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PRODUCTIVITY COMMISSION

TRANSCRIPT OF WEBINAR: Greening our cities: urban water's role

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Introduction – Michael Brennan

MICHAEL BRENNAN: Good afternoon everyone. I'd like to welcome you all to today's panel discussion on integrated water management. My name is Michael Brennan and I'm the chair of the Productivity Commission.

I'd like to start today by acknowledging the traditional owners of the various lands on which we meet and pay respects to elders, past, present and emerging.

I'd also like to welcome our panellists, whom I'll introduce shortly, and all of our virtual audience, which is building by the second.

The background to today's panel discussion is that in March this year the Commission released a research report on integrated urban water management. The subtitle was Why a Good Idea Seems Hard to Implement. And that's the broad theme or the point of departure for today's discussion.

And we did this research because, firstly, it's a significant emerging issue for our cities, which in turn are a key driver of productivity and growth for the future. But we also did it partly to reflect the role that the Productivity Commission plays in water policy. Under the Commonwealth Water Act, we are responsible for the triennial review of progress on the national water initiative, as well as the five yearly review of the Murray Darling Basin plan and, as many of you know, our latest review of the NWI is underway at the moment following on from the last review, which was in 2017 into 2018. And we also did our last review of the MDBP in 2018.

So 2019 was in some ways an off-season for us.

But as I've said in various fora before, we take our responsibilities to the water sector very seriously, and we wanted to ensure that when we're not doing a formal review, we were doing relevant research to contribute to the debate and to inform our own thinking for future review work. And this was the first of those efforts since taking on the water responsibilities from the old National Water Commission.

Our cities face major changes and challenges. And even allowing for the uncertainty of the COVID-19 pandemic, we are likely to see continued population growth in our major cities along with an increase in population density, increasing urban temperatures and more impervious surfaces. And that growth comes with the need for significant new investment. As we know, all of our urban water providers have major investment plans over coming years. And much of those investment plans reflects business as usual, albeit for a growing population.

The question is, can we design our cities for the right levels of density with more open space, urban cooling and less impervious surface? Noting that to do this and to achieve that outcome could require as much as 30% more water than a business as usual design.

As our research suggests, that's not just a challenge for urban design, it's a challenge for institutional design. It's how the parts of the water sector team up with strategic urban planners, with environmental regulators, with economic regulators and local government to deliver better landscapes and better liveability.

So today we're thrilled to have our own Jane Doolan presenting the Commission's work. Followed by Adam Lovell, the executive director of the Water Services Association of Australia and of course Rod Simpson from the Greater Sydney Commission and followed up then by John Thwaites who's not only the chair of Melbourne Water but also of course a former Minister for Water, as well as a Minister for Planning and a Minister for Health, not to mention a Deputy Premier. So a unique confluence of experience to finish us off.

So firstly I'd like to hand over to Jane.

Integrated water cycle management: why is a good idea so hard to do – Jane Doolan

JANE DOOLAN: Thank you Michael.

As Michael mentioned, our water utilities are poised to spend billions of dollars over the next decade. And the real question I think we need to ask ourselves is, 'can we get more for that money than we might under traditional water management'? Can we actually get greater urban amenity as well as a range of normal traditional water outcomes?

We know that water management can contribute to urban amenity. It provides fit-for-purpose water to actually irrigate green open space and make sure it's green even in times of water scarcity. The way we design our water distribution networks, our stormwater networks, can actually provide water in the urban landscape, so it can give us wetlands, connected green corridors that serve as urban habitat. It can integrate with natural waterways. We can even these days enhance urban waterways.

More traditionally in the past, stormwater has been a source of degradation. But now we can manage it in ways that reduce pollution, potentially reduce harmful flows and even provide beneficial flows under a drying climate. So the real question is, 'if that can be done, what does it take to get that done'? And I suppose I just want to take you through the sorts of things that actually have to happen. We have to think about whether we want to move to that more integrated approach.

So traditional urban water management, which is pretty much undertaken by urban water utilities around the country for the most part, has two key functions. Supplying fit-for-purpose water, reliable and affordable for households and businesses, and then disposing of unwanted wastewater, treating it to standards that meet health and environmental requirements. That's the traditional roles, but there's another, of course, source of water in

the urban environment, and that's stormwater. It is generally managed via a completely different institutional arrangement in most states around the country and it's managed mostly by local government, and managed to mitigate the impacts of flooding, to protect human safety and protect assets, and to minimize some of the damage to the environment.

But what we consider, and others do as well, is if these three functions are managed together in a holistic and integrated way, you can add a fourth potential function and outcome to that. You can provide water for the irrigation of green open space and provide water in the landscape and achieve some urban amenity outcomes for the community as well.

So that's our concept if you like, of integrated urban water management, the holistic planning and management, integrated planning and management of those three key functions to now give four community outcomes – including now urban amenity, on top of water supply, on top of our wastewater management and stormwater management for flood control.

But being the Productivity Commission, we would say that you actually need to do that in a certain way. If they are the outcomes that we want, then effectively we should basically be looking at integrated planning and management -- identifying options, but choosing the option to meet those outcomes that is the least cost to the community.

Now, none of this is particularly new. The water sector has been advocating for this for some time. Nearly every government across the country has a high-level principle statement supporting integrated urban water management supporting the provision of green open space for urban amenity.

But if you look around the country, this is not the mainstream way of planning urban water management.

There are a range of pilot projects around the country. Lessons where you can say yes, that's done well, but it is not the business as usual way of managing water in our cities. So the question we asked ourselves is ‘what does it take’? Why is it not mainstreamed? Why is it in fact that what everybody seems to agree is a good idea is it so hard to do?

So what we've done in this report is examine the policy, service delivery and regulatory environments. We've looked for key impediments. In that process, we've looked at best practice across the country. We’ve also looked at areas where things didn't go quite so well and there's lessons to be learnt.

But if we look at the policy and institutional settings, if we look at water supply and wastewater management currently undertaken by our water utilities around the country, they operate in a really robust and rigorous policy environment. There is strong policy set by government. There are strong standards they have to meet. There is clear guidance from government on how they are to undertake those two functions handed down in things like operating licences or statements of obligations. There is clear guidance to regulators about how they should treat those functions, what costs should be able to be passed on to customers, and it's a very rigorous and robust framework

But when you seek to actually broaden that to include stormwater management and to include other outcomes like urban amenity, that's when you start to see barriers emerge, and in this piece of work we identified 10 key impediments to achieving integrated water cycle management as the business as usual approach.

There are others, of course, but of our 10, these are the top five I would say, and they're all in the policy environment.

So effectively what we see to start with is a lack of clear objectives from government for enhanced urban amenity. There's high-level statements. Often of the motherhood type. But in terms of providing guidance and an authorizing environment, there's very little clear specific direction. So water utilities and local governments even working together don't have clear goal posts and are not clear what they should be achieving and they're authorized to actually seek to achieve.

Along those lines, the roles and responsibilities for enhanced urban amenity aren't very clear either. It's mostly a local government job, but the role of water and the expectations of water utilities in that process aren't clear. And if governments do want to see urban amenity as one of those four outcomes of water management, then some changes need to happen to actually bring the statutory land planning sector together with the water planning sector. They're not well linked at the moment, and certainly not consistently across the country, and they need to be linked at a variety of scales, both spatial and time scales. So you need it at the city shaping scale. You need it at the growth corridor scale, at the precinct scale, and the very local scale -- each answering different questions about how water is integrated, and it needs to also be done at the optimal time for both sectors. That has to be worked through, so it's got to be a consistent and formalized establishment of linkages between these two sectors.

As I said at the outset, stormwater is not integrated with water supply or wastewater management.

Effectively, if you went and sorted the first three, that would help a great deal. But if you even look at what is happening with stormwater management, effectively it has no consistent institutional arrangements, no consistent funding arrangements. It's not subject to the same discipline at all, and there would be merit in trying to actually impose a level of robust arrangements across the country on that.

Another area, a key area, is where government has put restrictions on some solutions. So if you want to undertake an integrated water cycle approach, you look at all the options and you evaluate them and choose the least cost. But if there's restrictions on some of those as there are, for example, on the use of purified recycled water for potable use, then that takes out a range of options from that whole approach. The flip side of this is when governments have actually created mandates, so in some cases, to incentivize the use of recycled water, Governments have set recycled water targets and certainly that increased the uptake, but in doing so, a number of those projects were not successful and were not the least cost option. Communities paid more for it.

So for us they are the top five. They are policy and they are the purview of governments. There are some other impediments to achieving integrated water cycle management in the service delivery area and the regulatory area as well. Probably the most significant of these are that collaboration is required. There's a range of players now. You've got to have water planners working with local governments, working with water policy, working with statutory land planners. And that collaboration is required -- a different suite of agencies working together -- through the planning phase, construction, implementation and ongoing management. And that actually has to be worked through, thought about and incentivized.

So we identified 10 key impediments. None of those are particularly new. They won't be a surprise. But they do point to areas where reform is required if we do want to make integrated water cycle management the new business as usual. And as Michael said, we're exploring this area further in the current inquiry, so we'll be looking at this. But the key people to make some of these changes are state governments.

So that's it for me. I'm now going to hand over to Adam Lovell from the Water Services Association of Australia.

Our urban water future: liveability and water security – Adam Lovell

ADAM LOVELL: Thank you very much Jane. Hopefully everybody can hear me and see my slides. Thank you for inviting me to join this panel and thank you to the Productivity Commission for such a fantastic report.

As an industry, we've been talking about this for quite some time. In fact, ever since the Millennium Drought. I think really so many of these issues have been going on since then and even before then. So I think this year, with the current review in progress, it is time to take up the mantle and really drive forward with some change.

So what we've identified through our processes over the past few years is some key challenges. There's a number of challenges, but here's the top two as far as we see it. First of all, embedding liveability outcomes, health and environment in particular, through blue and green infrastructure. And that's enabled by integrated water cycle management and Jane has very clearly identified some of the problems in implementing the blue plus green scenario.

Water security delivered for all Australians by ensuring all options on the table. And clearly that's not been the case and we continue to see either implied or direct policy bans on certain options. Those are pretty famous of course, but also you know other solutions are put on the table as being the silver bullet.

I just want to hone in, in particular, on the liveability benefits. If nothing else, COVID-19 is showing that access to amenity and green space has been an incredibly important part of what the community is looking for. I'm not going to read through all these statistics, but the

link to mental health and the access to green space and tree canopy cannot be understated and you can see there the costs related to mental health services and health and anxiety.

In London, River Economics did a major piece of work just a couple of years ago, where they identified avoided costs of about 1.8 billion dollars per year in Australian dollars in access to public parks. And so what we're trying to drive towards here is a recognition of the costs attached to the health and well being of Australian communities and their access to green space. Why is that important? Because as Jane identified, currently it's opportunistic. It's done because there's proponents who are willing to go those extra miles to put these new projects through. We want to move that from the opportunistic through to the systemic, and that's the challenge that we have in front of us.

We did a piece of work with Frontier Economics last year. And we looked at a couple of case studies.

So if you were to do a large greenfield development with fully integrated water cycle management, you can see there the benefits are up to $94.00 per person per year, and that's across recreational benefits from physical health, mental health benefits, urban cooling and air quality. But the biggest driver, the most surprising one from our perspective, was the mental health side of things.

And also we included in part of that, urban stormwater rehabilitation. So, you know, re-naturalization of creek and concrete beds. And we also looked at regional town supply. And particularly, there's so many photos, particularly from the drought over the past few years, where you've got that green space in a regional town which becomes the community hub. And so we're building a case, there is a case there to move towards integrated water cycle management supporting liveability and health outcomes.

We recognize too that there's no easy fix. There's no silver bullet, but in our blue plus green liveability report, which we released late last year, we've tried to lay out some steps that various stakeholders can take to try and achieve these liveability outcomes.

And I think one of the important things which I think might come up in the discussion is just how far collaboration will get us towards that goal. I suspect that it will be a lot of collaboration and in fact we've seen the Greening of the West program down in Melbourne. We've seen across the country -- collaboration working -- but I just wonder whether we don't need some of those institutional and structural changes to go the whole hog. So I'm not going to read through those.

Moving towards an element of integrated water cycle management which has been a little bit untouched over the past decade, many of you will remember back in the Millennium Drought that Marsden Jacobs did a levelized cost curve to look at the various water supply options across the country. And it became evident last year as we were looking at those cost curves, that technology had changed, approaches had changed and some of those costs

undoubtedly would have changed. So we've worked with Marsden Jacobs to redo that cost curve.

We've had 20 of our members across the country. We've had around 49 different project proponents. We had well over 400 projects included in this. But Marsden Jacobs were looking for quality here so we've whittled that down to 330 projects that establish what the costs would look like, and so the $64,000 question is what does that look like now compared to 2007.

So here's a sneak peek. We actually haven't formally released this project. You're getting a sneak peek today. We're looking forward to getting this report out on the streets very quickly, but a couple of points to pick up is that you'll see there in the middle that purified recycled water for drinking has edged below seawater desalination. These are median levelized costs and you might look at recycled water for non-drinking and say intuitively why isn't that cheaper than purified recycled water? Well there are certainly some projects there that might be for agriculture and for green space, for instance, which may be cheaper, less treatment requirements, but many of the projects we have in there are the dual pipe or the third pipe dual reticulation. So we're eager to get this report out in the street so the Productivity Commission can have a look at that in a bit more detail. There's plenty of case studies too to go look behind these numbers.

The other part of all options on the table is the enabling environment for people to be able to talk about, in particular, purified recycled water. We've picked on purified recycled water for this particular report because we could see that there was not an enabling environment for those discussions to be had.

We see many politicians making these decisions on a doorstop interview, rather than taking that time to work with local communities in a local context to enable these discussions to happen. So we've looked across the world. There are currently 35 cities and towns cross the globe that are using purified recycled water for drinking. The ones with blue dots there you'll see on the screen are ones currently well and truly down the planning path. The most recent one, el Paso, is actually what they call a direct potable reuse facility. But the key thing about all of them is that the community has been engaged before politicians have made a decision either way.

And I think that the long term goal that we need to have is a well informed community led, well not led, with the local context in mind and all options available to them on the table for them to help make decisions on the path forward.

Just looking ahead, just today and an once we've finished our session, we've just published a set of guidelines on integrated water cycle management, particularly for water utilities. It's a summary report. We've got a full report ready for release in a very short time frame and that will go through many case studies too. And really, it's about what sort of pathways utilities need to take to implement integrated water cycle management working with a number of institutional and collaborative partners that they do, and it works through all of the economic evaluations, funding and financing. And we've worked with the Monash

Institute. Rob Skinner, who many of you all know, has led this one and this is on the back of a lot of great work that the CRC for Water Sensitive Cities has undertaken work as well.

So just to just to finish off, you know, nothing like a 10 point plan. That's probably a bit wordy for you, but I'll just run through some of the highlights here. Our vision that we set the water industry back in 2014 -- customer driven, enriching life, still stands, absolutely, and we need to be able to recognize the role of water for delivering liveable communities.

And the new urbanism, which I'm sure Rod Simpson's going speak about, that talks about, you know, a new sense of localness. And COVID-19 has really thrown that up, and the importance of urban amenity. But how do we actually fund it? And I think we need to be really innovative. We need to look at the way we fund these things and look at the way you know prevention is better than the cure. And so if we're keeping people out of Health Services through the ability to access good quality green space, then I think we should take that into account. The uplift in property value that we see right across the country from access from living close to green space. All options available for water security in the local context.

The one thing I haven't spoken about which we're also developing some work around is the circular economy and what a new utility should look like in 10 to 20 years to ensure, you know, water is the most circular of all the economies, but we have a huge resource stream that runs through as a waste manager and driving your reporting towards the sustainable development goals has to be one of our key priorities. And lastly, but not least, we are absolutely behind renewing the national water initiative to set in stone what the outcomes are going to be, but allow jurisdictions room to move to adopt their own approach given local circumstances.

So that's a quick overview of where we're at. Thank you very much.

Integrated urban water management as a key driver of planning – Rod Simpson

OK, and here we go. Hello. Look, thank you very much for the opportunity to speak. I'm speaking from Cammeraygal land on the North Shore of Sydney. I think it's an extraordinarily important piece of work and I'm so very pleased to be able to contribute to the discussion.

Of course, when we're talking about water management, we're talking about the specifics of place. And the Sydney System of course extends all the way down almost to Canberra in terms of the water catchment. And when we then look at Sydney bound by the national parks that you can see there, there are very different conditions in the East of the city flowing to the ocean, to the West of the city, flowing into the Hawksbury Nepean.

So the three things I want to talk about are place, the importance of place and how we're thinking about that. And then secondly, how we might change our evaluation because collaboration needs to be based on understanding how systems work, but also how we evaluate different options, which of course is what Jane touched on. And so the last thing is then connecting to country, which I'll just finish off on.

But very quickly, Sydney is expected to go through a great amount of growth -- plus 37% in terms of population growth. A lot more dwellings of course, that goes with that. And then when we look at the city itself, what we're planning to do in Sydney is really harness that growth to re-balance the city and provide more opportunities in the West of the city.

So those are the framing strategies if you like. But if you can see the catchment that we're moving into, Wianamatta: South Creek catchment, suddenly we've got a completely different set of hydrological conditions and receiving waterways that are extremely sensitive. Now the thing that's interesting about that, of course, is that in the history of development in Sydney we've assiduously avoided going over that catchment, or pretty much so, and the reason for that is because of the sensitivity of these waterways.

And as we move into that western part of the city, we're not only moving into a new catchment, we're also moving into a different climate zone because the cooling easterly breezes, nor'easters don't penetrate much past Parramatta, and so we've got very, very different conditions there in the West of the city.

And you can see it here in the existing changes in or differences in temperature from the East to the West of the city and the area that's blank there, of course, is probably going to turn orange when we start to roll out that urbanization.

And the projections for the West of the city you can see over on the right are anticipating a lot more very hot days. And so we've got a number of different factors coming together here. It's not simply to do with water, but also to do with then how we actually condition and remake this landscape.

And this is, of course, what we've been doing, not just in Sydney, I'd have to say, but I'd suggest in many parts of the country and that's the urban heat that we're talking about, which is already going to be the result of climate change, which could be exacerbated by this pattern. So the question becomes, when we're moving westward, how might we do things differently?

And of course, there's been a lot of thought given to this over the years for many years. The urban heat island effect is nothing new. Sydney Water has done some really interesting thinking about this over the last few years. And really, it comes down to these integrated place-based approaches, which is a way of dealing with complexity.

But like stormwater, when you look at a diagram like this, which looks very simple and integrated, of course we're talking about multiple players.

And so really to understand what are the outcomes? What are the objectives that we are collectively aiming to achieve, becomes a truly critical question.

And what we've come up with, this is working with infrastructure NSW looking at the sort of difference in the urban pattern that we might want to achieve, and different alternatives which have been evaluated to look at the water systems and to evaluate, as Jane said, what is the most effective way of dealing with this, and we think that possibly increasing the amount of canopy compared to normal development by three times open space and gardens. In other words the actual typologies of buildings that we're building might be double the amount of open space and gardens, changing the width of roads and so forth so that we have an increase in pervious surface.

So you can see that this is where we start to get that integration between water management and land use planning, but not even at a precinct scale. This is at the scale of an entire catchment, and for that matter at a climatic scale, in terms of a different climate zone in the West of Sydney. So again picking up on what Jane said, working at multiple scales from the entire Metropolitan area, right down to the detail of how we design a street.

And that's why we've actually changed the emphasis from Transit Oriented Development to what we're calling, seriously, Parkland Oriented Development or green space oriented development or whatever.

But the point here is that it's not that transit oriented development isn't effective in some ways, but if you start with the water systems and then plan the green and blue grids, then it's actually possible to fit the transport systems afterwards. So that's what one of the things I'd like to leave you with today -- the importance of starting with the blue and thinking about the water systems, not simply in terms of the flooding and water supply, but also in terms of the amenity that it can actually provide.

So that's why I think it's fair to say that we've moved from necessity, in other words, seeing water as constraints in terms of flooding and supply and wastewater and water quality, into aspirations for how we want these places to be.

And how do we actually evaluate that? What we've done is come up with an approach which we're calling ‘place infrastructure compacts’ which give us a framework for evaluation of not just water infrastructure, but all infrastructure. Because of course a place is where all this infrastructure comes together to create the place that people experience -- the lived experience of all of the infrastructure coming together.

And I think it's fair to say that the way we've approached our city in the past is to break it into components to organize it, to split it into silos. And we deliver those and we try and coordinate them. But we don't necessarily see how all of those things actually interact and feed off one another and have these synergistic arrangements.

So the idea of the placed infrastructure compact is to consider all those things at once. And the reason we call it a compact is because it's essentially a compact with the public about how we're going to do things better.

And here is where you can see the difference in that approach and the sort of framework it then produces, which shows gaps.

It became apparent that in fact there was no government agency, either local or state, that was capable really of delivering the blue and green grid. And out of this work, as you can see here, around about 16.5% of the total infrastructure required for the area around Parramatta in this case actually needed to be delivered by an agency that in fact didn't really exist. Now that's now being picked up as Premier's priorities and you can see also then the connection across to water.

And so seeing those these two things together and recognizing that there's institutional arrangements that need to be created to achieve the outcomes, rather than seeing it as the delivery of individual agencies, is what's really come out of this work, as well as having a framework for seeing how all of these things come together to produce the sort of combined outcomes we want.

Now I think that that's also something that we can then think about in terms of country, because if we think about the way that the land was perceived, we really did I think, as Europeans, or it wasn't appreciated, that this was a managed landscape. And then of course, we came in and very quickly tried to change it even further and remove even more trees. So this is what's happened in Sydney in that time -- with a massive removal of vegetation from the West of the city.

And this is what it looks like, over on the left hand side. You can see the current condition with some remnant vegetation, much of which is running along the riparian corridors and Creek lines in that landscape.

Now that we know that there's some fantastic projects. I certainly look to the Nimmi-Caira project in New South Wales, which is on the Murray Darling. Or on the Murray I should say. And of course the wonderful example of the Yarra River.

My point here is that if we actually start to look at the water systems as the basis for planning, there's also the basis then for perhaps reengaging, reconnecting, and for that matter caring for country.

And it's not that we haven't done a Metropolitan scale sort of landscape concept before. This is Canberra. These are four drawings all at the same scale. There's the Canberra national capital open space system. There's like Burley Griffin. Then there's Wianamatta: South Creek that I've been talking about and this is Sydney Harbor rotated 90 degrees, but just to give you the idea of the scale. So these landscapes really that inform the liveability of the entire Metropolitan area are something that we can recover, rediscover and actually then reengage with.

And of course, we've been doing this over the last few years. It's not just the expansion of the city, but the remaking of the existing city. Again, starting again with the water systems and seeing if we can re-inhabit all the green tendrils and so forth that flow from that and extend all the way through the city. So everything that Adam's just touched on in terms of liveability and the potential to remake our existing city for higher amenity is not just in the greenfield, it's also in remaking the existing city.

And so, what are these integrated urban water management outcomes? And this is, I think, a key point and perhaps a partial answer to the challenge that Jane's posed. I think if we start with the outcomes. If we really articulate those outcomes. If we start to elaborate those in terms of new planning and urban design approaches, which I've hinted at in some of those slides. If we then accompany that with formal evaluation processes which look at all of the infrastructure being delivered in a coordinated but more importantly a holistic way. Then perhaps we can start to design the governance to suit. It is not going to be one size fits all. It's the basis then for collaboration because we can define the roles and responsibilities.

And then lastly, that may enable us to reconnect to country and to care for country. And so, in other words, I think integrated urban water management really does give us this space for turning necessity into aspiration.

And I think now I'm handing over to John. Thank you.

IWM: a report card for Melbourne – John Thwaites

JOHN THWAITES: Yes, well thank you Rob. Today I want to use Melbourne as a case study for integrated water management -- where we're doing well, where we're not doing well. And hopefully that will throw some light on the barriers that Jane talked about.

So to start with the challenges that Melbourne faces, and I think both Jane and Adam talked about these challenges. But I'll be specific to Melbourne.

First, the challenge of providing long-term water security. You'll see there, the blue line is Melbourne's water supply with the desalination plant, declining over coming years with the impact of climate change The green line is increasing demand. Now, with COVID, there may be some limitation in population growth, but no doubt it will continue to rise. And that means that within the next 10 to 15 years we are going to need a new source of supply.

The next challenge for Melbourne is flooding and drainage and we already have about 230,000 properties that are estimated to be at risk of flooding.

But with increased population we're densifying the inner city areas which are the at risk from flooding areas. And that will cause further challenges for the future. And of course, climate change will exacerbate that.

The third big challenge is healthy waterways and the environment, which impacts on Melbourne's liveability. And on this map you see in red the rivers and creeks in the growth suburbs of Melbourne. They're going to suffer considerable reduction in their environmental health overcoming years.

And it's estimated that with the rapid urbanization in Melbourne there will be an extra 49 billion litres of stormwater flowing into these creeks and rivers because of impermeable surfaces with the new development.

The consequences of that, are that the river health will decline, and it's estimated that there will be about 850 kilometres of poor or very poor rivers and creeks added to Melbourne's catchment over the coming 50 years. And of course that threatens the environment. And it threatens liveability.

So I think we all see the answer to these multiple challenges of water security, of flooding, of the environment and of liveability as being a new way of managing water and that is integrated water management.

But I think as Rod pointed out really clearly, integrated water management operates at different scales. It operates at the city scale. But it also operates at the regional catchment scale, the precinct scale and the lot scale.

Probably the biggest challenge for integrated water management is each of those different scales have many different parties that have responsibility and governance within them.

So we have state government, local government, different water authorities, developers and, of course, residents.

And the challenge to bring all of those different parties together and have a common management is probably the biggest challenge of integrated water management.

And for that reason in Victoria we've established integrated water management forums. And we've established them across the state, and Rob Skinner, who was the former managing director of Melbourne Water, is overseeing that process.

We've got five of these forums for each of the major catchments in Melbourne. And then ten across the rest of the state, and I think the other point that Rod made, which is really important, is that in a city like Sydney or in Melbourne the integrated water management issues are very different in different catchments.

And so you have to change your approach. And I might say from the time I was Water Minister where we looked at Melbourne as one beast from a water and planning point of view, I think we've now graduated to understand we have to look very carefully at the different impacts in the different catchments.

Now in each of these integrated water management forums we have brought together local government, traditional owners, catchment management authorities and the water corporations to develop a strategic direction statement for that catchment.

And that will link to a catchment scale integrated water management plan, which is now underway, and for each of these forums in each of these catchments, we aim to facilitate collaboration. But also to develop a shared vision. To develop and an agreed pathway. And importantly, to identify the specific projects and policy and regulatory changes that are needed if we're going to effectively implement IWM in the catchment.

Now, traditionally our water planning has been around a series of requirements for water authorities and local government at the year, 5 year, 10 year and 15 year frame, and the key planning tool is the sustainable water strategy, which is once every 10 years.

But how do we overlay integrated water management, and particularly at a catchment scale on top of this.

What we're seeking to do is to use the outcomes of these integrated water management forums to develop catchment scale plans which have an impact at a local level, and so that might be place-based opportunities to offset potable water needs at the local level. But also to embed these catchment plans at the broad strategic level so that they're embedded in water security plans for the long term. And as Jane said, traditionally this hasn't occurred. Stormwater planning has not been integrated with long-term water planning.

So what we need to do is embed the localized plans in the long-term plans.

Well, given all of that, what I've sought to do, and I've done this together with Rob Skinner and Chris Chesterfield, both with enormous amounts of experience in water in Victoria to give a quick report card on how we're going on the seven key outcomes for integrated water management that the integrated water management forums have set.

And I think they do accord pretty closely to the report that Jane said about how we're going. First in terms of safe, secure and affordable water supplies, I've given that a grade B in that we're going pretty well in diversity of supply now. We're not just relying on traditional rain fed reservoirs. We've got a diversity of supply, particularly the desalination plant. And we're doing well in water conservation.

Where we fall down though, is in stormwater harvesting. Because despite all the talk there is still very little actual stormwater harvesting as part of our supplies.

Then in terms of effective and affordable wastewater systems, also a grade B. I think that's consistent with what Jane indicated. Very good environmental outcomes. Good regulation. There's a pathway to resource recovery. But where we fall down is we're not really implementing the circular economy. And there is an opportunity to do so.

The third area, which is opportunities to optimize future flood risks and impacts, we've also graded a B. And this is where water sensitive urban design really is making an impact. We are now managing flooding very much through water sensitive urban design through wetlands and integrated water management. And at the lot scale, we've now integrated land use planning with water planning, so through the Victorian planning provisions at the lot scale, developers have to take account of stormwater impacts, particularly for flooding.

Where we're not good and where we fall down is on the broader precinct and regional scale. At the whole of catchment. Where we're not requiring those whole of catchment plans to take account of flooding in the same way we do at the lot level.

And the other area, I think we really fall down in terms of flooding is in community literacy, where there's very little understanding from the community or for developers about the impact of new developments on flood risk.

In the fourth area is healthy and valued waterways and the environment. And this we rated a D. Now in this area we have great strategy. Melbourne has a healthy waterways strategy which is very clear. There's good intent. But frankly, we just fall down in the outcomes. New development in Melbourne is having a significant negative impact on the environment on the rivers and on the catchment.

And there's not a real understanding of the impact of new development either from the developers or from the purchasers of land on the impact of that on the environment.

In terms of valued landscapes for health and well being, the area that Adam really highlighted, the liveability area. We graded C. And we're very good at highlighting the value and the water industry owns this space. Where we're not so good is, once again, on the community literacy and understanding the link between the type of houses and developments they're living in, the permeable surfaces and the impact on their liveability, and where we're really poor is on funding of liveability. We don't have a system for funding that.

In terms of strengthening community knowledge and local values, we've graded that a C. Once again, we have a strong commitment to it. We've now got good traditional owner inclusion. We've got good community engagement through the integrated water management forums. But it's not really mainstreamed, it's still part of the water system. It's not, as Rod said, part of the transport planning or part of the regional economic planning.

And then finally in terms of jobs, economic benefits in innovation, we graded that C. Once again, there's good commitment from the water authorities and the water corporations. But we're not really good at innovation, and we're certainly not implementing a circular economy approach.

So that's a quick report card, and finally a final slide. I just want to reflect on the impediments that the Productivity Commission has highlighted.

And agree that all of those 10 impediments affect the report card that I've highlighted.

I just particularly like to highlight #3, which is land use planning and water planning are not well linked. And I think Rod really highlighted something when he talked about transport oriented development and compared it to green or waterway oriented development. Because I know from my own experience of having been a Planning Minister that really transport was the big elephant. And planning and water are, you know, much smaller players in cabinet, much smaller players in government. And unless you really get transport and land use planning integrated with water planning then we're not going to get the right outcomes.

I've also highlighted four additional barriers, which may be implicit in the Productivity Commission's barriers, but I think need to be made clearer.

And I think first, and most importantly, funding mechanisms and financing are unclear. And essentially, that's because integrated water management provides multiple benefits. But who benefits and who pays is not clear. And so if the Productivity Commission is to say, understandably, that we have to have the lowest cost option, that will generally exclude the liveability options or the environmental options. Because who's paying for that? And so I think what needs to be done, there needs to be a clear mechanism for those public benefits, the environmental benefits, the liveability benefits to have a funding source.

And the second, which is linked to that, is that risk sharing is not agreed. The most obvious example of that is between local governments in the upper and the lower ends of the catchment. Who shares the risks and who pays for them? The Councils in the upper end of the catchment may not be prepared to pay for benefits that are really felt in the lower end.

The third big barrier is community literacy and until developers, transport operators, Treasury and others understand what we all understand, then it's not going to happen.

And the final thing is, the circular economy is not sufficiently supported across the whole of government. A circular economy is key to much of the integrated water management, but for it to be actually implemented, you're going have to have Treasury and central government supporting it as they do in Europe.

Thank you.

Questions and answers session – Michael Brennan

MICHAEL BRENNAN: Well, thank you very much to John and thank you very much to all our panellists. That leaves us some time for questions and answers, and I remind you, as people are already doing, to populate the Q&A section and then we'll be able to put these questions to the panel. We have a number of questions coming through already to Adam, on the methodology applied in the Marsden and Jacobs work about the cost estimates and the like and we will come to that.

But I thought I might start with what's effectively a sort of double barrel question from Andrew Chapman about firstly, how one reduces the institutional barriers and gets the risk transfer right between relevant agencies to get better whole of community outcomes, as well as the observation that integrated water options are often incremental decentralized options compared to the traditional water supply options, which are often Big Bang and tend to rise in a crisis where we go for the big picture outcome.

I thought I might start by putting that to John Thwaites and then we might get other panellists to comment on that.

JOHN THWAITES: OK, I think the answer is that you have to have a level of network governance, which is what the integrated water management forums that Rob Skinner has been over-sighting do. I used to think that they wouldn't work because you've got to have one particular organization that is accountable, but there are so many players in this field you can't do that. So I think this is all we can do, which is to have a network governance model.

Then you need to put in place some rules and contracts that make different organisations accountable for what they do. So local government, water authorities and state government need to agree, I think in a contractual way or in a agreement or regulation, that they will fulfill certain outcomes over a period of time.

And in that regard, I also think targets are important and I know you and Jane sort of criticize them, but I think unless you have certain targets, a lot of these more innovative aspects of integrated water management won't happen because people always revert to habit, to what they've done before. It's cheaper and easier. And so the only way to get, for example, stormwater harvesting up, in my view, will be to have some targets for that which drive the system and for which people can be held accountable.

MICHAEL BRENNAN: Rod, do you have anything to add on that?

ROD SIMPSON: I think that my proposition is a simple one really. Which is that I think we do have targets. We've got water quality targets. We've got receiving water targets, supply targets and security of supply targets. There's a lot of targets we already have.

I guess the shift that I see as being important is that if you look overall, if the whole urban system is understood, then we can start to see the benefits of reducing urban heat by 1 degree on the electricity network in terms of peak. And that's not something that would immediately be apparent in terms of water targets, and so I guess I think the targets are very important, but I think that if we start to talk about outcomes and the outcomes actually being outcomes for an entire urban system, then we can start to develop new methodologies and so forth and then start to allocate roles and responsibilities and reporting requirements and so on.

So, and that's not to say I have to do it all at once, but I think that it would help all of us if we can actually understand the costs and benefits of an urban system rather than still reverting to, you know particular sectors. I hope that makes sense.

MICHAEL BRENNAN: It does, thanks Rod. Jane?

JANE DOOLAN: I'd just like to add, I think it's not so much that the targets that are a problem, it's when you skew towards a type of solution. So as Rod said, if the outcomes are clear… so what are the community outcomes we do want? We do know, a range of water quality etc because they've still been set. But if there's urban amenity, to be specific about it, then that it provides you with the wherewithal to go what are your best options? Is it treated recycled water? Is that storm water? Is it potable water? What are the best least cost?

And I note that people are a bit worried about the least cost, but I want to make the point that it's the least cost for the full range of outcomes that you want, so you actually have to define what those outcomes are and then least costs can work. So it's not the point that least cost will always get rid of the health and well being outcomes, because if communities think that's important and governments think it's important, it's in the equation as what the outcomes are. And I think the example that Rod gave us in Sydney to say, well in western Sydney they want twice the amount of parkland and I've forgotten how many trees, but you know there was a factor there. That's starting to actually be specific about the urban amenity outcomes that we want and then that can be designed. What are the appropriate sources of water? What's the best cost or least cost option to meet all of that?

MICHAEL BRENNAN: Thanks, Jane. I'll come to you now, Adam, but in addition, I might just draw your attention to the question from Hannah Paxton from Melbourne Water. We had also a contribution from Darren Coleman of City West talking about work that's being done, particularly in the West of Melbourne. But Hannah raises the question for water services providers, water utilities, what steps do they take to transition from piloting these sorts of projects to them becoming more mainstream.

ADAM LOVELL: Yeah, that's a really good question. I think often what's lacking is your authorizing environment to make that happen, and I think right across the country, from my point of view, you see a range of different actors and stakeholders largely rowing in the same direction but with different mechanisms at their disposal. And I think one of the big challenges is, and I think one of the successes, if I was to highlight one of the successes, is the role that City West water and Melbourne Water put into the Greening West program. Really creating a leadership role but in a collaborative sense. So in other words, 'we'll put the resources in to help lead, but we need all of you as stakeholders to come along for that ride'.

I guess I have a problem and we have a problem, as Jane has picked up through the report, is that I genuinely think collaboration will only get us so far and I think, you know, all of the years that I've been involved in urban water, I've seen massive gnashing of teeth and wringing of hands about what we're going to do with stormwater management in Australia. So that's been two decades and longer. So are we going to actually change the paradigm and make that step change into a waterways manager, something different?

But what we must do is to get stormwater into the total urban water environment, and I think it needs to be outcomes based. It needs to be agnostic to ownership, but there will have to be some sort of institutional and structural changes to actually make that step change and I know that in Sydney and in Melbourne with 20 plus local councils and a water utility and various other regulators trying to manage what a stormwater harvesting scheme or a better waterway outcome might look like, is a very difficult thing to manage and do we actually think we can still manage with that? I just challenge that. I think that that we might have reached the limits of collaboration, just to be provocative.

MICHAEL BRENNAN: Thanks, Adam. I might come to the question of indigenous cultural values because that's also looming large in the Q&A, both from Katie Burns and also from Michael Brown.

I might start with you, Rod. As Katie puts it, how do we better reconcile the pressing system challenges with genuine cultural outcomes?

ROD SIMPSON: Ah, look, I think the Yarra example that I've included is a start. I think that the work that's being done in the Murray as I pointed out. But I think the main thing here is, it's a simple point I suppose, you know, Wianamatta means mother place in the Aboriginal language of the area. And so, I think the waterways and waterway management and caring for the waterways is actually a very good starting point. It's not the only starting point. There's certainly a whole range of other issues in terms of economic development and social development and so on. And native title. I mean, I don't want to wade into all that, but I think that waterways are a very good way to not only engage with the Aboriginal community, but also to involve the entire community in a restoration of landscape.

Now, I think that then an ethos does start to emerge about how we use our open space, the public domain more generally, and so I think it starts to unfold. But I do think it's unfolding in a number of ways, but I do think it's possibly a starting point that we haven't picked up on anywhere near as much as we might in urban situation in particular. That retracing understanding, how we can not just understand the landscape but actually reimagine it and restore it. And I think again with the COVID situation, the way that people are actually inhabiting the city is really quite different. So I think we're at a point where that first instance, though, is to recognize the importance of the waterways and then start that conversation and make time for that conversation to emerge.

MICHAEL BRENNAN: John, do you have a view on that? Part of the question too is about governance and support for cultural Indigenous groups to have their voice heard in this context. Do you have a perspective on that?

JOHN THWAITES: Well, you have to, obviously have a process, but you've got to set aside time too. I think that's one of the things that we found that thinking you can just sort of force traditional owners into the time scale that we might have had or force them into, you know, an outcome that we necessarily want is a bit presumptuous, so I think having a really respectful listening process with plenty of time is important.

MICHAEL BRENNAN: We might come to the questions about the Marsden Jacobs numbers because there are few questions about that. Paul Sherman, Lindell Pickering, Tony Wong have of all put questions about this. Firstly a technical question about the component recycled water numbers, whether they were effectively direct or indirect projects. Secondly, whether or not the avoided costs or downstream benefits were included. But also Tony Wong's point about whether or not we need to differentiate the benefits a bit more. The costs are kind of homogeneous, but the benefits maybe differ according to the nature of the project. I note John Madden's also chimed in with a perspective on that, that it makes a lot of difference specifically what's planted and the options around the design of some green urban space as to what cost might be.

ADAM LOVELL: I'm already glad that I've achieved the outcome of starting a discussion because that's exactly what this paper was designed to do. When you read it, it is not an answer. So the figure that you saw before, that is not an answer. That is not an answer that you would put into a water planning process. This is a discussion starter and now, if I just really quickly went through some of the decisions, some of the technical questions.

So there are direct and indirect projects within the report and you'll see that. So the costs that you saw on that graph, the single cost that you saw was a median cost between all of the ranges between groundwater augmentation, reservoir augmentation and direct potable. That's all within there. And then there's a good percentage of direct projects within there.

In terms of avoided costs, no. And the reason we didn't include avoided costs, was because it is very locally specific. The context for each project is very locally specific. There's very many reasons that you would you would want to use this as a discussion starter and pull in the local context according to what you're looking at.

And then getting onto the bigger question which Tony asked, and he's absolutely right. I mean this piece of work is about water security, and if you look at, say, the costs of stormwater harvesting, of course it's going to be, naturally we'd expect it to be, more expensive. But then if you include in a local context the avoided costs of flooding, or liveability benefits. Then, for each local context, that answer is going to look a little bit different, so that's when you have to expand and do further work to include the local context. So you know, we're putting out this report, and it's got a whole range of explanatory statements that that sit behind it that you could actually use to talk to stakeholders, and your community about the various sources that are available.

The other thing, which is more exciting and, you know, we were putting this out purely for public policy discussion. You know this is not, as I said, this is not an answer. The day we actually publish it, it's old because there are new projects coming on board all the time.

But think about the energy impacts from each of those options. Think about the greenhouse gas emissions. The yield. The rainfall dependency. These are all things that a utility or a water service provider could layer on top and then go to the local community and have that discussion. So all points are really absolutely valid.

But we thought it was time, given the massive changes since the Millennium Drought, and I'm not sure what we're going to call this current drought, although given Sydney at the moment, that's stopped, but in other parts of Western NSW and Queensland. But that so many things have changed that we needed to update that base case almost for discussion purposes.

MICHAEL BRENNAN: Thanks Adam. We might go to one last question and then I'll get all of our panellists to kind of have a last word, as it were. Casey Furlong raises the point that climate change will result in damage to open space unless there's more irrigation, but there's a block around the use of potable water for irrigation purposes. Is that taboo, helpful? Or do we move towards the WSAA proposal of all options being on the table? Do we do we look at all supply options on their own merits?

Why don't I start with you Rod? And then we'll, well, why don't we start with you, Rod? I'll get each of you to provide a perspective on that and a sum up comment as well.

ROD SIMPSON: I'm not going to fudge that answer. I think when we start talking about all options being on the table though, that's when this starts to play out. Because if we're talking about indirect potable being reticulated, we've saved a hell of a lot on the reticulation of, you know, recycled water in some cases.

It's then a matter of the prioritization. It might mean that there's a much greater emphasis put on the storm water being kept in the landscape and how we handle that. That then starts to affect the form of development because we might be setting aside more extensive areas for stormwater retention and doing it on a on a regional, or at least a sub-catchment basis. And so I think you could see how once we've got all the options on the table, the responses are going to be very different in different places, whether the soil is saline or risking. It's so specific, I don't think there's a simple answer unfortunately, but it goes to what do we want to achieve? And absolutely, we know that most plants go into heat stress at about 46 degrees C. They stop of evapotranspiration. So you actually get a negative, a disadvantageous positive feedback in terms of the heat then suddenly going through a threshold.

I don't think we've ever thought about the urban systems in such a sophisticated way before. Not because it's a nice thing to do, but I think it's absolutely essential that we start to see all of these interconnections, which we've been aware of, but not really been required to take into account as much as we now are. And that's why I think that Sydney water diagram is so telling. Because if we want any precinct to work, it's going to involve a whole lot of different actors and not just roles and responsibilities, but right through from strategic planning through to actual construction.

So it's, it's, yeah it's a challenge.

MICHAEL BRENNAN: John, do you have a final observation.

JOHN THWAITES: On the use of recycled water, I don't think that anyone has a problem with irrigation for Parkland. I think the issue was direct potable and I agree with Adam on

that, that has to be a long-term community discussion where people are brought to it over a period of years, and that's why the Perth approach or what they're doing down in Geelong too using aquifers, are part of that.

What you can't do is have that discussion in the midst of an emergency, like the drought, where it is totally politicized. And I can assure you if we'd said we were going to have recycled water then, it wouldn't have happened. Like there would have been community outrage. You can't do it in that context. You've got to do it after sensitizing the public over many years. And I endorse Adam's approach on that.

But, the other point, I do think the huge barrier that we really haven't sufficiently addressed, and I do hope the Productivity Commission does, is this one around who pays and who benefits? And it's not just around stormwater harvesting, it's also around the impact on the environment of new development.

All the advice is that we have to reduce stormwater by up to 60% in some areas.

Now who is going to pay for that? Is it the new homes? The developers of the new homes in those areas? Is it the whole of Melbourne? Is at the whole of Victoria? That's a huge impediment to getting the outcome which we need. Which is this safe and healthy environment which we're not going to have if we just build the current type of urban development in the way we've done it in the past.

MICHAEL BRENNAN: It's an excellent question, and I'll come to you Adam and then to Jane for a final observation.

ADAM LOVELL: Yeah, just in signing off I'd just endorsed John's comments. I think one of the key questions that we continue to stumble across is who benefits and who pays. And I think, you know, we talk about the health benefits and environmental benefits still as externalities, and wouldn't it be wonderful if you would pick up the phrase they use in the US. They call it one water, but it's more about water security. It's sort of the water supply system.

But we talked about one water in terms of including stormwater and the benefits that integrated water cycle management plays to the whole economy, instead of treating the physical and the mental health, and the urban heating, as external benefits that we can either take or leave. We've got to include that. That's got to be one of our next steps. We want to move towards that, so we have a one water system and it becomes a little bit clearer then about who's funding and who's paying. But we're all running in the same direction, and I just think if we all get in the same boat then I think we'll manage to achieve it to have a healthy Australia. All Australians should have access to safe drinking water and be water secure.

MICHAEL BRENNAN: Thanks Adam and Jane is the author of the report that got all this started, a final observation?

JANE DOOLAN: An I suppose you know, we need to acknowledge we started with that funding question because that was the one that was dominating everybody in the area.

But we really felt that a lot of it was actually sort of almost upstream. It is a lack of clear policy outcomes. So if governments are prepared to say what they want, you know, what do they want to do with storm water? Do we want that healthy environment there?

Then it becomes some of the existing mechanisms can flow and it will cost. It will cost in local rates or it will cost in our water supply prices.

So some of it to me is still the policy lack. The concentration on high level principles not providing enough authorization to actually then have it flow into the normal funding mechanisms. But I do acknowledge some of that is pretty difficult, so it is still trade offs for government. Government has to think about if they do want to set the goals for urban amenity, as I am urging them to do. Then there are trade offs there. There's some difficulties. You know? How much are we willing to see? What's the equity issue? What's the impact on house prices? A whole range of things?

But I think we're now at a point that the case has been made for the importance of urban amenity in health and well being to communities. I think we're seeing it in real time as we're restricted to our suburbs in COVID, that people really need that space. And if we've actually made that shift then I think it can start to influence and become far more apparent in the policy environment. So that will help a great deal. Maybe not solve all the issues. But it actually will help.

MICHAEL BRENNAN: Thank-you Jane, and apologies to all that we've gone six minutes over time. Thank you to the 148 participants who remain with us and have gone the distance. Thanks too for all the questions. I apologize that we had so many good questions that weren't able to canvassed today.

Can I just say firstly, thank you to our three guest panellists, firstly to Rod Simpson, John Thwaites and Adam Lovell for their well thought through, well prepared remarks and then their candid comments in the question and answer session. A particular thanks to Jane Doolan, both for her performance today, but also for her work and authorship on the research report. And could I just put in a quick thank you too to Marianna Olding and Lou Will and Stuart Turner, who have provided the behind the scenes support for today.

So thank you all very much for joining us and don't forget the progress report on the National Water Initiative. It is under way. The Issues Paper is out. Submissions remain open for a couple of weeks yet so there’s still time and we looking forward to the ongoing engagement on water issues.

Thank you very much.

WEBINAR CONCLUSION