**Melbourne Water Flood Management Strategy capacity building session 2\_ Introduction to flooding (planning)-**

13 September 2023

**Nicole Sutherland** 0:19  
So we have engaged rain consulting to help us design and deliver these sessions and they're building on sessions that we ran in 2021.  
Next slide please.  
I think it's important to reflect on the size of the problem that we're facing in relation to flooding across the region and some of you will be very familiar with this and would have heard me say it a number of times, but based on the flood modelling that we had done up until 2020, there were over 200,000 properties with a 1% chance of flooding each year.

**Nicole Sutherland** 1:02  
Within that 200,000, there are 23,000 properties that have a one that have a 1% chance of flooding above floor each year rather so this is based only on the Melbourne water system.

**Nicole Sutherland** 1:20  
We currently have a flood modelling program well and truly underway where we're jointly doing club modelling with councils and the aim of that program is by 2026 that we would have completed modelling with all councils within the region.  
So we'll have a complete data set for the first time, which means we know that these numbers will increase, but based on the modelling that was available in 2020, we estimated the average annual damage cost of flooding to be 735 million, which is a really significant figure.

**Nicole Sutherland** 1:59  
But once you factor in climate change and urbanisation, this number increases significantly.

**Nicole Sutherland** 2:07  
So based on those projections, by 2100, it's estimated that the average annual damage cost will be 1.6 billion.

**Nicole Sutherland** 2:17  
And every time I say this figure it completely blows my mind.  
I cannot.  
Imagine a figure of 1.6 billion a year, and the damage that that would cause.  
We also know that Victoria's population is growing at more than 100,000 people a year, so this means that there will be an increase in demand for infrastructure and housing supply.  
So building large scale infrastructure to reduce flooding remains an important tool to be tackling the issue of flooding.

**Nicole Sutherland** 2:53  
However, it's not enough alone and we need to be looking at a broader suite of tools, and planning is one of these tools, and that is the focus of today's session as well.

**Nicole Sutherland** 3:06  
So we're very grateful to be working with the team at Rain Consulting again to bring you these sessions.  
And next, I'd like to introduce our speakers that we have Luke Cunningham, who set up rain consulting in 2019 to pursue creative and original.  
Approaches for managing water that enhance liveability and maximise environmental outcomes, as well as meeting regulatory guidelines.

**Nicole Sutherland** 3:34  
Rianda Mills joined as a director shortly after and is energised by the Freedom to think outside the box and challenge the way that we manage water.

**Brenda Lee** 3:38  
And what is?

**Nicole Sutherland** 3:45  
Both are environmental engineers.  
Together they draw on decades of experience in all things surface water with technical expertise in hydrodynamic hydraulic and hydrologic modelling across many sectors.

**Nicole Sutherland** 4:00  
They specialize in urban flood modelling, mitigation, stormwater management and integrated water management.  
Luke and Rianda a deep strategic thinkers, often assisting authorities in leading work that pushes the boundaries to optimise outcomes in flood and stormwater management.

**Nicole Sutherland** 4:19  
They're both really passionate about knowledge sharing and enjoy learning, incorporating new ideas and concepts through their work and from their colleagues.

**Nicole Sutherland** 4:29  
Not only are they experts in what they do, they have this amazing ability to explain super technical information in a really engaging way.  
So I'm really pleased to have them here with us today.  
We also have Caroline Reisacher from Melbourne Waters, urban Planning and development area.  
Caroline is an experienced strategic planner with many years working in the planning industry, particularly on bringing updated flooding maps into planning schemes.  
Caroline has worked at Stonnington Bayside, Mount Alexander and Hepburn councils at various stages during flood amendments.

**Nicole Sutherland** 5:08  
Caroline's interested in finding new ways to share flood information with the community to fast track the process.  
So it doesn't take years to update planning schemes, so I'd like to hand over to Caroline first, please.

**Caroline Reisacher** 5:24  
hi everyone.  
Thank you.  
I feel very privileged to be able to come along to this presentation today because it gives me the opportunity to be able to speak to everyone, you know, from the different Councils all in one place, to be able to, I guess, share some of my experiences as well as opportunities for the future in the way that we follow on from the flood mapping projects that are going, you know, the 38 Councils in the next three years.  
So we've got quite a big work program coming up and so obviously following on from those, we would hope to run planning scheme amendments to get this information into the into the scheme.  
I guess I just wanted to give everyone just a little bit of insight that I'm actually gonna be here after the presentation.  
So there's going to be a Q&A session and I hope that people hang around.  
It would be really good to be able to have a bit of a conversation about, you know, things ahead and what we might, what we might consider before we go into the planning scheme amendment process.

**Caroline Reisacher** 6:43  
Anyway, I hope to talk to you all later.  
Thanks, Nicole.

**Nicole Sutherland** 6:49  
Thanks very much, Caroline.  
So now we will be hearing from Luke and Rianda from Rain consulting.  
Thanks guys.

**Rianda Mills** 7:01  
Thanks very much Nicole and Caroline.  
Thanks for great intro Nicole as well.  
Hi everybody.  
It's good to see you all and welcome to this session.  
I'm just gonna share my screen, yeah.  
Very confused.  
Ohh.  
Not letting me share audio talking.  
Ohh, sort that out.  
Yeah.  
So I just like to firstly and acknowledge the traditional owners of the land from which we're presenting today and pay our respects to elders, past, present and emerging.  
Uh, sorry in the session today.  
We I just wanted to give everybody the heads up that this Luke and I were presenting largely the same content that we did last week with the planning folks to come at the end when Caroline begins to speak.  
So that will probably be in about 45 minutes.  
That Caroline will be here.  
So if you were in the session last week and there's anything that you missed that you'd like to listen to again, please stay tuned.  
Otherwise, if you are really keen to hang out for Caroline's Q&A, maybe you could pop back at quarter, quarter past or stay in the room and and tune back in then.  
So it looks just trying to work out the audio at the moment.  
Still hear us?  
Sorry, one second may not.  
Looks like it's not gonna work.  
And probably like us after adapter and that.

**Lucy McLaren** 8:47  
Would you like me to share my screen, Luke?

**Rianda Mills** 8:50  
Yeah, Lucy.  
**Rianda Mills** 9:04  
Thanks Lucy.  
Perfect.  
Alright, so basically we'll be going to the mechanisms of flooding.  
So as we know that there's three general types of flooding.  
River rain pluvial, which is generally stormwater and flash flooding, and storm surge.  
And we're going to play a video from the GCC is if you could click on the video and it will take you to the website.  
Hopefully the audio will share.  
You might just have to really share.  
 **Lucy McLaren** 9:48  
Yeah.  
Take two.  
Sorry everyone.

**Rianda Mills** 10:07  
And a good job.

**Lucy McLaren** 10:08  
Along Australia's most deadly natural disasters.  
But it's also important for agriculture and the life cycle of many plants and animals.  
So what are floods and what causes them?  
Put simply, a flood is when a normally dry area is covered in water.  
There are many ways this can occur, and many types of flooding.  
River rain flooding is perhaps the most common in Australia.  
Rivers are formed over thousands of years.  
They carry excess water from the land to the lowest point possible, often the sea.  
The two main contributors to the riverine flooding are heavy rainfall and the lands capacity to absorb water.  
The land is a lot like your kitchen sponge.  
There is a limit to how much water it can soak up.  
Once the land is saturated, water flows across the land and into our river systems.  
However, River systems have a maximum capacity to carry water.  
If this capacity is exceeded, the water will eventually rise higher than its banks and flow out into the low lying areas adjacent to streams and rivers.  
How quickly a river responds to rainfall and how long that flooding lasts can vary significantly in flat inland regions, floods may spread thousands of kilometres and lasts for weeks to even months in the mountain and coastal regions, flooding is often less extensive and of shorter duration, but with higher flow velocities.

**Lucy McLaren** 11:32  
Likewise, flash flooding happens very quickly and for that reason is the most dangerous type of flooding they can occur in any part of Australia.  
Back can be a particularly serious problem in urban areas, where the drainage system may not cope.  
Flash floods are of short duration within six hours of intense bursts of rain.  
The rain falls so quickly that it can't soak into the ground or drain away through normal channels.  
It can cause roads to become rivers and turn normally safe areas to raging torrents within minutes.  
In some coastal communities, storm surge can be a dangerous cause of flooding.  
It can occur when an intense low pressure system or a tropical cyclone crosses the coast, raising sea levels that can swamp low lying areas up to a kilometre inland.  
The effect of storm surge can be further intensified by exceptionally high tides, often referred to as a king tide.  
These can be caused by the local topography and the positions of the Earth and the moon tip to the sun.  
A less common cause of flooding in Australia is snow melt.

**Lucy McLaren** 12:40  
When rapidly warming conditions cause snow to melt quickly into the river system, while we often associate flooding with damage, disaster and loss, flooding is a natural process that can bring benefits.  
Floods feel billabongs and wetlands replenishing water bodies and contributing to the life cycle of many plants and animals.  
Floodwater also carries valuable nutrients and minerals important for agriculture.  
However, flooding is the second most deadly natural disaster in Australia and all types of flooding can be dangerous.

**Lucy McLaren** 13:10  
To find out more about floods, watch our understanding flood classifications video and visit the Bureau website.

**Rianda Mills** 13:24  
Thank you, Lucy.  
Lucy, I might just get you to keep sharing, cause we've got another video to play, if that's alright.

I'll just have to say next slide, please in.  
Thank you.  
So bit of a recap, pluvial flooding, which is what we know as riverine flooding, obviously we experience a lot of these throughout Victoria and Australia's East Coast generally.

**Rianda Mills** 13:54  
We're talking about really large catchment areas where the soils are wetted from prior rain to the point where they're saturated and we see that express, as is flood conditions across the surface.  
Usually this occurs in winter or spring.  
Generally associated with longer storm durations and high volume.  
You know, historically they've formed a smaller portion of annual average damages or AAD.  
You know, notwithstanding, last year we had, significant floods across the country, a lot of which were in regional areas and due to fluvial flooding as well, next slide.  
So onto pluvial flooding.  
So this is often associated with storm water.  
We can see a great picture here, which is flooding along Elizabeth St which I think Luke will talk to a little bit more later on.  
Generally associated with a smaller catchment area, the catchment saturation is less influential and this is because essentially it's already saturated.

**Rianda Mills** 15:05  
There's hard surface on the ground.  
You've got less impervious surfaces and so the water just reacts in immediately runs off where we've got concrete and these are often associated with shorter, more intense thunderstorms, and it can result in flash flooding which a lot of you would have experienced across your municipalities, particularly more urbanized areas after an in spring or summer, and comprise a lot of the annual average damages due mainly to the fact that there is a lot of infrastructure and expensive buildings, roads so on in these areas.  
Next slide please.  
Interruptions to traffic and emergency services and things that are associated with that higher population density as well.

**Rianda Mills** 16:06  
I'm finally on to storm surge, so we have an intense low pressure system or tropical cyclone crossing the coast which can inundate inland areas.  
We have a lot of coastal councils in Greater Melbourne, so a lot of you would be dealing with increased storm surge damage and conditions and we have been here.  
What is the king tide?  
It's where we have a high tide coinciding with the storm surge to create something even bigger, bigger, associated with.  
  
So how will flooding change in the future?  
We've got a little animation here which tends to go too quickly for me, but if you could press play, Lucy and I'll raise it.  
So this is our little catchment here and at the moment we've got one storm cloud that pops in over our catchment and causes some flooding and we've got now full to a receiving water body.  
So what doesn't fit in our drainage system expresses itself as overland flow. Of course.  
What change means we're going to be expecting some more tropical like rainfall events, more like Queensland sort of ones more intense.  
We've got 2 clouds now which represents climate change for us and two clouds means more rain, so you can see we've got a little bit more water overland.

**Rianda Mills** 17:21  
Now we've also got sea level rise implications as well with climate change, so our receiving water body can rise, the polar ice caps will melt.

**Rianda Mills** 17:32  
And here's our little digger coming into build us a levy wall.  
So we're gonna be getting squished from both ends.  
We're gonna have lots of rainfall coming in from the catchment or more intense rainfall, more than what we're used to, and that's coming in.  
But we've also got the problem of rising sea water levels as well, particularly as Rianda mentioned in our coastal catchments so all of its problems here.  
So how are we going to start reacting to this?  
It's just going to become increasingly difficult and we've got some more sessions coming up which are going to talk to climate change a little bit more.  
We might be looking to big mechanical solutions such as pump stations and things like that to help protect our urban catchments.  
Very costly solutions.  
Levy walls and costly solutions.  
Difficult to implement things like that.  
So that's a quick snippet.  
Like I said, just a plug for our future sessions that we're doing.  
We've got some coming up on climate change and they're going to be designed sort of as a bit of a 101 to climate change, but also moving into so that we that we structured as one for coastal catchments.  
So will our coastal councils should come along to that one?  
And then one for inland.  
So there will be a little bit more in the coastal ones about storm surges and the impacts of slave sea level rise and how we can potentially start thinking about mitigating against some of those events.  
Slide, please.  
  
So when we're talking about flooding and the probability that it caring and I'm sure a lot of you will be very familiar with this, some may not be.  
So we talk in what we call AEP's annual exceedance probability.  
That's the probability of the event occurring in any one year, so you may have heard in the past people used to call it the one in 100 year event or the one in 50 year event one in 10 year event.  
And we've moved towards the AEP terminology, so the one in 100 year event, we now call the 1% event.  
It's got a 1% chance of occurring in any one year.  
The problem with the one in 100 year terminology is people and may then get 100 year flood and then set their calendars for 99 years from now for the next one.  
And that's obviously not the way it works.  
So it's probability based thing, so this is a great little table.  
I referr a lot from Tony Ladson industry leader and down the side there we've got the frequency descriptors which are really, really handy for us when talking to community members and things like that.  
So you can say we start off with the very frequent at the top, and that's up to our one exceedance.  
Here what we call the one in one year.  
You know, it should happen once a year through to the free.  
When you say AY yeah, save in CS and they're the most frequent treatment and they're a bit more complex there.  
But at 12, a while would be one in a month type event, so 12 times in one year.  
As we move through the frequent and into the rare category we're talking about what was the 50 and 2051 Hundred Year event we now call them the 5/2 and 1% and then we push into the very rare and extreme at that point.

**Rianda Mills** 20:57  
So they can say we're just can keep going into the extreme all the way up to the PMP, which we call the probable maximum precipitation.  
So there's some work we can do there to work out what's the doomsday event in this particular catchment.  
Thank you.  
So another plan for the next sessions and we're going to go into these slides, you know a lot more detail and provide you with some resources to be able to do this yourself.  
But this is what we typically call an IFD curve or an intensity frequency duration.  
So the use of these sort of graphs is to be able to again communicate with residents or communicate with others of council around that.  
That storm event last night was, you know, one in 100 or one in 50.  
This ones, got the old terminology on it.  
I should probably update this slide, but what we can see these are two events that we had.  
And in Melbourne in the past, so the 1972 Melbourne Flood that Rianda showed the picture of before that went down Elizabeth St very, very big storm, we received 91 millimetres over a period of 108 minutes.  
So we can up on the Y axis the vertical axis.  
We plot 91 millimetres and we follow that across to 108 minutes.  
And those curves then demonstrate where we sit in terms of probability.  
So that event sat somewhere between the one in 1001 in 2000 year event.  
I can say a couple of steady Melbourne people on the line and great to see that we had a big event in 2018 as well.  
It was the Friday afternoon about 4:35 PM, the weekend before Christmas, the city was absolutely buzzing and a big cloud started to roll it over the city and we got 50 millimetres of rain in 15 minutes, which is just incredible to think about in Melbourne.  
If we were talking to a group from QLD, they'd probably roll their eyes inside.  
We got that yesterday, but in Melbourne that's a big event for us, so 50 millimetres in 15 minutes.  
We read that across and somehow perfectly that actually sits right on the one in 2000 year intensity.  
So quite a large storm.  
There just wasn't as much volume in it, so it was just a short storm.  
We can get heaps and heaps of volume, so we didn't see the big depths of overland flow like we saw in 1972, but it certainly disrupted the city, probably the most busiest Friday night of the year.  
Thanks Lucy.  
Sorry, I'm just talking now a bit more about councils responsibilities.  
I think I saw Alan in the room before Alan You might recognise this one, city of Kingston has some nice fact sheets online that they used to help communicate to the community where the different responsibilities lie.  
I really like this very simple diagram here, so it clearly indicates to the property owner who is responsible for drainage and signing.  
If there's a flooding incident near fall within their property, so in green we've got the property owners responsibility, which is their internal drainage until it connects to the authority, drainage or easement, or the nature strip.

**Rianda Mills** 24:26  
The Council's responsibility, highlighted in red along the drainage easement and then it also outlines where Melbourne Water might be the responsible authority associated with main drains and list some of the related supporting documents and permits and contact details, so really nice reference material for them to be able to turn to when fielding some of those flood and drainage inquiries or complaints.  
Also, the councillors you know are responsible for administration and enforcing planning provisions and building regulations in relation to building and development on flood affected land.  
They provide for and support the conservation of natural resources and areas of environmental significance through land use planning and asset management.  
And that's one that's becoming more, more and more important as time moves on or with much more focus on it contribute to development of local flood management plans and flood Emergency Management plans, participate in flood risk reduction activities and project prioritisation can be quite challenging.  
Frameworks for prioritizations, a rolling supporting public awareness and access to flood risk information.  
Supporting delivery of flood warning messages, managing local drainage infrastructures, infrastructure.

It's generally the catchment areas less than 60 hectares and we know that there's a bit of a process going on around this.  
This item at the moment participating in flood risk reduction activities and project prioritisation, that's a repeat I need to remove that dot point coordinates like relief, recovery and clean up at the local level and leading local adaptation processes to prepare for climate change induced flood risks such as extreme weather events.  
And that is responsibilities.  
In listed out in the flood management plan as well, if that's of help, which I think most of you would have one of those at this point.  
So in terms of flood management journey for Council, we know that councils are all on their on their own journeys in this regard and some Councils have covered quite large municipal areas and experience all different types of flooding.  
So they might have a large rural portion of the municipality through to, you know, urbanised, highly urbanised areas.  
And so both with rain and pluvial stormwater flooding are, you know.  
Tenants and important to understand. there's a lot of information that that needs to be cut sort of collated, understood, to understand where you are in terms of your baseline flood risk across the municipality, but also what that risk might look like towards the future. getting that good understanding is you know.  
Involves quite a lot. A lot of councils at this point have quite a good understanding of their asset base and some Councils are still working through that.  
So where are the pipes?  
How big are they?  
How old are they?  
What sort of condition are they in?  
Capacity. what do we need in future?  
Will that services going forward so?  
It's super important that you know, we continue to improve our knowledge base in this regard and that gives us a good foundation for things like undertaking flood modelling and mitigation studies in a prioritised fashion.

**Rianda Mills** 28:21  
sorry if you could go back to that one.  
I was sort of adding to be on the first dot point.  
Often it's good to be able to prioritise an approach for flood and drainage issues which councils do in different ways through to quite complex risk consequence analysis down to quite simple approaches as well that are easy to communicate just like that previous fact sheet that we looked at, you know creating some simple fact sheets that are communicating with your community and also internally we know that a lot of what you're doing is communicating.  
the approach that you're taking internally council as well to get the funding that you need.  
And to be able to do it, planning that you need to do so that that can help you in in a lot of ways or can help in a lot of ways.  
And like I said there, so we want to be able to prioritise where we do the upgrades and mitigation planning and have a robust and defendable framework for.  
We all know that there is limited budget and a lot of different issues across councils that they are contending with either flood or not flood related.  
So lots of clashing priorities.  
Next slide, please.  
Lucy just going to say on that slide there, Lucy, sorry to make you go back one more.  
I love that photo.  
So that's the 2008 flood, the Christmas, just the weekend before Christmas.  
One and the Billboard down in the bottom corner.  
If you can see that says rethink summer.  
I think it's quite a nice message just by chance there with regards to climate change, you can move on there.  
Thank you.

**Lucy McLaren** 30:12  
Nothing else on this slide.

**Rianda Mills** 30:14  
I think what's the petrol prices?  
We can make a comment about that.  
That's all good. another one from City of Kingston.  
It's a simple community fact sheet outlining that prioritization of flood and drainage issues that come through the door.  
So simple, high, medium and low.  
And it's a little bit more complicated than this behind the scenes that this is this is a good high level summary of that, that prioritisation approach.  
So where the house is inhabitable and there's flooding above the floor or building, garage shed is flooded above the floor.  
Or there's a flooding of the main road that could cause a serious accident.  
We consider these to be our high priority, where a medium priority might be significant flooding of the private property or a main road that is not considered to be dangerous.  
Lower priority might be flooding or flow over council roads, so city of Kingston have pretty good flood mapping across their municipality and would have a good understanding, but also would rely on the descriptions from the Community as well as their own investigations in determining those priority rankings.

**Rianda Mills** 31:28  
The simple messaging across the top as well.  
Why do we need to prioritize these?  
Why can't we go out and just mitigate every single flood issue that comes through the door?  
And again, that relates to, we have to have a prioritised, focused approach.  
We are a Council and we've got a limited annual budget.  
Next slide please.  
So more along the journey is the transition for councils from a reactive to proactive planning approach.  
So being able to proactively strategic, strategically plan as we know it involves a pretty good understanding of the risk and of the asset base and understanding where that risk is headed in future with development and with climate change.  
So have a good understanding of where you know.  
If your housing strategies, for example where you are to expect vacation or even just you know understanding the planning scheme zones across the municipality and what densification those zones would allow in their current form can go a long way to sort of being able to identify where your hotspots might be in terms of increases in flood risk and indeed greater population that that they might be at risk from areas that are already flood prone.  
So there's a lot of information that we have to hand.  
That's both publicly available and that you would have in house.  
You continue to add to that to that information base as you go through surveying and flood mapping and mitigation modelling and so on.  
Next slide please.  
having a program of works that that you might be able to support to say which areas you need to focus the programming on.  
And there are also other considerations as we know that Councils have responsibilities for and that's, you know, protection and enhancement of downstream waterways.  
We have a lot of beautiful waterways throughout the greater Melbourne Councils.  
Some of those are classified as high priority waterways, according to healthy waterways strategy and these healthy waterways strategy high priority catchments.  
as we know by this point, have you know even more requirements around the way that stormwater in those catchments is managed and they might be greater infiltration, water harvesting and reuse requirements to protect those waterways from excessive runoff and excessive pollutant loads.  
So a lot of these things we need to start building into how we strategize.  
And our programs of works, how we manage flooding?  
How we manage runoff and the links that are inherently exist between flood risk and, you know, waterway quality.  
And finally, a good flood modelling program, if we when we undertake these flood modelling projects, we can also like us tech onto it, things like annual average damages, assessments to understand and inform our cost benefit analysis for any mitigation works that we might do but also to be able to then take the flood modelling results and map them and start to do some of those filtering processes to help us with our planning scheme amendments in future should we wish to go down should we wish to go down that track.  
So what are the little things we can do if we're undertaking a flood study right now that might set us on the right path to being able to create overlays and things like that?  
So we're going to talk through some of the mitigation options that are available to us.  
Obviously we need to consider that using planning controls is a mitigation option.  
Community educations.  
A mitigation option and all those sorts of things if we could jump into the next slide, Lucy, these are some of our structural ones.  
See, we've got some flood storage ones and some infiltration ones that we'll click through some of these and I'll talk through some of them.  
So and starting on the left in the flood storage realm, we've got rainwater tanks and on mass a lot of rainwater tanks might be able to make a bit of a difference to our flood storage requirements, particularly when they're designed appropriately to effectively try and control 1 portion of our catchment or when they're paired with other bigger assets.  
So we've got things like the multiple use flood storages, or retarding basins.

**Rianda Mills** 36:44  
We call them multiple use one storages because you know we may only use them.  
You know, in those rare events that we spoke about when they're needed and the rest of the time, maybe there are fully Oval, maybe there are Parkland open space area and we've also can think about large storages and reuse.

**Rianda Mills** 37:03  
These could be big underground tanks, things like that.  
If we're going to be using them for we need to be thinking about what the end use is and what treatment might be required and things like that.  
So it's and being able to make sure that capacity is available in the flood comes moving into the grey area in the middle.  
We've got rain gardens and a lot of you would be familiar with rain gardens.  
They're typically used as a water sensitive urban design tool that, with doing a little bit of work to can show that they do have an impact in some of those more frequent flood events as well.  
And some of these infiltration ones to move into the a bit more of the frequent flooding, some of the flooding that councils may be a little bit concerned, more concerned with managing and it got down parts to raise garden beds and L pot disconnects there.  
LPOD is legal point of discharge, and so we're talking about how we drain each particular property.  
So either down pipes into the raised garden beds to let the water infiltrate through there, slow down a bit, and legal point of discharge disconnects might be discharging instead of directly out to a curve and channel or directly out to a path.  
Maybe across the nature strip or a roadside garden bed or something like that.  
Just to try and remove some of that directly connected impervious area.  
green roof and facades  
And it's obviously becoming a bit more common, lots of multiple benefits to a lot of these as well.  
They can also assist us with some infiltration  
We get asked about a lot and great technology.  
Just wanted to flag that the ground conditions also need to be suitable for that to work as well, so we need to have the right conditions below that they will add him to allow that infiltration to occur.  
Then we're going to go into some more detail on some of these.  
So next slide is green walls.  
That's kind of similar to facades, so these are some of these scales at which we can mitigate out so you can see from lot scale straight scale and precinct scale.  
So things like the legal point of discharge disconnects.  
That's most definitely lot scale.  
And of course, when we're at lot scale, the amount of volume or flow that we can actually target, obviously going to be smaller than when we're talking about a whole precinct scale when we can get all our drains and main drains into one point and do things like the big smart tanks or big flood storage is underground. So when we're talking about flood storages and this is a really nice example called Waterplain.  
I think that's how you say it in Rotterdam in Netherlands, so this we've got video of this one  
It's a sort of, sitting basketball space , air, all that sort of stuff during normal days.  
And then in a flood event, I think about 1.7 megalitres of storage that can fill out and it has as we understand operated a few times.  
**Lucy McLaren** 40:44  
Our climate is changing in the coming years, it will not only rain more frequently, rain showers will become more intense.  
This presents a problem for the water management of cities like Rotterdam, densely populated and consisting almost entirely of hard surface.  
If we just stand back and do nothing, the issues concerning excess water will only get worse.  
Rotterdam and Rotterdam climate initiative are doing their part to help build a more sustainable future, together with partners of the water plan, Rotterdam tackles the consequences of climate change head on.  
Additional space for water must be found in order to prevent flooding in case of heavy rainfall, and that space is difficult to find within the city.  
The water square is an innovative solution for this storage issue.  
The lower lying areas of the square can temporarily submerge, thus retaining the rainwater and decrease the pressure on the city's sewer system.  
The water square also functions as an attractive meeting place for city residents.  
The design for the Bentham Square stems from an intensive participation process.  
Various community stakeholders like students and teachers from the surrounding schools, members of the Youth Theatre, the church, the Health Club and residents from the neighbourhood all put forth good ideas that were included in the design for the water square.

**Lucy McLaren** 42:16  
The water square consists of three different basins.  
In the two shallower basins, rainwater and runoff from the surrounding surface and rooftops is collected.  
Water from the wider area flows into the central sports square.  
In dry conditions, you can skate./Dance.  
Play sports or just sit around and relax in the square.  
Moreover, the square will be greener than it was before.  
As soon as it rains, water will flow through the wide open gullies into the two shallow basins.  
If the rain comes pouring down hard, the water flows through a water wall directly into the deeper basin.  
The Betham Square has a storage capacity of up to 8500. Bathtubs.

**Lucy McLaren** 43:32  
That's at least 1.7 million litres.  
As soon as it stopped raining, the water will slowly drain into the ground or flow to the nearby Nord single canal, and the square is ready for use once more.  
The Betham Square is the very first large scale water square in innovative and attractive Rotterdam solution for excess water in built up urban environments.  
It serves as an inspiring example for other cities.  
Construction of the water square starts in the summer of 2012, and it's slated for completion by mid 2013.  
Bentham Water Square is designed by the Urbanista is financed by the city of Rotterdam.  
The water boards key. London.  
Crippen evade the European Union and the Ministry of Infrastructure and Environment.

**Rianda Mills** 44:16  
Thanks, Lucy.  
And we love that example.  
We often looking at squeezing flood storage into very urbanized areas, and that's just a very creative solution to it there.  
And another great one is in Tokyo and amazing video on ABC which the link is there will pop it in the chat window a bit later for you, but great example of how they've built these humongous like seriously humongous underground tanks under Tokyo to divert entire rivers beneath the city during a flood.  
So it really great example there.  
I encourage you to watch that one, there's some shorter ones as well on YouTube  
that can give you some good snippets about how this one works.  
Obviously very much a structural solution, very heavy structural solution, this one, it's all the budget in the world.  
Here's a fantastic one.  
And again, Alan and the team at Kingston are getting a shout out here and another video they've got.  
This is out in edithvale down where I live they've designed so this is called the edithvale stormwater treatment and reuse project and multiple tanks here and which you can see in the image and a bar attention.

**Rianda Mills** 45:37  
So it was part of a flood mitigation project I believe.  
And this was also on the end of it as well.  
And the water in those tanks is really used around the city of Kingston.  
There's an early Learning Center type community facility just next door, and you can see some sporting grounds and things like that where the water is used as well.  
 **Rianda Mills** 46:09  
Talking now more about the infiltration type and I'm just giving a couple of examples of these and then we'll move on to get over to the declining sides of things.  
But green roofs and facades and green walls when we're talking about, you know, what is the potential for water sensitive urban design in terms of flood mitigation?  
Well, it's more you can provide it a smaller role for these.  
There's more local scale projects in the frequent and very frequent flood events, and so I think someone putting the chat we know before something about was it rain gardens?  
Lot scale to street Scale is mainly where you see these sorts of applications and obviously that they can provide.  
A lot of opportunity to enhance ecosystem services to create cooling, greening.  
And we're seeing some really good examples that these now around the place and I'm sure a lot of you were doing..  
Here is the green our rooftop demonstration green roof project on the left, which is city of Melbourne and DEECA and wall on southern Southbank, which is the city of Melbourne project.

**Rianda Mills** 47:47  
Flood warning and education flood education are huge.  
There are hugely important. We've got building regulations.  
Things like design guides or going to one of the retrofitting guidelines a little bit soon and planning scheme amendments which Caroline will talk to.  
Another quick one that Sanjeeva from City of Melbourne will be familiar with, so looking forward to new technology that's coming through and what we can do with that and all sorts of smart ways we can manage our drainage systems to better prepare ourselves before an event.  
So learn a bit more about how our networks work, but also during an event, if we've got enough travel time and attachment trying to manage the drainage a little bit more like you'd manage the traffic network perhaps or the way that the storage system is managed in some locations.  
This is an example from the City of Melbourne where they put some iota is the SE border commercial and devices to read the water levels in the drains.  
So during a flood event, we can find a little bit about what's going on, but they're also recording nonstop as well.  
So we can use them to identify blockages in the network.  
So if there's a lot of standing water in that pit and we know there might be a blockage downstream, or if we have a big rainfall event, nothing goes through it, then that suggests potentially blockage upstream or we're not quite getting as much as we thought.  
Sanjeeva has popped up there another 20 in the future.  
That's great to hear from Sanjay where you can start to get a bit of an idea of how the network reacts, particularly in something like the Elizabeth St catchment, really important, the other ones just machine learning on those sort of things deploying maintenance crews out as well as getting a better understanding of our rainfall information.  
There's all sorts of new technologies in in the rainfall field as well of how the people are going to start tracking beyond rainfall gauges.  
Flood warning and flood education.  
Are you able to click on the link Lucy?  
I'm sure a lot of you would be familiar with this, but knowing you're flood hazards and if we Scroll down, there's information about different types of flooding and other videos that we can play, but also we have lots of links to our quick links that they've got there to emergency.  
So at the top on the right, finding your local flood guide, creating an emergency plan and floods.  
A really excellent resource that I know where will point people to as well.  
If you could click on the left one Lucy. In last week’s session we had the consulting Co, author of this particular one present so if you can click on the PDF link as well.  
So retrofitting flood affected homes, so we've got this wonderful resource.

**ianda Mills** 52:22  
In guide to retrofitting, if we go to the contents page, it's excellent.  
So how to retrofit your home for flooding?  
It has a Melbourne focus, although one author is from Queensland.  
Obviously, we know that Queensland's very flood prone, so a lot of the like work as opposed and testing and things like that has been happening in Queensland, but I didn't give this more of a Melbourne focus looking at detached homes, semi -detached and fully attached, so more of your townhouse and terrace sort of options and what you might do to retrofit those to make them more resilient to flooding and some of the takeaways that I had from the presentation last week was that you know the focus is on being able to get people back into their homes as quickly as possible after flooding.

**Rianda Mills** 53:27  
So lots of the techniques that are used involve using flood resilient materials which are able to then just let the past and the flood pass straight through the home and also positioning of data and PowerPoints and so on above the flood line within the home.  
So some of these really I feel very pragmatic, sensible things that can be done when we know that there is a fund risk in here and in that particular home.  
So I just wanted to give a little bit of a plug to that document because I thought I think it's, it's brilliant and encourage people to take a bit of look, that concludes our part of the presentation.  
So thank you very much for sticking with us.  
I think most of you stayed around even if you had seen most of it last week.  
As Luke said, we've got four more presentations coming up in this series.  
They're the intro to flooding done, so the others will have different focuses moving forward.  
So it'll be fresh, fresh information to come and come and have a look at.  
But now we'd like to hand over to Lucy and Caroline.

**Lucy McLaren** 54:40  
Thank you so much, Luke and Rianda really appreciate you running through that.  
And again, thanks to everyone that's stuck around and I'd like to formally again acknowledge and welcome Caroline, who's here today to answer some of our questions that we have relating to planning scheme amendments.  
We do have some prepared questions ready to go, but I please welcome you to pop any questions you have in the chat and we will endeavour to work through those today and also come back on any that we don't have time for.  
So, Caroline, I wanted to open with a bit of a hard hitting question first up and I wanted to ask, we heard your experience at the start of the session.  
You've worked across a variety of different councils and I know you have extensive planning background.  
So in your experience, working across the planning scheme amendments, can you describe what have been some of the challenges you've faced and overcome?

**Caroline Reisacher** 55:51  
Thank you, Lucy.  
So I guess you know, importantly, councils vary in terms of the Community that they have.

**Caroline Reisacher** 56:05  
So in in some cases you know there are there are different issues that that come up or you know challenges.  
So I guess from their planning scheme amendment submissions, a lot of a lot of the information that comes in from the Community in their submissions revolves around things like the effects of the amendment on their property value, the effects on the insurance premium.

**Caroline Reisacher** 56:36  
They say that it's never flooded since I've owned the property and I've owned it for 50 years or whatever.  
That there is drainage upgrade works required to mitigate the flooding.  
They like to have a crack at the accuracy of the modelling and also but they talk about the IT might affect the development potential.  
But I guess the thing that I wanted to talk about was the main.  
So more recently it's getting harder and harder.  
The challenges are increasing to get the planning scheme updated with this new flood information, and so I would say the biggest challenges would be to get it through the Chamber. Council Chamber and then, you know, with councillors wanting to, first of all go forward where the planning scheme amendment and then second of all, the independent planning panel.  
And then finally into the scheme I just wanted to touch briefly on and I don't know whether everyone's aware of C3 or 84, the City of Melbourne amendment and so that one.  
Went through a section 39 process which is essentially the submitters were questioning the independent planning panel process and they asserted that, I've got some notes, panel failed to provide the applicants natural justice through the panel's refusal to allow the applicants to make further submissions in response to a Melbourne water document that the panel member had requested and so they the submitters made a request for the C server for the section 39.  
However, they did it out of time.  
You only have one month after the panel report is released and so it went to the tribunal in May.  
And what happened was it was a really long process and there was lots of argy bargy about picking through the faults in the flood modelling.  
But ultimately, the tribunal decided that.  
it was refused because it was lodged outside of time, which was a really good outcome and the and the order came out in August.  
However, following on from that process, now these same submitters have lodged a Supreme Court appeal.  
That was lodged on the 7th of September.  
So that's going to be an appeal or review to their tribunals decision and there's going to be a directions hearing scheduled for the 18th of October.  
So this is such a big, big impact on you know how we move forward with our planning scheme amendments.  
I just wanted to bring that to people's attention if they weren't aware of that. Sorry.

**Lucy McLaren** 59:50  
No, that's great.  
Thank you, Caroline.  
And I think then if maybe I could take a step back and ask if you can talk to some of the high level timelines that are involved in the planning scheme amendment process and maybe break that down a little bit.

**Caroline Reisacher** 1:00:08  
Yeah.  
So I don't know how many strategic planners are in the room, but we all know that planning scheme amendments can take years when they're exhibited, and it can take potentially, you know, from 18 months to two years.  
I do know that there was a difficult one recently.  
I'm not sure if everybody's aware it was something like 10 years it took to finally get the information into the planning scheme.  
The Council resolves to abandon the amendment twice, and then the final one, C 91, was gazetted in March 22.  
And you know, if you think about the cost and time that's involved in this, these processes it, it's just, it's just really, really difficult and I mean it's a challenge, isn't it?

**Caroline Reisacher** 1:01:05  
I just I guess I just wanted to talk about also, you know if the Council does decide they want to take this flood mapping forward into a planning scheme amendment, Melbourne Water wants to play a partnership role and we do our best, you know to be involved in the process and we like to share resources we have an agreement where we you know we want to partner up and you know share the costs and you know we like to play a really supportive role to councils so that they can feel comfortable about going forward with this very technical amendment so if Council has a drop in session for example when they do the amendment we'll bring along engineers and we'll make them available we will field telephone calls and respond to emails we do we'll do everything that we possibly can and so just in relation to the cost sharing. it's generally 50/50.  
However, if for example Melbourne Water was only 10%, in those instances, we might do 10%, it's just comparable in that regard.  
And also one of the things if it does get to an independent planning panel, Melbourne Water will bring along our own experts to speak to the amendment.

**Caroline Reisacher** 1:02:45  
I think I've answered that haven't I?

**Lucy McLaren** 1:02:48  
Yep, no, that sounds good.  
Thank you, Caroline.  
One more question from me and then I'll see if we have any in the chat to work through.  
from your experience, is there any piece of advice you'd give to Council general advice?  
Who's about to start a flood management program that might result in planning scheme amendment process?

**Caroline Reisacher** 1:03:17  
Ah yes, I guess with the with the flood mapping project. obviously the engineers from Melbourne Water and Council.  
They work together so they would already be working together and it's my understanding that during that project, strategic planners are invited along at the at the inception or the beginning and we get to, we get to introduce ourselves to the strategic planners.

**Caroline Reisacher** 1:03:45  
And so it's really good to start that conversation.  
Really, and be kept in the loop cause that can take 18 months as well, right?  
So that's a very, very long process too.  
Umm, so it's just it's really important to make sure that you know is a strategic planner where they're up to in the process so that you can start planning if you're going to, if you're going to bring it forward to a planning scheme amendment.

**Lucy McLaren** 1:03:59  
True.

**Caroline Reisacher** 1:04:14  
And so in that regard, I guess it's important to inform your senior leadership team and potentially seek Council support for the consultation and amendment if it's going to go forward.  
I also had a point here to refer to the Victorian flood plain management strategy, but that's already been referred to so I don't need to talk about that again.

**Lucy McLaren** 1:04:41  
Yeah.  
Great.  
Thank you.  
**Caroline Reisacher** 1:04:50  
Sorry, Lucy.  
Can I just add one other thing?  
**Lucy McLaren** 1:04:54  
Go for it, yes.

**Caroline Reisacher** 1:04:55  
Yeah, I wanted to just talk about.  
So when we are talking about going ahead and doing a planning scheme amendment, we know how.  
We know how we've got to do the exhibition period and sometimes some of these submissions can be quite contentious and so there are some councils out there now who are starting to investigate the potential to consult earlier than a than a formal planning scheme amendment and so in this regard, I guess you could call it in informal consultation, but they are potentially using the building regulations to do that and that's not our process.  
And so we can't necessarily tell councils that that's what they should be doing.  
We can only speak to examples that we've heard of, and we do know, and I don't want to throw anyone under the bus here, but we do know that there is a Council out there.  
They're their municipal building surveyor is actually going to do the designation under the Under 153 the building regulations to make the flood declarations the land liable to flooding, which essentially means that they can do it for us as well.  
This Council isn't necessarily doing it for us at this stage, but it means that that information can then be used to inform planning, planning, permit applications and you're sharing it with the community.  
So Council has the obligation to share that information with the Community, and that's a really good way of doing that whilst they're waiting to do their, you know, protracted planning scheme amendment.

**Caroline Reisacher** 1:06:41  
I just wanted to make A to make a point of that and if anyone wants to talk more and more about that.  
I'm happy to take it offline.

**Lucy McLaren** 1:06:51  
Yeah.  
Great.  
That's really helpful.  
Thanks, Caroline, and there are I think there is a request in there for you to follow up with someone outside of this session.  
So it's really great of you to take any other questions outside of the session.  
Are there is a question from Ruwan and I can see you've got your hand up there?  
I'll ask it and then let me know if I've missed anything.  
I'm not sure whether we will have an answer today, Caroline, but I'll put it to you.  
Can you give an update on the PSA review currently undertaken by Melbourne Water?

**Caroline Reisacher** 1:07:27  
Ah, yes, I'm sorry I'm unable to give an update on that today.

**Lucy McLaren** 1:07:33  
Not for today's session.  
No worries.

**Caroline Reisacher** 1:07:34  
Yet.

**Lucy McLaren** 1:07:36  
Was there anything further Rowan you had?

**Ruwan Jayasinghe** 1:07:39  
So thanks. Thanks for the opportunity, Lucy.

**Ruwan Jayasinghe** 1:07:42  
So there was when I spoke to Melbourne Water in May with the Russell Smith.  
At the time, there's a review that Melbourne Waters Board was undertaking, whether to go down the planning scheme part or actually do a declaration under the Water Act.  
I believe for Melbourne Water and then under the Building Act for Council, and that that review was to be done with Dell, Pam and you said all waiting for the outcome of that to inform Council.  
So we act at the at the moment doing some joint mapping with Melbourne Water, which is great.  
The outcomes will be known possibly June next year.  
So I'm just trying to get up to speed  
I probably should go to Russell.  
I guess to get that update, but I just thought I'll take the opportunity here to see if there was update on that process or on the review at least.

**Caroline Reisacher** 1:08:36  
Thank you, Rowan.  
Unfortunately, I'm unable to provide an update on that on that project today.  
So yeah, happy for you to reach out to Russell Smith about that.

**Ruwan Jayasinghe** 1:08:50  
Yeah, no, all good.  
Thank you.  
Thank you for that.

**Lucy McLaren** 1:08:54  
And there's another question in here.  
Uh, from Roger and I'll just read it in full for you, Caroline.  
So very few councils in Melbourne have formalised local flood extents through a planning scheme, amendment process and politically it can be very difficult to get councillors to support a PSA when there's significant community opposition.  
So the question is, what support can Melbourne Water offer to assist councils in this space?

**Caroline Reisacher** 1:09:28  
Like I said, we if it can, if it goes to a Council meeting, we can, we can probably have Melbourne water to attend to have a conversation with councillors.  
It depends what you're looking for, so if it's, if it's to get them over the line and to have confidence in Melbourne Water's ability to be involved in the planning scheme amendment process, we can certainly do that probably informally and formally as you like.

**Caroline Reisacher** 1:10:02  
You know, we could go to a workshop with the councillors.  
So is that the sort of thing that you're looking for, Roger?

**Roger Woodlock** 1:10:16  
Will be enough at the end of the day.  
But point is that with so I think there's only three or four councils that have actually got, formalised local flood extents in the planning in their planning schemes.  
So how do we address that?  
How do we actually get more councils to go down the path?

**Caroline Reisacher** 1:10:33  
Well, there, , there are other options and they are being investigated and I guess that information will come out and so Melbourne water at the moment is waiting for the information to come out of the enquiries like the parliamentary inquiry and the state government inquiry.  
And so they will have recommendations coming out of that and hopefully that will assist us with changing our process.  
We are, we've been advised that in terms of the planning scheme amendments that we have to operate under a business as usual model which doesn't allow any creativity or any implementation of any other tools that are available.  
There certainly are other tools available for us, but as I said, currently hands are tied and we and we have to do this business as usual.  
And I think until those flooding enquiries have been finalised.

**Lucy McLaren** 1:11:35  
Thanks Caroline.

**Roger Woodlock** 1:11:35  
Thank you.

**Lucy McLaren** 1:11:38  
And there's another question here from Shane, although acknowledging you might have just talked through a possible option, but I'll put it to you planning scheme amendments.  
So typically from a certain date, for example, and your application from December in a certain year, so how should we handle existing applications where the property was not flood prone before the new flood modelling, but the properties now uh is flood prone under the new updated modelling?

**Caroline Reisacher** 1:12:15  
So I'm so generally with the process when we get this updated flood modelling, what we do is we have what's called area under review in our mapping system and we seek to have informal arrangements, informal referral arrangements with Council, so that if you're talking about the Melbourne water extent so that Council can then refer on to us ahead of it being formally in the planning scheme.  
And this is the other.  
Or, you know way if you use the building regulations that just gives it more statutory weight. so it's kind of like an interim step before you get in to do your planning scheme Amendment cause it's makes informal referral process.

**Caroline Reisacher** 1:13:14  
More formal under the building regulations.

**Lucy McLaren** 1:13:22  
Great.  
Thank you, Caroline.

**Lucy McLaren** 1:13:24  
I'm just scanning.  
I don't think we have any other questions through the chat at the Minutes.  
Sorry, I might have missed one.  
Sorry Alan, let me scroll up.  
Sorry, here's another one from Alan.  
Some councils are currently working with Melbourne Water to finalise flood mapping by 2024, followed by an advertising overlays.  
Simultaneously, coastal councils will be receiving DEECA Port Phillip Bay climate change data.  
Later on this year, the question is what is Melbourne Waters view on how and when to incorporate this in 1% overlays to address any planning scheme?  
Amendment objections, for example backflow causing additional inundation areas under some combined events.  
This is a nice detailed question for you, Caroline, that let us know we need to take it on notice.

**Caroline Reisacher** 1:14:25  
I think we have to take that one on notice because there's a lot of a, a lot of intricacies in that question.  
I do know that with our flooding program, the one that we're doing across the catchment that that all includes climate change modelling, but I but yeah, so this this particular question. Umm.

**Alan West** 1:14:58  
And includes inland climate change modelling, but not the latest information on sea level rise storm surge that is coming from DEECA and we may be in a position to have to do secondary modelling after we've completed the inland modelling.

**Caroline Reisacher** 1:15:10  
Yeah, I don't.  
I'm not sure I surmised that might be the response but I don't know.  
We'll have to get the answer from the flood modelling team.

**Lucy McLaren** 1:15:29  
We shall take that one on notice, Allan, and come back to you.  
Although Michael might be able to assist, I can see Michael has his hand up.  
Michael over to you.

**Michael Mozina** 1:15:41  
Thank you, Lucy.  
It is this point in time issue that we that we coming to terms of and dealing with our parent mapping projects that we're wearing and I'm working on getting agreements and starting this year.  
We've including these scenarios with tail water and sea level rise with the current.  
The current point I metre sea level rise increase, but we're also flagging that we want to look at other scenarios in anticipation of what's the new.  
The new sea level rise information will be will be you be communicated in the in the coming months.  
Where we've where we're still doing some where we at a particular stages of our current modelling, mapping work.  
We're looking at doing some variations to accommodate that as well, so we're doing the best as we can, keeping up with it, but it's just the reality of when we start these and when these changes are coming along with both.  
So we're very aware of it.  
We tried, like I said, we're just trying to anticipate that and get that incorporated into suture.  
So the ones going forward and the ones that we're concluding at now should be in line as best as they can to provide that information.  
That's our current approach at the moment, but we do need we ask, Caroline said.  
We just need to fully understand this and then.  
And my continue to provide, uh, more advice on how we're accommodating this and supporting this, this, this implication as well.

**Lucy McLaren** 1:17:21  
Great.  
Thank you, Michael.  
And I we've got time for a couple more questions.  
Carolina might throw another one to you that's come through from Matthew, and the question is, has there been any consideration of using VC amendments similar to the BMOS bushfire management overlay?

**Caroline Reisacher** 1:17:45  
Yes, thank you, Matthew.  
That's a very relevant, good question.  
And so there isn't.  
There isn't a Melbourne water position on that and I can only speak of my own opinion on this matter, and I thoroughly agree that we should be that we should be considering.  
That we should be considering fast track amendments, but I, you know, as I said earlier, even a VC amendment to bring them all in.  
I think that would be challenging from a Melbourne water perspective.  
It could be a GC amendment.  
This is just my particular viewpoint.  
This is not a Melbourne water view, as I said in my blurb earlier, you know, it's really good for us to try and look at new ways of doing things.  
We know how difficult it is to get these planning scheme amendments moving forward, and we've got to find alternatives because it's just, you know, all those challenges, particularly the political climate, the cost, the time and it is it is a risk to life and you know, we could be trying to push forward with that.  
It certainly is an option, but like I said, it's business as usual.  
And so once we get out of that business as usual, it could be something that could be considered in the future.  
Thank you.

**Lucy McLaren** 1:19:09  
Thank you.  
Thanks, Caroline, and I think we might have time for one more question before we wrap it up.  
It's from Philip, and the question is, what's your opinion of effectiveness as a planning tool and referring referral authority to use of Melbourne water schemes versus having an actual planning scheme amendment?

**Caroline Reisacher** 1:19:33  
Sorry Philip, I'm a bit unclear about what that what that means.  
Are you able to articulate with your voice?

**Phillip Pritchard** 1:19:43  
So we we're in a rural sort of area in the coastal area and there's Melbourne water schemes.  
It's like an area called Grantville for example.  
And you know, there's it implies, but it's from an effectiveness point of view from as a referral authority.  
It's been hit and miss, whereas there's not really a planning scheme amendment for the area to define as a flood area.  
So my point was, well, what works better from your opinion from a planning perspective?

**Caroline Reisacher** 1:20:22  
Thank you.

**Caroline Reisacher** 1:20:24  
Yeah, that's probably enough.  
And so from my understanding, these scheme areas, they have the they have the flood overlay removed.  
Don't they?  
I don't think they have flooding in them because they're part of the precinct structure. Planning is that they work to mitigate the flooding in those areas.  
The globe?

**Phillip Pritchard** 1:20:48  
Yeah, this sort of question sort of two prong because then you've got coastal inundation and flooding which is also part of a land subject innovation which it tries to deal with.

**Phillip Pritchard** 1:21:02  
So it's a merging of.  
You know, there's a plan in this game of member or it's a scheme, or it could be a combination of the two top scenarios.  
I thought from effectiveness, if we're going to waste our time with the planning scheme amendment when the scheme can function, as you know, the driver to being forced, you know, change.

**Phillip Pritchard** 1:21:28  
I just know that both are big headache, so I just wanted to know which one put the effort into.

**Caroline Reisacher** 1:21:32  
You know, thank you for bringing that up, Philip.  
I'm going to have a chat with my schemes counterpart to see what she has to say on the matter and say what we can, what we can do about that.

**Phillip Pritchard** 1:21:48  
Yeah, cool.

**Lucy McLaren** 1:21:50  
Yes, thank you, Philip.  
And uh, we'll take that one on notice.  
And that brings us to time for our Q&A session there.  
So I really want to thank Caroline for attending our session and running through some of our questions with everybody and also a big thank you again to Luke and Rianda from Rain Consulting.  
We really appreciate all your skills and expertise in the session before we finish today.

**Lucy McLaren** 1:22:24  
I'd really encourage for everybody to please complete our post session survey.

**Lucy McLaren** 1:22:31  
The link is on the screen and I'll also pop it into the chat.

**Lucy McLaren** 1:22:35  
Where we'd really love to hear your feedback on what you think.  
Well, but also any ideas or suggestions you have for future sessions will be running these again next year and we're really keen to incorporate any any of the thinking that you have.

**Lucy McLaren** 1:22:52  
And I then encourage you all to please check out our your say page and register to attend our remaining sessions that we have.  
Our climate change is coming up next, and then there's more information about our remaining sessions that will be happening in early October.  
So again, a huge thank you to everybody for coming along today and taking the time.

**Lucy McLaren** 1:23:20  
We really appreciate it and a big thank you to Caroline, our guest Q&A specialist today and thank you everyone for your time.

**Caroline Reisacher** 1:23:33  
Thanks everyone.

**Phillip Pritchard** 1:23:34  
Thank you.

**Caroline Reisacher** 1:23:34  
See you.

**Rianda Mills** 1:23:35  
Everyone thanks everyone.

**Phillip Pritchard** 1:23:35  
Catch you later.

**Caroline Reisacher** 1:23:35  
Enjoy the rest of your day.