

Transcript

Sarah Tout:

I'd like to acknowledge that this podcast was created on Nyungar Boodjar, and pay my respects to Elders past, present, and emerging.

Hello and welcome to this second act of the Geoffrey Bolton Lecture 2022. The Geoffrey Bolton lecture is an annual celebration of discovery and insight, informed and enriched by archives.

This year's speaker is Dr. Julian Bolleter, co-director at the Australian Urban Design Research Centre, author, landscape architect, designer, teacher and researcher at UWA.

If you've not yet listened to part one of our conversation, this podcast lecture is an exploration of the evolving edges of Perth water and, in particular, the Perth Foreshore.

In the first episode, we explored the last hundred years of evolving designs along the foreshore, and what they tell us about us as a culture and as people. We saw how these spaces are changing, both with the ebb and flow of what is built along them, how the needs and aspirations of the people shape and react to space, but so too how the tides are literally turning with alarming shifts in our environment.

In this episode, we explore the findings in a recent paper written by Dr. Julian Bolleter. His research examines the way we use public open space, how it serves us, and how it is under threat, how **we** are under threat. Floods, rains and sea level rise are beginning to impact and shape the Perth foreshore and demand a response from us in how we design it.

What follows is an extremely important discussion about climate change and what it demands from us in how we shape our city. If you live here in Perth, it's urgent listening and hello if you're joining us from elsewhere, it's an important and fascinating conversation that has worldwide relevance and implications.

We begin with a recap of some of the features of Elizabeth Quay, the large urban development on the edge of Derbal Yaragan, the Swan River, at the face of where a city meets its river.

Its proposal was met with demonstrations and protests by many Perth-dwellers, and thus we begin this episode with some reflection on public open space, what it is for, and how it can be used for democratic expressions by its people.

Julian Bolleter:

Yeah, so look, the esplanade was regarded by many people who protested as a space where we've had, in Perth, democratic expression. And I remember that from being a kid: going to the esplanade in the 1980s with my parents and attending nuclear disarmament rallies, you know, um, so it was an important space for that.

It was also an important space for the Anzac Day marches and big civic events. So this big slice of turf, which was the esplanade, functioned well for those big events. It had plenty of capacity and it did support the kind of democratic expression of the people, and that's really important for a city to do that.

Uh, what was perceived by many people who resisted Elizabeth Quay was that the project saw the privatisation of that key public space. The city's front lawn, in fact, not just any public space, but the city's front lawn.

Um, and they saw it being carved up for developer interests, and short-term profiteering and gain. I guess what the design team had seen was that the esplanade wasn't well-inhabited, on a day to day basis. It was a kind of, fairly vacuous, you know, expansive turf.

So the design for Elizabeth Quay was trying to make the experience an urban experience of the river, which is very much something that would be activated day to day and would be part of the life of the city and the river.

But what you did lose with that was the big openness of the esplanade, which did really, uh, cater for, you know, large-scale public demonstrations, or celebrations.

Sarah Tout:

That's really quite interesting to reflect on: the significance of public open space democratically and for protests and for people to gather.

Because your work does look quite centrally at the function of open spaces and, what we use them for.

Julian Bolleter:

I think a lot of the protests about Elizabeth Quay too also were about this idea of the river. The lingering idea from James Stirling, that the river is an Arcadian escape from the city into some kind of Arcadian paradise or nature.

Now, it should be said the esplanade was fairly denatured. It was mostly turf, but nonetheless, I think in the public imagination, it was not built and therefore it was vegetated and it was, to some degree natural. And so the idea of urbanising it, particularly with tall buildings - you know, right in your face, right down there on the front lawn, um, on the edge of the river - was seen as being a kind of an urban attack or assault on this natural system of the river, and its green foreshores.

So from a symbolic point of view, it kind of upsets this equilibrium between perceptions of nature and culture in Perth. It upends them.

And some of the renders for Elizabeth Quay, which were done under the Carpenter Government, which were tagged *Dubai On The Swan*, some of the unfortunate renders did show very tall buildings, quite phallic buildings, right there on the foreshore, right in your face.

And for a lot of people, for some people, that was aggravating. For some people it was like, *well bring it on*. You know, *it's time for Perth to assert its urban identity on the river*. But for some, I think, you know, it was a sense of an assault on Perth's natural amenity and natural identity.

Sarah Tout:

So I wonder, just picking up on the importance of public open space, I wonder if you could speak a little bit more broadly about what we use public open space for and, and what it gives us.

Julian Bolleter:

Public space, um, particularly in this day and age is, is needing to be increasingly multifunctional. So, a lot of public open space in Perth is still quite mono-functional and, and is resulting of various, uh, areas in which it was designed and delivered.

Let's take the foreshore. If you look at a landscape like Langley Park, which is a fairly barren, turfed expanse. That was originally designed to be more elaborate parkland, a bit like Hyde Park. So this was in the, the late 19th century. The idea was when it was reclaimed that they would produce, you know, a handsome civic foreshore, which would

have lots of pedestrian paths, lots of European trees, um lakes, ornamental lakes, a few cricket ovals.

So it would've been a elegant and well-furnished kind of civic - handsome, civic foreshore park under what's known as the city-beautiful tradition.

Um, that didn't happen. The landscape we've ended up with along that broad expanse of the foreshore at Langley Park, in particular, is representative of the recreation movement, which is a more of a 20th century idea that, um, that public space was about making people be active and it typically involved organised ball sports and a lot of ovals and most - frankly - most suburban public open space in Perth represents this recreation movement.

It was the idea that, um, physical recreation would make people physically healthy, but there's also a moral dimension that it would temper immoral impulses. By the fact that people would be out running around kicking balls and exerting themselves in the sporting field.

Um, as we move into the contemporary realm, such ideas look a little bit, um, mono-functional and there's an increasing desire in Perth for spaces to both function in terms of biodiversity habitat - Perth is in a biodiversity hotspot. There's only 35 of them in the world, and they're the most biodiverse regions where biodiversity is also under threat.

So our parks need to be working harder in terms of biodiversity. They do need to be providing for active recreation, but also passive recreation and experience of nature. So, you know, there's just, um, a huge tsunami of research just showing the amount of mental health benefits you get from being in green space.

Sarah Tout:

I was curious to note that there's even, um, evidence of reduction in, in mental health issues and even soothing of symptoms of things like ADHD.

Julian Bolleter:

Yeah, that's right. I mean, who would've thought that nature would be so good for us? And there's been all these experiments of people recovering from operations in hospitals where people are put in a ward, which might have a view of a freeway or an urban, you know, urban expanse beyond the hospital or putting them in in a room which has a view of a landscape courtyard with mature trees and understorey planting.

Unsurprisingly, we find people generally recover quicker when they have that view of nature.

So we don't even need to interact with it necessarily for it to have benefits. And that's because we are not designed to live in cities. We haven't, you know, the breadth of human evolution hasn't been of us living in cities: we've been 'in nature'.

I use that term in inverted commas, but what it does is allows us to relax. And when we relax, our bodies can recover more quickly: either from an operation - such as in that example - or from just the stresses and strains of, you know, of urban life in the 21st century.

So enormous benefits, which, you know, research is proving are important, and manifold.

But we're also - some of them we're still, I think, coming to grips with - there's still implications for spending time in nature and putting your hands in soil and the implications that can have for butt *[laughs]* gut bacteria, which then has other implications for human health.

So there's pathways and relationships there that we are also still only just beginning to understand.

So, public open space is loaded not only with the desire for democratic expression for physical health, for mental health, uh, for biodiversity. And now we have to also think about public space in terms of climate change.

You know, like how do parks cool urban areas around them? There is something documented called a *park cool island effect*, uh, where a park like Hyde Park will actually cool the urban areas around it.

Uh, so how do we do that? How do we design public open spaces - such as on the foreshore - so they can soak up sea level rise, storm surges and floods and perform a green infrastructural role?

So public space has gotta work hard these days. Um, it can't just be sporting fields. It needs to be, you know, needs to be doing more things, more of the time for more people.

[music: Before It Hit by Rachael Dease]

Sarah Tout:

This leads us to a paper that Julian has just completed about climate change and sea level rise, and the impact it will have not just on our urban spaces, but also those ecosystem services that have just been described: those health benefits and the physical support that the foreshore and areas near water provide us to help prevent flooding.

The paper explores climate change and its impact not just at Perth's coastal regions, but the foreshore as well. Sea level rise, flooding and storm surges are very real and imminent, effecting these areas along the Swan River. There are many implications to consider here, but firstly, Julian explains just how much water is coming.

Julian Bolleter:

The International Panel of Climate Change, the IPCC, have just updated their - they've issued a new report and updated their projections.

So there's three figures I'll talk to. The first one is about - the most optimistic: is a bit over 0.5 of a metre of sea level rise by, uh, 2090. And now that is based on the most optimistic scenario. And it basically it relates to net negative carbon dioxide emissions. So that's the best case - is a bit over 0.5 of a meter.

Now, I guess, the worst case that has a reasonable likelihood - is about 0.84 of a metre. Or a bit over at, let's say, a bit over 0.8 of a metre. Okay? That's for 2090 and that's under very high carbon dioxide emissions.

However, there's a third one I wanna chuck into the mix, which is for an additional 1.75 metres, which factors in ice-sheet instability, under a significant climate change emission scenario.

So we literally, you know, we're having trouble responding to this problem of climate change. But it's also not easy to model and there is huge, um, uncertainty around ice-sheet stability.

Now that is unlikely, it's a low likelihood projection of 1.75 meters, um, by the IPCC, but you know, it's worth taking seriously.

So they're the three ones we're dealing with. But the problem with those projections to 2090 is it tends to, it tends to presume that at 2090 things stop.

Um, but they don't. They will continue for centuries now, regardless of what we do.

So, over the broader sweep of the next few hundred years the level of sea level rise could be well into the tens of metres, for instance.

So what we are seeing here - we've initiated a process which is already ongoing, which we will not be able to, um, in the longer term... there's nothing much we can do about what is locked in.

Um, so it'll be simply now an ongoing process of trying to adapt to those increasing levels.

However, we need to be also cognisant that as climate heats, there is more energy in the atmosphere and that can result in increasing intensity storm events, because there is more energy. So you can get microbursts of rainfall, which could contribute to flooding in the Swan River.

Um, and also, cyclones are projected to get - actually not more frequent in the north of Australia, but - more severe, and they may come further south as we've seen over the last summer. So storm surges could also increase. So there's a kind of, um, there's a whole bunch of different factors here which could compound each other and result in substantial flooding of the foreshore and the city.

Sarah Tout:

Mm. Something that the paper explores in-depth is that sea level rise is unequivocal and it's coming.

And there are kind of three ways that a community can respond to - and plan for - this influx of water that is coming through: not just sea level rise, but as you've said, storm surges and flooding.

So the three modalities that are discussed in the paper are: fortification, accommodation, and retreat.

I want to spend a little time talking about each one. But, tell me about fortification; it doesn't seem like it's enough, as you've mentioned earlier, to build walls or dams or structures to just simply block the water and tides and rising flood levels. Why not?

Julian Bolleter:

Yeah, well look, it might work in the short-term. Um, the problems are mostly, well, threefold I guess.

There are hundreds of kilometres of edges to The Swan River. It's gonna be almost impossible to fortify it all from just a, you know, feasibility perspective. So there's that issue. But when you do build the walls, they come with a couple of problems.

One is, it tends to trigger issues downstream. So the kind of, um, the energy of coastal processes then gets kind of... the problems get shifted elsewhere.

And you can see that in Seabird, which is a town north of Perth, I think, just north of Guilderton. They built a huge - a couple of houses were gonna go over the cliff - and they built a very long embankment, essentially, to protect those houses.

And you can see, when you go to the north of the wall, that it's resulted in significant erosion of the beach, which they haven't been able to fortify.

So there's a problem of you can just move issues further down the system.

The second thing is, you can build a wall and that might protect you for a while from sea level rise, but the problem is - if there's a lot of water in the catchment behind - the wall can form the role of/as a dam.

So you might be holding out sea level rise, for instance, using a wall along the foreshore, but water is also collecting behind the wall in a high rainfall event, so you're then having to mechanically pump it because the level of the river is then higher than the level of the water collecting behind the wall.

Now, mechanical pumping is possible, but there's, again, feasibility issues around this.

The third problem, as it relates to the river, is a geotechnical one. There is what's called, *the paleo channel* running under much of the foreshore and under the freeway interchange.

This is ancient. This is essentially the alignment of the river.

Um, and so it's an old alignment of the river, but you know - millions of years old in cases - and you've had millions of years of mud effectively accumulating.

I had an engineer describe it to me, in relation to Elizabeth Quay, as: *trying to build Elizabeth Quay on the Paleo channel is like trying to build on 70 metres worth of toothpaste.*

Um, so there's not a lot down there in many cases that you could lock the wall onto that would prevent groundwater movement and groundwater intrusion behind the wall.

So it's not to say it's not possible, and I'm no geotechnical engineer. I'm not a, you know, I'm not a civil engineer either.

Um, but evidently they're real challenges in terms of water collecting behind the wall or water just coming under the wall. Or just paying for the wall, or dealing with the problems that the wall causes downstream.

So, you may fortify it at various points and that may work for a while, but you can't hold the tide back forever.

I think inevitably we will need to retreat in the longer term.

Sarah Tout:

Mm. Something you mentioned as well is that, uh, building a wall, or a large fortification, gives the community perhaps a false sense of security that the issue is fixed when there's really much more complex matters at hand.

Julian Bolleter:

Yeah, absolutely. Um, I mean, it's funny we don't have faith in our government in many respects, but for some reason when when when they build a wall, we tend to take it pretty seriously and think the problem is fixed.

But the problem is not one that can just be fixed in terms of sea level rise in the river. This is a process we have now set in motion, which will continue to unfold, and everything you do in that context will be temporary.

Now, your idea of temporary will change. Some things will work for decades. Some things will work for just years. However, inevitably, any fortifications will - over the longer term - be overwhelmed.

Now, everything in life is transient. I get that. But I think we just need to be careful about the way we think about planning and fortification. This is a - we're now orchestrating a process to respond to this process we've set in motion, i.e. sea level rise, it's not something we can just fix and it goes from being *unfixed* to *fixed*.

Sarah Tout:

That's right. Um, the next strategy that's discussed in the paper is this idea of accommodation, which seems to be like: factoring in the fact that water is going to come into things that we are building. So that the ground floor is higher or there are spaces for the water to flow through buildings. Can you tell us a bit more?

Julian Bolleter:

Yeah. Um, some of the planning that came out of the Brisbane floods (from however many years ago that the initial ones were), um, looked at building regulations where you have a two story house, which potentially sits up on stilts. And you have a room or two down below (it might be a laundry, but they're not, uh, not necessarily habitable rooms) and they're designed - if they go underwater, they go underwater.

So you could apply those kind of ideas to, I guess, presumably higher-density, 'cause we're not generally dealing with just housing, uh, into commercial buildings where the ground floor can flood. And the buildings, sort of, can still function, and the damage is minimised.

Accommodation approaches also often build on the role of green infrastructure. So, it would involve - in the foreshore - things like significant wetland plantings, plantings of reeds, you know, and paper bark trees. Actually a bit like the endemic landscape treatment.

And these kind of zones can soak up storm water. They can help to deal with erosion because you have a lot of root systems and plant systems which hold the soil together.

So you're basically trying to create a spongy green mass, which can both soak up water and can deal with erosion.

And it's also about revegetation up in the catchment. So, when water falls in the catchment, you wanna try and catch it in vegetative rain gardens on the edge of streets. So you delay the movement of water down to the river. So you actually build in some tolerance and time for the riverine system more generally to go down, before storm water flows make it down to the river and compound the situation.

So it's about, um, I guess built form which is able to adapt to floodings, and allow a bit of flooding without, you know, huge damage. And it's about a spongy green landscape. It's about a sponge city which can soak up water and deal with erosion. They're the two approaches which generally go with accommodation,

Sarah Tout:

Mm, I I was thinking about this today. I was walking around Lake Monger, and there is an area on the west side, which - some years ago now - was redeveloped and the width of that marshy vegetation landscaping, that is at the edge of the lake, was made much, much, much wider presumably because of things like erosion, and also flooding and rainwater.

It's such a sensible and beautiful, aesthetic thing to have created. It makes a lot of sense.

Julian Bolleter:

Yeah. And when we talk about green infrastructure it sounds a little bit, kind of, mechanical and functional but it can be enormously beautiful.

For those people who live in Bayswater - a nutrient-stripping station, or wetland, was built at the foot of the main drain of Bayswater where it emanates out into the Swan River. And that's essentially a huge, reed-filled wetland, which takes nutrients and filters contaminants out of the stormwater drain. And it's an absolutely beautiful thing.

So I don't think - um...

Green infrastructure on the foreshore could be both a very beautiful landscape as well as one that works hard in terms of helping to clean storm water and also try and prevent flooding.

Sarah Tout:

Mm-hmm, and tell us now about retreat.

Julian Bolleter:

Okay, so retreat is basically something that I think will be forced upon us sooner or later.

So, what'll happen as the water rises... We will likely try and build some walls. Um, we will delay, I guess, more fundamental changes to how we think of the foreshore and the city and its relationship to the river.

But, inevitably, fortifications will - over time - be overwhelmed and also accommodation approaches will be overwhelmed.

For instance, if you're trying to build this spongy green mass on the foreshore, it actually needs to be above water, at least in places for that to work. So in the end, we're gonna need to look at retreat.

So what that will mean, in a planned sense, would be this: as buildings get to the end of their lifespan and when they're regarded as being in a flood zone, we will then not rebuild them - ideally.

The government would orchestrate land swaps, to try and incentivise people redeveloping away from these sites, which are compromised. Um, and so over time you would have a phased withdrawal, which is not a panic. Uh, you know, and we do have time here. This can occur over, you know, over decades.

It's actually a little bit how the government builds freeways.

So they have, you know, a zoning for freeway - where a freeway might not currently exist - and you begin buying up property opportunistically as it becomes available. So the state government could seek to buy back land as it becomes available in what will become flood zones.

And the way you can identify the flood zones is you - when the water consistently gets to this level of 0.6 metres above where it currently is - then, you know, areas which are within a three metre elevation of that 0.6 then get designated as being some kind of future flood zone. And the state government then, in conjunction with the local government, would try and buy back sites and ensure that development... the buildings there are not redeveloped when they reach their end of their lifespan.

So essentially it would start to transition to into public open space.

But as the water keeps rising, that public open space kind of buffer, then needs to also migrate inland. So the thing continues to migrate over time as buildings, you know, come to the end of their lifespan and then are demolished.

How you do this in the context of what would be huge, um, resistance from existing land owners - you know, who own some of the most expensive real estate in Perth - how you would orchestrate that process would be immensely difficult.

Um, and, of course, governments will probably try and dodge difficult decision making because a failure to protect property and protect the foreshore will likely be seen as a failure of government, and that'll have political implications.

But in the longer term, it's really hard to see what other options there will be than to retreat.

Sarah Tout:

85% of Australia's population resides in coastal communities. Do we need to start building more infrastructure in land, and now?

Julian Bolleter:

Yeah, I think we do. Um, you know, there's things that people don't think about. Like sewerage pump stations.

Now, a lot of them are along the river because it's the lowest point and it's the point where sewerage flows to, and then it's pumped to the central - not into the river, but - into a central sewerage treatment plant.

But, all of those systems will need to be unpicked. You know, there's huge expense which goes with them.

Um, we've also built so many arterial roads along the foreshores in Perth. Think of Mounts Bay Road, um, through to the university. Think of Riverside Drive along the foot of the city. Think of the freeway along the Melville foreshore.

Um, you know, so a lot of this infrastructure is pretty important to the movement of people around Perth, and it's gonna need to be fortified in the short term, but probably in the longer term, you know, we might need to think about how that's replaced elsewhere.

And so I think in this sense, you know, sea level rise might be a catalyst for some much better foreshore outcomes, at least, as we have to pull arterial roads back from river edges where they frankly never should have been anyway. Um, but that's not gonna come without some pain and with many issues.

So, we're gonna need to reconsider both, I think, yeah service infrastructure but also transport infrastructure.

Sarah Tout:

You say that we've got time, that we don't need to panic and we've got some time, but how much time have we got?

Julian Bolleter:

It depends which part of the river you're talking about, but, you know, not that much time - I'd say - with the foreshore, you know, the Perth city foreshore.

At many points that foreshore is 1.2 metres above mean river level now.

So if you threw in even half a meter of sea level rise - which could happen well before 2090 frankly given the trajectory we are on (maybe that's mid-century, hypothetically speaking) - if you put a 0.7-high metre tide on top of that, the water is essentially - which happens, you know, on a daily basis - um, essentially the water level is then the height of the foreshore of Langley Park.

At that point it, it's gonna cease to function as a recreational space. It's gonna seek to function as a space which protects the urbanisation beyond it.

Because they're not the only two factors: if we had a flood, if we had, you know, a high rainfall in the catchment, (which can increasingly happen with climate change) and we had a storm surge, well then that thing is well underwater and so is most of the urbanism along Terrace Road.

So we have a bit of time, but in some situations like that one (which I would say is a very important one), we certainly don't have more than a decade or two, I think, to get ourselves organised. 'Cause we need to plan for the... we shouldn't be planning for the best case outcome. We need to plan for the worst.

Sarah Tout:

And it strikes me from reading the paper and this idea of, as you've so articulately described, the way wetlands and vegetation can function...

Is there some sort of scope to revegetate a lot of Langley Park and build a kind of hill of sponge-like vegetation that can just sort of soak it all up before it gets to the city?

Julian Bolleter:

Yeah, look I think there is an opportunity to do that. It's not to say that active recreation and physical sport is not important. We should still cater for that.

But I think some of the landscape of the Point Fraser wetland - which some of you will know - which is expansive reed plantings and endemic plantings...

I think that kind of landscape treatment should probably march up from Point Fraser - which is in the east of Langley Park - envelop Langley Park, and then, you know, reach right around to the foreshore interchange with Elizabeth Quay sort of poking its urban head through.

But the rest of the foreshore having a lot more in the way of spongy green landscape to soak up floods, to also help to prevent erosion, to help with biodiversity and biodiversity habitat, and also, frankly, to help with mental health of the people who are using those landscapes.

Um, we know that these kind of endemic landscape treatments are best in terms of mental health benefits. So there's many functions it could perform, but one of the key ones would be this spongy green mass, which can help to soak up sea level rise to some.

Sarah Tout:

Mm. I find myself swinging and pivoting between two points: of overwhelm with how crushingly, pessimistic the outlook is - climate change-wise - and a strong sense of optimism given the possibilities for change and management.

I feel like this is another point of tension that we've kind of come across in this conversation of two strong and opposed meanings at the same time.

Uh, how does that sit with you? Do you feel optimistic and pessimistic?

Julian Bolleter:

Yeah, look I... well, look...

I don't own an apartment on Terrace Road, so that helps obviously. Um, So different people are gonna feel very differently about this, but I do think there's an opportunity here.

You know, I talked about the city-beautiful straightjacket - which currently kind of locks the river into its current alignment - kind of demineralising that edge and allowing the water back in, and using that as a lever for more complex kind of ecologies along the river. Getting the arterial roads off the river's edge.

I mean, in these respects, flooding - if properly managed - could be a catalyst for actually rethinking foreshore environments. Which, I think, are deeply compromised in their current form.

So in that sense, it represents a creative opportunity to do better.

And I think... I mean, I'm a designer, so I have a natural bias towards thinking design can make the world a better place. (Other people might not be so convinced of that narrative.)

But I think in the right hands and managed proactively, you know, this could improve: the relationship between the city and the river.

But it's gonna be a humbling exercise as we've talked about. And we need to be cognisant of that. We're now not fully in control and we won't be so fully in control in decades to centuries to come.

So there will be humbling dimension to it. But I think design could elicit and produce a better for environment than we currently have. More multifunctional, doing more things, for more people, and more creatures, more of the time.

Sarah Tout:

Mm. And who needs to get on board to bring this creative solution into reality?

Julian Bolleter:

Yeah, look. So, there has been a task force developing planning for Perth water, in particular, and I think a task force has been much needed and they've certainly produced some credible reports.

I think what is missing is the longer term view. About, you know... there can be a tendency to be, um, arranging the deck chairs on the Titanic, you know.

And I think it's difficult for government and for policy to deal with the broader sweep of what we're likely to experience. For a couple of reasons: it's highly uncertain, so you're into the unknown and it's... given short-term electoral cycles it's hard to think really long-term these days in planning. Planning is sort of tied, in some respect, to political cycles.

So it's not easy, but I think we need the state government to really get involved.

I think local government has a big role of course, but the problem is you're dealing with systems here which straddle many local governments. Think about all the local governments, which adjoin the Swan River.

So trying to coordinate between them all is not easy. So I think the state government needs to step in and I think a lot of this adaptation, you know, climate change adaptation work is gonna be hugely expensive and is not the kind of thing that local governments alone are gonna be able to bear the brunt of.

So the state government has released a climate change report recently outlining its policy in response to climate change. However, it's a bit weak on concrete actions in relation to adapting to climate change, and I think this would be a perfect example for the state government to step in and take real ownership.

Given the significance of Perth water and its surrounds, to the state - to really step in with the local governments. Show us what climate change adaptation looks like in real terms.

Not in terms of reports, but actually delivering outcomes on the ground. And I think that would be a hugely important statement.

And then, you know, that arena of Perth water, as it should, could then start to act as a kind of case study for other areas of the river.

Um, so I think we need much more proactive engagement by state government, personally.

Sarah Tout:

Who do you hope will read your paper?

Julian Bolleter:

It's so hard because there's so much climate change adaptation literature being produced, there's a tidal wave of it being produced. And it's not easy to get across.

And so, look, I would hope that it's useful for policy makers, the Australian Urban Design Research Centre - I think it's one of its fundamental roles is to be an instigator to revision and change to government policy.

So, you know, we perform a critical role because we are outside of government, although we are supported by government, we are at arms length enough that we can speak, I think, in quite blunt terms (and that's what tenured academics are meant to be doing).

So I like to think that the paper is digestible enough that it could land on a policymaker's desk and they would be able to make something of it.

And also particularly, um, could land on the desk of a politician who might find that - rather than just being... I hope that they would take from the paper that there is a creative opportunity here.

This is not - doesn't need to be - just a slowly unfolding disaster that they should be trying to distance themselves from, but actually there is a creative opportunity here. To do something, which is an improvement on what we currently have.

So they're the two, I think: policy makers and politicians are the two main groups I would direct the paper towards.

We'll be trying to do secondary activities like this podcast, which talk to the broader populace too, and I think who can really start to build a groundswell of support around proactive action in relation to climate change adaptation. So that is also important.

Sarah Tout:

Mm, what's your vision for how Perth can not only cope with sea level rise, but thrive?

Julian Bolleter:

OK, so the key things. These are the key steps I would now take if it was purely in my control.

I would limit any development which is in compromised zones along the river.

For instance, we're still developing in South Perth and Mill Point, an area which is already having to be mechanically pumped at points to remove water and put it back in the river. So, that needs to stop immediately.

I would get policy in place that would trigger movement of a kind of foreshore easement back into the city, which would be triggered by different levels of sea level rise.

So when we consistently have another, you know, 0.2 meters of sea level rise, then other areas - and other urban areas - would become zoned areas where we should not be developing, where we should be trying to demolish buildings at the end of their lifespan. And orchestrating land swaps to allow development to happen elsewhere.

So I would get those kind of planning frameworks in place, quick smart.

I think then it would be about trying to refashion the foreshore into something which is much more spongy and green and can actually work hard in terms of soaking up sea

level rise, soaking up flood events, but also contributes to the ecological health of the river and the health of residents living around it. And communicates to them that some adaptation to sea level rise doesn't need to be just a giant wall that sterilises the city and its relationship with the river and sterilises riverine ecology.

That we can actually engage with this creatively and produce a wonderfully multifunctional and beautiful foreshore environment, which both has utility and beauty. And I firmly believe we can do that.

As part of that planning, I think we would have to consider: where are the urban moments along the river? You know, is there potential for another urban embrace of the river in South Perth, for instance?

Possibly there is, but I think those sort of expressions will be limited in comparison to the rest of the river, which needs to then become this spongy kind of green mass of an edge.

Finally, I think we need to take a long and hard look at the sterilisation of river edges with arterial roads. They should be shunted back into the city where possible.

In some extreme examples, freeways have just been removed. Now, this sounds like a completely radical idea for Perth. There's an example of San Francisco where a major freeway was destroyed by an earthquake and it was not rebuilt. And somehow the world goes on.

And we may be able to reconsider the degree to which we really need significant arterial roads or freeways along the river. I think we need to unshackle the river from the constraints that are posed by these transport infrastructure and return the river back to the public as it should be.

Beautiful opportunities there to imagine Kings Park without Mounts Bay running along the foot of the 'scarp.

Imagine Kings Park just flowing down the escarpment right into the river and returning that to a more endemic condition. It could be a beautiful thing.

So they would be the policy and spatial changes I would seek to make, to get us ready for what is coming.

Sarah Tout:

Dr. Julian Bolleter, thank you so much for speaking with me.

Julian Bolleter:

It's a pleasure, Sarah. Thank you. Wonderful questions as always.

[music: When the River Did Flood by Rabbit Island]

Thank you for listening to this Geoffrey Bolton Lecture 2022. This podcast was produced by the State Records Office of WA, Dr. Julian Bolleter, and myself, Sarah Tout. It was mixed and mastered by myself and Adrian Sardi at Sugarland Studios.

This episode includes music by Rachel Dease and Rabbit Island.

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