, so things like water accounting information. We only get once a year, whereas flood data, we get every 15 minutes.

AH: The process to bring all these information together can take a long time but Matt says it is extremely important job.

MC: The key thing that, probably sounds boring to most people, but I think is the most important we do is actually write standards, so that means all water management agencies, when they're collecting water data, they do it the same way, they communicate it in the same way, so when we put it all together and put it into a national dataset, we're comparing apples with apples.

AH: The Inspector-General is working towards achieving something similar with the regulatory leaders' forum, established to help improve collaboration and consistency across basin states. Ultimately improving trust and confidence in how the basin's water is being managed.

MC: Yeah, it's a really good point and I think the issue that we're being faced with in recent years is when the bureau started doing this work in 2007, there was very little public water information available. So the bureau was filling a big gap and what we've seen in probably the last 5 year particularly, is a lot of different agencies have become more mature in their data information, and now there's a lot of different water information out there. So when the 1st Inspector-General wrote a report into this, he described, I think his words were 'the plethora of water information products was slavish'.

AH: Yup.

MC: And so for an organisation like the bureau at least, we had introspective... introspection to say it's no longer good enough for us to just sort of put information out there that will you know, add to the noise and confuse people, but really know what our value proposition is. And so in my view, what our value proposition really is, is getting that data together in a standard way. In some instances, we'll then do the value add and make nice portals or reports, but in many instances, we just need to make that data available and allow other people to go and innovate and build up their own tools and products.

Speaker: This is Water's Edge, for more information visit www.igwc.gov.au.

AH: The most recent weather outlook from the bureau indicates that La Nina is starting to ease as we head into 2023. But Matt says La Nina and El Nino events are just some of the weather indicators used by the bureau.

MC: But I think it is important to highlight to listeners that although we speak about El Nino and La Nina a lot, it's sort of drummed into us, it's in the newspaper every year, It is just one of the climate drivers that impacts weather in the Murray-Darling basin, particular the other big one is what's happening in the Indian Ocean. The Indian Ocean Dipole which, I guess to summarise it just the equivalent of what El Nino and La Nina is but on the other side of the country.

AH: Okay.

MC: Conditions in the Indian Ocean have actually been one of the really big drivers behind both our wet and dry periods in the basin the last 20 years. So what I'd encourage people to do who really want to understand what's happened with the climate is look at our climate outlook and our long range forecast because they do the work of considering all the various climate drivers, you know, what's happening in the Pacific Ocean, what's happening in the Indian Ocean, what's happening in the Southern Ocean, what's happening in the tropics and they do that translation work for you. I've found where sometimes people get really set on just looking at one thing. It can sort of, I guess, doesn't give the full picture of what's going on.

AH: The Murray-Darling Basin is so big with such a varying climate from one end to the other. In fact, it covers about 14% of Australia's landmass or a similar size to both France and Spain joined together. It's no wonder it can difficult to provide a specific overview of the weather forecast for such a large area.

MC: The basin is a big place and it has different climates in it and it is probably important to know that at this time of year, generally, in an average year, you'd have the rainfall slowing down in the southern basin where they have really wet winter and spring, and generally summer is pretty dry in the southern basin and we see dam storage levels decline as the irrigation season kicks in, whereas it's a different story in the north. The north has a much more variable climate over the course of the year but generally the northern basin actually has more rain in late summer and autumn so it's certainly not enough to call it a wet season. But it is sort of particularly given that we've got a lot of full rivers and full dams, it is important to note that when we often see the biggest floods in the northern basin are actually late summer into autumn. So although things may be calming down in the southern basin as we head into that summer irrigation season in the northern basin, we are sort of entering the period where we get more extreme rainfall and sometimes flooding.

AH: We are certainly a country of drought and flooding rains, and it means we need to be prepared for adverse weather events and frequent ones. The water market reform roadmap was released in October 2022 and was developed by the independent principal advisor, Mr Daryl Quinlivan AO. This report contains 23 recommendations to drive water market reforms. The report said water market reforms need to be sorted before the next drought, so how long do we have to get water market reforms underway? Now if we're looking at statistically speaking, you know you can't really predict a drought, but we had the millennium drought from '97 to 2009, and then we had the most recent one from 2017 to 2019, so 2027, is that what we're looking at for the next drought?

MC: Ah look, if I could pick the next drought, I wouldn't be working here. I'd be a very rich man. I'd be doing something else but you know it is a big challenge because our climate outlooks are getting more and more skilful and they're doing a pretty good job of looking sort of into the season ahead. But it's very very difficult to say with any confidence sort of what happens beyond I guess, the next 4 months, up to 2 years. And really, looking back at historical cycles of floods and droughts, I know there's something about human nature that makes us do that but it's quite unhelpful to understanding floods and droughts. We've had periods throughout history where we've had really quick shifts from droughts to floods, like we've had recently we've had long periods of drought, we've had long periods of floods so every flood and drought is different so I think the best I can do is suggest that people monitor the current conditions and look at the outlook to see how things are changing. One thing I will say is what we're seeing and what climate models have said would happen I guess for the last 20 years is an acceleration of some of that variability, so we know that the Australian climate can go from wet to dry, and cold to hot very quickly but given climate change, that variability is accelerating and I mean what's really remarkable to me, I was looking at some stats yesterday in preparation for this interview, if you go back you know, 2 years to the summer of '18-19, you know, we broke so many records in the basin for how dry it was, we broke the 2 year drought record, we broke the 3 year drought record and now here we are in 2022 we've had 2 of the wet, 2 of the wettest year on record. So it's quite remarkable how quickly the Murray-Darling Basin can go from extreme drought into extreme flood. And although the people are very very experienced in Australia with dealing with that cycle, we are seeing it accelerate so we're seeing, you know, hotter droughts and that quicker turnaround between floods and droughts.

AH: So the report, the Quinlivan report also said the bureau of meteorology needed o be ready with updates to water trade data via a centralised hub, which we were touching a little bit earlier, so how are things progressing with that project, and what sort of information can people access at the moment?

MC: Yeah so, essentially this is the big focus for us in the water space at the moment is responding to the Australian Government's water markets reform roadmap which was released in October, and what essentially it said is that we really need to step up in our capability and water markets' information, so we have collected water markets' information for the past 15 years but some of the systems that we have in place to do that, some of the processes just aren't really fit for purpose given the maturation of Australian water markets, so you know we receive some water markets data every week or every month. Some of it's incomplete, we don't capture all of it under the current water regulations and we really need to do a sort of once in a generation uplift there, so moving to systems that capture and publish data in real time which is really important for informing water market participants. You know, some of the recommendations in that roadmap provide additional regulatory roles to the Inspector-General of Water Compliance as well as the ACCC, but we need to provide those organisations with the data they need to be regulators. So what we're doing is we're going through that roadmap and through the ACCC report and really turning those high-level requirements into detailed data requirements. Once that work's done then we go out and starting talking to data providers about what will...

AH: So who provides data to you, to you guys?

MC: So the state registries are the biggest data providers, so the operators of each water market registry in each state, but also irrigation organisations and 'cause there's a lot of trade within irrigation organisations and what the roadmap envisages is us onboarding some new data providers in the form of intermediaries. So in the current water regulations which outline who has to provide data to us, it already includes state agencies, it already includes irrigation organisations, so in those cases is just a matter of modernising those arrangements and expanding on them a bit but for intermediaries, it will mean onboarding them to the water regulation for the first time and the reason that's really important is the water markets roadmap and the ACCC report both found that in order to have a really fair water market and one that could be adequately regulated, you really need to capture what's called pre-trade data, so the offers that people are putting out there to sell water and the bids that people are putting in...

AH: How do you capture that sort of data though?

MC: Look, I've got to be honest that I've got to confess I'm not a data expert but from my view the actual data sharing bit is not that complicated. I mean, each of us have apps on our phones that capture and share data in real time. We all have online bank accounts where we can send money around in real time. There's countless examples of real time data exchange but what is probably unique about our arrangements is that we have to develop systems that really meet a really wide range of data providers and users. So for example, one of our biggest data providers is Water New South Wales. Now that's a very big organisation they have very modern IT systems, they're already sharing data internally, so a discussion with them is very different to if we're talking to a smaller irrigation organisation that might not have much internal IT capability and our job as a regulator is to deliver on the requirements of reforms like this but also while minimising the burden that we put on those data providers. So what that requires is flexibility and how we go about doing it. There's not just one process or set of rules that we put in place for everyone because that's just not going to work.

AH: In addition to the centralised data hub, the water market reform roadmap also identify the need for the bureau to, you guessed it, have a uniform data standard. It's something Matt says is foundational to ensuring the success of the data hub.

MC: There's a lot of different recommendations in the water markets roadmap that relates to the bureau, but there's 2 big ones and the big one that's really really easy and exciting to talk about is the water data hub, you know, we're going to build a thing which is very exciting, and the thing going to su...

AH: It's tangible and people can see it. Yeah, yeah.

MC: The thing's going to solve all the problems, but in my mind, the thing is the easy bit. It's the standards that we have to develop before hand. As I said those standards need to facilitate the flow of data into the hub but they need to be developed in such a way that is really collaborative with all of those data providers so we have data sharing mechanisms that are fit for purpose and they meet the requirements of regulators and of market participants but don't impose undue burden on data providers so... I mean it's always hard when you're delivering big government commitments that are big and shiny and people want to, you know, see announcements very quickly but I think the key to this reform for us, is actually doing the really hard work before we build the shiny thing in terms that we get the data sharing arrangements and the standards right. From that perspective the technology, some of the stuff we did 15 years ago was really ground breaking at the time. These days there's all sort of off the shelf technology you can get for data capture and sharing. It's the standards bit and the collaborative bit that is the hard work.

AH: The bureau has been working on another project in recent years to make a wide range of water information more easily accessible. This project has delivered the Murray-Darling basin water information portal. This portal includes information on river flows, storage levels, rainfall, soil moisture, water availability, water price and water trades. The bureau is seeking feedback from the public in order to make it better through enhancements to be launched during 2023.

MC: You know, not everyone, but a lot of people are a bit too polite and with providing feedback but the reality is that the more detailed and the more specific the feedback the better we can make our products. So we really encourage people to get onboard and have a look at these tools and if they're not meeting their requirements, or if there's other things, flick us an email at water@bom.gov.au. Feedback is gold to us, particularly for the Murray-Darling basin water information portal. We've essentially got another year to keep working on that before the funding for that project dries up and so now is the perfect time for us to really be hearing from users about what is it they want, and we can include it and we can make enhancements and things like that.

AH: Well thank you so much Matt for joining us today on Water's Edge. We really appreciating you clearing some time in your schedule to talk to us. Thank you.

MC: No worries. Thanks for having me.

Speaker: Water's Edge is produced by the Inspector-General of Water Compliance, Australian Government Canberra. For more information, visit www.igwc.gov.au