LEGISLATIVE COUNCIL ENVIRONMENT AND PLANNING COMMITTEE

Inquiry into the 2022 Flood Event in Victoria

Melbourne – Wednesday 11 October 2023

MEMBERS

Sonja Terpstra – Chair

David Ettershank – Deputy Chair

Ryan Batchelor

Melina Bath

Gaelle Broad

Wendy Lovell

Samantha Ratnam

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John Berger

Ann-Marie Hermans

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WITNESSES

Dr Nerina Di Lorenzo, Managing Director,

Craig Dixon, Executive General Manager, Service and Asset Lifecycle,

Tim Wood, General Manager, Service Programs, and

John Woodland, Head of Waterways and Catchment Services (South-East), Melbourne Water.

The CHAIR: I declare open the committee's public hearing for the Inquiry into the 2022 Flood Event in Victoria. This public hearing is for the Environment and Planning Committee, an all-party committee of the Parliament looking into the October flood event. We will be providing a report to Parliament, which will include recommendations to the government. Please ensure that mobile phones have been switched to silent and that background noise is minimised.

I would like to begin this hearing by respectfully acknowledging the Aboriginal peoples, the traditional custodians of the various lands we are gathered on today, and pay my respects to their ancestors, elders and families. I particularly welcome any elders or community members who are here today to impart their knowledge of this issue to the committee. I welcome any members of the public in the gallery and remind those in the room to be respectful of proceedings and to remain silent at all times.

For those who are giving evidence today, all evidence taken is protected by parliamentary privilege as provided by the *Constitution Act 1975* and provisions of the Legislative Council's standing orders. Therefore the information you provide during the hearing is protected by law. You are protected against any action for what you say during this hearing, but if you go elsewhere and repeat the same things, those comments may not be protected by this privilege. Any deliberately false evidence or misleading of the committee may be considered a contempt of Parliament.

All evidence is being recorded, and you will be provided with a proof version of the transcript following the hearing. Transcripts will ultimately be made public and posted on the committee's website.

At this point I will take the opportunity to introduce myself, and then committee members will also introduce themselves to you. My name is Sonja Terpstra. I am the Chair of the Environment and Planning Committee, and I am also a Member for the North-Eastern Metropolitan Region.

David ETTERSHANK: I am David Ettershank, Deputy Chair, and I am from the Melbourne metro west region.

Samantha RATNAM: Afternoon, all. Samantha Ratnam, Member for Northern Metropolitan.

Melina BATH: Melina Bath, Member for Eastern Victoria.

Rikkie-Lee TYRRELL: Rikkie-Lee Tyrrell, Member for Northern Victoria Region.

Gaelle BROAD: Hi, I am Gaelle Broad, Member for Northern Victoria.

Wendy LOVELL: Wendy Lovell, Member for Northern Victoria.

Ryan BATCHELOR: Ryan Batchelor, Member for Southern Metropolitan Region.

The CHAIR: Thank you all for those introductions. With that, we will invite you to make your opening remarks, which are limited to 10 minutes. That will ensure that we have plenty of time to then ask you questions. Before you begin, could I also get you to state your name and the organisation that you are appearing on behalf of, if any. Over to you.

Nerina DI LORENZO: Thank you. Good afternoon, and thank you for the opportunity to appear before this committee today. My name is Nerina Di Lorenzo, I am the Managing Director of Melbourne Water. With me today are Craig Dixon, our Executive General Manager of Service and Asset Lifecycle; Tim Wood, our General Manager of Service Programs; and John Woodland, our Head of Waterways and Catchment Services.

I would like to also first and foremost acknowledge the affected residents, present or watching this session today, from all of the impacted suburbs and, more broadly, all the communities across Victoria who have been impacted by these devastating floods.

No two floods are the same. In addition to our own investigations, we are very keen to provide information that is useful in forming views about managing flood risk in the future and undertaking all learnings from this process. Melbourne Water has a key role in flood plain management for the Port Phillip and Western Port catchments. We have got four critical functions. This includes flood modelling, which helps us understand flood risk across our region. We model the kind of flood event that has a 1 per cent probability of occurring or being exceeded in any one year, and we provide that information to other agencies and to communities in order to manage flood risk. We use this information to support 38 councils to include new and updated flood modelling into their planning schemes and their building controls and emergency management plans. It is important to note that there are broadly two different types of modelling that are often referred to here: one is modelling for planning decisions, which is a very long term process to develop those, and they have a long life, as opposed to modelling that informs warnings, which is much more dynamic and much more frequently updated. They are two different models. I thought I would start with that, and we can talk a bit further depending on your questions. Second, we take planning referrals where we advise on planning and building permits to minimise flood risk. Melbourne Water can object or it can require conditions to help manage flood risks, but only if there is an appropriate overlay in place. We can only do that when that is in place. Third is physical maintenance and mitigation, such as ensuring Melbourne Water drains are clear and constructing infrastructure such as flood-retarding basins where it is feasible to do that. That is another area.

There are some things Melbourne Water supports but does not directly deliver. For example, we support the work of the Bureau of Meteorology and VICSES in issuing flood warnings to the community based, though, on flood predictions that we provide. We are not the direct communicators of that, so once it is transferred that is then undertaken by those agencies. We support the work of local councils in making decisions on planning and building permits through provision of flood information as a referral agency. We support the SES and councils to ensure flood emergency management plans reflect our best flood-modelling information, and we support partners such as the SES and council in recovery efforts. But we are not a recovery agency unless it is for our own assets or land – so just setting that out.

Melbourne has over 25,000 kilometres of waterways, which are vital in our city. This encompasses the major river catchments such as Maribyrnong, Yarra and Werribee and all of their tributaries along with the smaller catchments like Dandenong and Western Port. During a large rainfall event rivers expand into the flood plain around them. Like bushfire risk, flood risk is a risk that cannot be eliminated, but it can be managed and managed with practicable measures really focused on how flood risk may materialise for properties within the flood plain. There are over 200,000 properties across Greater Melbourne that are located near rivers, are within a natural flood plain and have a 1 per cent chance of flood risk in a significant event. Information on individual properties is available through things like the VICSES website, through councils and through section 32 property certificates. That would be how that information is accessed.

The October event was a significant natural disaster. The high rainfall on a soaked catchment had really significant consequences. Around 600 properties in the Maribyrnong catchment were affected, and I have heard directly from residents who have expressed the stress and the anxiety and the daily challenges they have had to endure as a result of the flood. We want to ensure any lessons are learned so we can strengthen this collective response for a future where we anticipate more extreme or more variable events.

Some key actions that we have taken – we established the Maribyrnong River flood review that was chaired by Justice Pagone. That made 15 recommendations, which Melbourne Water accepts and is implementing. We commenced a year-long hydraulic study, which will deliver a new model – this is the planning-related model – for the whole Maribyrnong catchment, including climate change projections out to the year 2100, with an interim model completed also. This is part of our recent program that is about delivering a model for every catchment in Melbourne, and that includes climate change projections out to the year 2100. That is a program that we are running at the moment. We are commencing the work to consolidate flood warnings with the Bureau of Meteorology. We completed a scoping review of potential physical mitigation options for the Maribyrnong catchment and a targeted flood awareness campaign to over 3000 flood-prone households as well as work to help residents more broadly across Greater Melbourne, which had a reach of about 90,000 people, including CALD translations. This is a really important area of focus, because our research and the research of

other agencies shows us that flood awareness is low, and we think this is an area where we really need to think the same way about flood as we do for bushfires.

I will address a couple of specific matters very briefly. In relation to causes and contributors of the flood event and the early warning system, the Pagone report notes that the Maribyrnong River catchment is a fast-responding system where floods can escalate quickly. What we saw in the upper catchment: a major warning was issued days before and was never downgraded in the upper catchment. In the lower catchment we went from moderate to major, and our data showed that change from moderate to major in a very short window of about 90 minutes. That is drawn out in the Pagone report, and we are happy to talk through that further – what our findings are in relation to that. Particularly because the event followed three days of high rainfall, soaked catchments meant that water that would normally be absorbed in the landscape flowed directly into the rivers, so that made things move more quickly. That is a really important learning from this event that has been covered in the report.

Regarding flood mitigation infrastructure, it is a complex long-term issue and it does have some challenges. Its challenges are basically because any infrastructure needs to be technically feasible, and it has got to be weighed up carefully against a broad range of community considerations and environmental considerations. You have got to think about all of those things and weigh them up. Our scoping review of flood mitigation options has been taken as a first step. It is very early work, but we will revisit it once we have the detailed study land in April. That is the right time to revisit it and take that further.

Regarding the Flemington flood wall, the review established some key facts. It established that the mitigating works that were put in place to offset its impacts appeared to have functioned, and when we overlay the actual flood extent against the flood model, it shows that the extent of flood before and after the wall were very close – appeared to be very close. We also recognise what a significant issue this historical decision is for communities. We will re-run the impact of the wall after April 2024, and we will reconvene the panel to reconsider that one issue, and that will be publicly available, in recognition of how significant this historical decision has been.

I am really conscious of time, so I will not go any further at this point. But I will just end with a continued thankyou for the opportunity to address you and to speak to you about this today. If we are not able to get through all of the questions – and I imagine there will be many – we would be very happy to respond in written form out of here to anything you do not get to today. We are really absolutely ready to talk through this with you and wanting to make sure we do the best for our community.

The CHAIR: Great. Thank you very much for those opening remarks. I might start. Yes, there are lots of questions, and it is really difficult to try and figure out where to start. I might just get you to return to your earlier comments. You were talking about flood models, and you were saying there were different types of flood models. Some are for planning and some are for emergency responses – is that right? Can you unpack that a little bit and help us understand how those things interface with other things? Then the agencies might pick it up and issue warnings – if we can start there.

Nerina DI LORENZO: Yes. I have two colleagues who can talk in more detail about the two different types. The models that we use for informing planning decisions – they are very long processes to complete. They take very long studies. It is about a year to get a model complete, and they have very long lives. That type of modelling we can talk through via my colleague Mr Wood. Those are the models we use when we get a planning referral or we are looking at: what are the types of things you can do when a building is being considered? That is the sort of model that is used to inform that response. My colleague Mr Woodland will be able to elaborate on these models – the dynamic modelling that happens in real time during an event is different. They are updated frequently. They are models that take the prediction of rainfall from the bureau. So we take one set of predictions and we input these into the dynamic models. Then in real time, as the rain lands and as the water starts to flow, the gauges then start to input their data, and these models are run and re-run. Then warnings are updated based on that, and that information is passed to the bureau and then used by the bureau to issue warnings. Then the SES, likewise, act on those. They are the two types. I will stop there, but if there is more detail, my colleagues can –

The CHAIR: I might just perhaps build on that answer in regard to you, John, because it is probably the issue of modelling for you. One of the things the Pagone report talked about was in the Maribyrnong catchment

– the middle section – that the catchment was exceedingly wet. His view was that there was not particularly a lot of rainfall but the run-off was what created this scenario. Does the modelling pick up that scenario where you have got excessive run-off as opposed to rainfall? When you are modelling rainfall, how does it measure run-off as opposed to rainfall?

John WOODLAND: Yes, that is correct – every flood is different. What we call the antecedent conditions of the catchment, or the wetness of the catchment, has a big impact on how much water flows off the catchments. You can think of a sponge – if it is a dry sponge, it will soak up some of the water before rainfall comes off. Our models do take that into account. These are rainfall run-off models, and the model we call URBS – unified river basin simulator – is the same model that is used across Australia by the Bureau of Meteorology. That model takes into account an initial loss – so what will soak into the catchment initially – and then, as it is modelled, a continuous loss. Our modellers run many models to calibrate that and get that to represent the best fit for the catchment, and that is a continuous process that we do multiple times. That is essentially how we take that into account.

The CHAIR: Right. You may or may not have heard, but some gentlemen we had in here – Ron and Geoff – earlier today were talking about some rain tables that in their opinion were not the correct rain tables. I think they talked about – it is a bit of a crude term – 'garbage in, garbage out'. They are saying, 'We believe that there were the wrong rain tables used for the predictions.' Do you have any response in regard to that?

John WOODLAND: Yes, look, I can talk to that. Obviously, if people have a different view, we take that very seriously, particularly a former colleague of Melbourne Water. We do look at that seriously. Geoff has emailed me on two occasions with that information.

The CHAIR: He mentioned that, yes.

John WOODLAND: That is also in his submission, which I have read. We have looked at that in a lot of detail, and look, he is wrong. I can go into the technical detail as to why he is wrong, if you like, but what I can assure you is we update our rating tables continuously. Here we are talking about something from 20 years ago; we are two decades on. We even use different models these days that are a bit more sophisticated, and we continuously update our rating tables to an Australian standard which is based on an international ISO standard. We have got a lot of rigour and QA around our gauges, and we can reconcile those gauges across the catchment. So what we can do – we have got 10 key gauges in the catchment, and we can look at one gauge and understand what happens at another gauge. We have hydrographers that go out in real time during flood events to measure the flow in real time, so we can do a very accurate reconciliation. I can provide more detail, but unfortunately he is wrong.

The CHAIR: Sure. Time is going to beat us, unfortunately, so yes, if you want to provide more. And just one final question from me, because the clock will beat me. Just in regard to the development of Rivervue and the retirement village, one of the key things that came out of the Pagone report was the permit. The finished floor heights were lowered at some point and that was approved and ticked off, and then the situation happened where some properties were inundated. What do you think went wrong there? What happened there?

Craig DIXON: I might take that one, thank you, Chair. Clearly what happened at Rivervue is inconsistent with what we expected. I do not think there is any denying that the situation was not as we expected. In terms of understanding, I guess what is important – and I think others have spoken about this today – is this is 20 years of a succession of multiple different decisions, applications, considerations et cetera, so we are still working our way through that. And as I would ask you to appreciate, we are pulling information from 15, 20 years ago, some of which we are still pulling out of hard documents in storage folders. There are applications we do not have access to and people who were around at the time we cannot even get contact with anymore. So we are certainly piecing it together. We have got a lot of pieces of the puzzle, but we do not have all of the pieces of the puzzle.

The CHAIR: So it is ongoing work.

Craig DIXON: It is ongoing. There are decisions that were made in there that at this stage we cannot necessarily understand or explain, so we could not give you a fulsome answer to that question, I am sorry.

The CHAIR: That is okay.

Craig DIXON: We certainly have elements of it, but not the full thing.

The CHAIR: Sure. Okay. I think that might do it for me for now, because I am just conscious that the next question I ask you are not going to be able to answer. So I might pass to you, Mr Ettershank, for a question.

David ETTERSHANK: Thank you, Chair. Thank you for coming along today. It is appreciated. I might just pick straight up on the Rivervue. I understand that it is complex, and I understand there have been well over a dozen variations along the way. It seems, though, that the bottom line here would be that in terms of the recommendations that came from Melbourne Water in 2016, you supported the findings of GHD, who I think were the consultants at that point of time, as to lowering or retracting the LSIO. It would appear that the level that you were happy to accept from GHD was lower than the 1974 flood level, which was a one-in-50-year. I am wondering how, in that context, you could possibly believe that a one-in-100 was safe, where you were proposing that that line would be?

Craig DIXON: I think there are number of things in there, Deputy Chair, if I can cover. Probably most important is what actually happened in 2016 with that planning scheme amendment. If I can just go through that, because I think there have been a number of statements made this morning that were perhaps not entirely correct. Basically, if I can just go through the process, I think it will help to answer your question.

I think it was about 2014 when there was a model – what is called an overland flow and drainage model – that was updated. This is separate from the Maribyrnong riverine flood model, so this applies to the broader catchment, if you like. That model was updated around 2014, and as a result of that model, it became evident that the LSIO as it stood was no longer correct. That triggered changes to the LSIO that we recommended or proposed through to Moonee Valley council to process. Just for completeness, I think around 450-ish properties were impacted in some way by those changes. There were about 125 properties removed. There were a bit over 50 properties that were actually added into the LSIO, so there were quite a few movements in and out. That original proposal did not include Rivervue, because it was purely an outcome of the overland flow and drainage model update, which does not cover that specific spot. That went through to Moonee Valley. Moonee Valley gazetted that, as is the normal case, to all potentially impacted. As a result of that gazetting a number of objections were lodged, including from the owners of Rivervue and others. I think in total around eight objections were tabled. They were all tabled to Moonee Valley, and Moonee Valley referred some of those back to us. One of those objections was from the Rivervue owners or developer, and their objection was based on the fact that, 'We built our development, we constructed and did the earthworks that were required as conditions of that permit and accordingly as we understand it we're no longer subject to inundation.' We reviewed that and said, 'Yes, based on the modelling we have at the time, the best information we have at hand at the time, that is correct,' so then we made the adjustment to that proposed modification and handed that back to Moonee Valley. Moonee Valley then handed that on to a review panel that they established to consider the objections, and certainly in handing that on to the panel Moonee Valley actually in writing supported our modifications to the LSIO.

David ETTERSHANK: Right, but it was still the reality that the agreed flood level at the end of the day was lower than in '74?

Craig DIXON: As I think I just conceded before, Deputy Chair, what happened in October clearly shows that there is a difference there.

David ETTERSHANK: Okay. All right. Thank you. Dr Di Lorenzo, you have been the CEO for two years, and I think the two years prior to that you were the general manager of service delivery?

Nerina DI LORENZO: Yes.

David ETTERSHANK: And you have got a reputation as being a pretty robust CEO who does not suffer fools or incompetence – understandable.

Nerina DI LORENZO: I do not know if I can comment on that.

David ETTERSHANK: We have obviously talked to a lot of people, we have read a lot of submissions and I am looking at this list. I am looking at the failure of the early warning system; I am looking at the failure of the mid-Maribyrnong flood model, whether it is because it was not calibrated or just a whole range of issues

associated with that; I am looking at the farcical appointment, albeit temporarily, of Nick Wimbush as the head of the inquiry, and I cannot even begin to imagine how that could ever have been a possibility, in terms of conflict of interest; and I guess I am looking at at least a very large cross-section of the recommendations that come from the Pagone report, which really do seem to strike to the competency of the CMA or your CMA role and performing those things. I guess, given the culture, I am sort of wondering: why are you still the CEO?

Nerina DI LORENZO: I would like to just begin by saying I would not characterise it in any of the ways you would characterise that, so I just need to be very clear in refuting those statements. I do not think I would characterise it at all that way. I do want to put on the table that there are many decades of information. That continues to improve. There are decades of decisions. That is all part of what is being unpacked, and what I am focused on is getting to the bottom of those things in this role. That is why I commissioned the Pagone review, which gives us 15 very clear recommendations. We have been as transparent as we could be with every piece of information, and I think that is a critical part of my job in the service of the public interest. That is what I am doing, and I stand behind that. We do not shy away from the fact that there will be things to learn, and no agency should ever do that. That is absolutely what I am focused on. I was in the role of MD for nine months when the flood hit. I have got to tell you that this has been a key focus for me. We are chasing down the facts, and we will continue to do that and continue cooperating with you to be as transparent as we can with all of our information.

David ETTERSHANK: So it is all other people's watch?

Nerina DI LORENZO: I did not say that.

David ETTERSHANK: Okay. Obviously you have an ongoing role to provide advice with regard to planning applications. Given the shortfalls that are manifestly apparent – and they are identified by Pagone and a range of other witnesses we have talked to – how do you perform your role to provide advice on the question of planning applications when there is clearly a lot of uncertainty as to the validity of the current mid and lower Maribyrnong flood modelling?

Nerina DI LORENZO: I will just make one quick statement. Just very quickly: again, in terms of validity and as borne out by the Pagone report, and as you will see by looking at a map that is behind me which shows the extent of flood that was modelled against the extent of flood that occurred, it was very close. There was one area, Rivervue –

David ETTERSHANK: Are you talking about in the context of the VRC?

Nerina DI LORENZO: In the VRC location, very close – what was modelled, very close to what occurred. So when you talk about validity it is important to put that on the table and to also point out that Rivervue is the area where we have identified it was not. There was a problem there, and again, we have been transparent about that. So –

The CHAIR: I am sorry, but time has expired. The clock has beaten us. Ms Bath, with a question, please.

Melina BATH: Thank you very much. There is a lot to think about. You mentioned at the beginning of our presentation today that no two floods are the same, yet part of the reason for your being is to model, assess, convey information and then predict, and then we can talk about flood mitigation over there. Data is certainly king or queen or key – and water heights and flow predictability. They might be aging and passionate; they were certainly members with a great deal of knowledge – in relation to Ron and Geoff, who we have spoken to today. Their suggestion was that with different rating tables and the like they could have – and it is only speculation, isn't it, because they were not in the driver's seat – provided 6 hours of advance notice. You are saying that you are doing this modelling, all of that, yet we have heard people today say that they only had 90 minutes time or they had very little warning or that by the time the SES got the notice to go and go into people's homes it was going through the bottom of their kitchens already. So I am trying to understand: if you are evolving, then why is there so little time? Why is that information not getting through?

John WOODLAND: Thank you for the question, Ms Bath. If I go back to the frequency of flood warnings, which is a critical part, we issue at the highest standard, which is consistent with the bureau and actually in agreement with the bureau – to 6 hours. A key part of our predictions relies on rainfall forecast from the Bureau of Meteorology, and we work very closely with the Bureau of Meteorology and have a very good relationship.

The 6 hours is actually dictated by the frequency at which we get the rainfall forecast. If we do not have an updated rainfall forecast, we can no longer run the models. That is a key point of our flood modelling.

In terms of rating tables and how we predict what is going on, we work with both the bureau and emergency services upfront. If we go back to the flood event in October 2022, the event happened on the14th. We worked with the bureau for them to issue the first flood watch on the 11th. On the 11th we put out a flood watch that included the Maribyrnong catchment. Then on the morning of the 13th we issued our first major flood warning for the upper catchment in the Maribyrnong, and then we continued on to bring in the lower catchment to a moderate flood warning. Before the event, we had a major in the upper and a moderate in the lower, so we were monitoring.

The other part of the models is you need to interpret the models. They are models and they are predictions. What happens in real life might not be as per the prediction, because there are so many inputs, and rainfall forecasts, as you can appreciate, can vary. But what we do is we have a 24/7 staff who are watching how the rivers behave in real time and watching how the rivers flow and the rivers rise, because we have got real-time gauges. In the Maribyrnong we have 10 of these, and we have eight rainfall gauges, so really good intel. If it starts to deviate as to what we predict, we will then make a call. That is exactly what actually happened during the event. At around 12:30 am on the 14th our flood warning duty officer noticed that the river was not behaving as predicted, so they made the right call: they worked with the bureau to issue a major flood warning. So the system worked in that sense. In terms of the learnings, one of the learnings we are taking away – a key rating table that we rely on there is the Keilor rating table, which is upstream of the Maribyrnong township. The sorts of flows that were experienced were flows that we had never experienced at that gauge.

Melina BATH: Is Darraweit Guim –

John WOODLAND: Darraweit Guim is up on Deep Creek. I am talking about the Keilor gauge at this point in time, which is upstream of the Maribyrnong township. At the higher end we use extrapolation techniques to predict how the river behaves at higher flows that have not yet happened. What we do know on the Keilor gauge is that the extrapolation, which is done to Australian standard and ISO standard, did not represent accurately how the river behaved at that higher end. What we were able to do during the event and around the peak was send out our hydrographers, who actually measured real-time information. So we now have a more accurate understanding of how that river behaves and what that relationship is. We have now updated that key rating table. So if we were to have an event that was equivalent to the event that happened about a year ago, then it will represent those flows at the river heights more accurately. We are also going one step further: to look at techniques on how we extend those tables for even more extreme events, and that is obviously important with climate change.

Melina BATH: Our time is short, and I do appreciate your very full answer. Somebody sitting down in Smith Street or wherever, down by the river – in fact I used to live down there, but I was a little bit higher up, many years ago; lovely place – what can they expect? You are saying you have got more data, all of that – how can they be sure that they are going to get more than an hour and a half or even sometimes 45 minutes? How do we know? How can you give that assurance? Because otherwise, with the greatest respect, what confidence can these people have?

John WOODLAND: I can tell you that we use the best available information that we have at any point in time. As we experience new events, we learn from those and we actually collect new data and improve the accuracy and the ability for us to predict. This is exactly what we have done in this situation. I go back to that point that we are even looking at more innovative techniques on how we further extend rating tables to events that could happen under climate change. We know there are going to be more storms and more extreme weather, and we are looking at four new techniques that we are trialling actually on that gauge. From that we will take the learnings and we will apply that across our whole network. So that is how I can give confidence to the community that we are taking all the learnings and that at any point in time we will have the best available information to make predictions, in partnership with the bureau and the SES.

Melina BATH: Thank you. Fabulous. My office is in Traralgon. We had a flash flood, but my retired people from the services were very on it – again, the Geoff equivalent over there. When it was in Mount Tassie and the streamflows hit a height, they knew what was going to flood and how high, and I will go into that at a later date. But their conversation is around the BOM – shouldn't it be more frequently than 6 hours anyway? I mean, why

this should be a recommendation in 2023, I cannot understand. These sorts of periods are very spontaneous. Why are we only getting that now?

John WOODLAND: Well, the 6 hours is actually the highest standard, and that is the standard that the bureau applies across the rest of Victoria, so we are in line with that. Then the other part which is worth noting is that there are next-generation models that are available which do monitor continuously 24/7.

Melina BATH: And people can watch them.

John WOODLAND: Yes.

Melina BATH: Yes, absolutely. I endorse that.

John WOODLAND: And the Bureau of Meteorology, as I understand, are in the process of moving to that next-generation model. They have not done that yet but are about to. So we are hopeful with our transition of our flood models and that forecasting function to the bureau, that that would be picked up in that process and we will see a step change for the community.

The CHAIR: I am sorry, your time has expired.

Melina BATH: I was going to ask about the Arundel basin, so you might want to give that on notice.

The CHAIR: I am sorry, Ms Bath, but your time has expired.

Melina BATH: Thanks, Chair.

The CHAIR: Mr Batchelor, over to you with a question, thank you.

Ryan BATCHELOR: Thank you. I want to go back a little bit to Rivervue and the decision-making, not to relook at that instance but what it tells us about decision-making in general. It seems to me that we have got a situation here where something gets approved and then little by little it gets changed, kind of like the apologue of the frog in a pot of boiling water, right? We threw the frog in when it was boiling, and it jumped straight back out again – you would reject a permit. But put it in a pot of cold water and slowly turn up the heat and the frog will die. What can we do to the way decisions get made and the interplay between developers coming back again and again and again? Council is saying, 'We take expert advice saying council's the decision-maker.' How do we improve this system so this sort of thing does not happen again?

Craig DIXON: I will take that one. Just in regard to that, I think we just have to be careful that we have a situation here which clearly needs to be better, but this is specific to Rivervue. If I could just –

Ryan BATCHELOR: This sort of thing you do not think happens elsewhere?

Craig DIXON: What I would say is – your proposition that there is an application, there is a decision and then there is a subsequent request for further review or further modification to that – that does happen. But what we can assure you is that every time that request comes through for modification we view it through exactly the same lens. The way we process the original application will be no different than the way we would review a request for a modification, so all the same considerations of risk, risk factors, all of the critical inputs in terms of the modelling and the data that goes in would be identical.

Ryan BATCHELOR: So it is not something that you think happens on a repeated basis?

Craig DIXON: As in requests for subsequent adjustment?

Ryan BATCHELOR: Or when the outcome is below the standard that was accepted and agreed at the start.

Craig DIXON: The only way that would ever occur would be if there were further mitigations that would happen that would allow you to consider an adjustment. So the critical thing with Rivervue is clearly the information that was used at the time. It was the best available information that we had, which was used for both the initial application but also for the subsequent amendments. We used that information, we were informed by that information and we made decisions based on that.

Ryan BATCHELOR: It strikes me that there probably needs to be something. Hopefully something is isolated, not systematic, in this instance.

Craig DIXON: Clearly, and it is an excellent question. We have looked at this extensively. This appears very unusual in terms of what has happened at that particular site.

Ryan BATCHELOR: I might go to a discussion I had with the reps from the City of Melbourne earlier today. I do not know if you were listening. They made a reference to a framework. I asked the gentleman to repeat it, and now I have forgotten what it was.

Nerina DI LORENZO: MUSIA?

The CHAIR: What does that stand for?

Nerina DI LORENZO: MUSIA – sorry.

Ryan BATCHELOR: I do not know. Anyway, their argument was it is designed for greenfield sites and large urban renewal sites like Fishermans Bend and like what may be occurring in West Melbourne. I particularly care about Fishermans Bend, obviously, with a large new community about to be built in my region. Their view is that the framework is not really up to the task of dealing with those types of new residential development projects. I am just wondering if you have got any views on that and any response to the City of Melbourne.

Nerina DI LORENZO: A partial response, but I think it is something we will take on notice, because it probably needs to be unpacked. And I do not think it was MUSIA but something else. In terms of the way infill development is assessed versus greenfield development, what is really critical is the models. The models are what we really base our decision-making on. It is different in infill development because there is much more infrastructure already in place, but those are the things that are taken into account when the models are developed. I think probably we would take the rest of that question on notice and respond more formally.

Ryan BATCHELOR: I would also be interested if you have got any further feedback on any of the work that you are undertaking associated with the planning around developments at Fishermans Bend to make sure that whatever happens there and the large amount of residential and urban development that is going to happen on that site, which has historically not been a residential site, has appropriate protections from further floods.

Whilst I am on this tangent, I would be interested in any updates you have got about the projects down at Elwood to mitigate against – obviously there was significant flooding in 2011 down at Elwood. There were warnings and people were worried last year in October after the prospect of a lot of rain and the Elster Creek flooding again. Fortunately, a range of factors meant that that did not occur, so I think people were relieved, but people were clearly anxious in the local community. A big amount of work has been promised down there. I am just interested in an update on that so we can talk to the local community about that.

Nerina DI LORENZO: We will take Fishermans Bend on notice, for speed, and –

Ryan BATCHELOR: You do not need to go into a lot of detail now.

Nerina DI LORENZO: I will hand to my colleague for the update.

Tim WOOD: It is quite a challenging catchment down there, as you probably are aware. We have been working with the four councils within that catchment, taking a whole-of-catchment approach to the way we look at flood mitigation and managing flood risk. We have been doing that probably for the last 10 years and working with those communities to understand what opportunities exist to manage that flood risk – the whole range from putting in infrastructure solutions all the way down to local community management of events and the like. That has been really successful. With the advent of some change in development of land at the old Elsternwick golf course, that provided an opportunity to look at how we might utilise that space differently. We have been working with Bayside and other councils around what that looks like, and as a result of that we are investigating a business case around augmentation of one of the existing drains down there, which could alleviate some risk for some areas of that catchment. So we are deep in that business case development at the moment, working through that.

Ryan BATCHELOR: Great. In the minute and 10 seconds that I have got left – the other thing I have touched on today is a bit about consumer understanding about risk. I am wondering if you have done any research, any behavioural analysis or any engagement with people about their understanding about things like 'one-in-100-year' and what that means to them from a prospective purchaser point of view, if someone is looking at buying a place, and just in general terms. Do you think people understand flood risk? And is there any research that you have got that you might be able to share with the committee about that?

Nerina DI LORENZO: Yes. We will share some of the research information we have got. But we know that in some locations the awareness of flood risk can be as low as 19 per cent, just even in terms of being located in a flood plain, and I think there are some really big learnings to come in terms of really magnifying our understanding of that and the way we talk about that. So we will provide a little bit more of that information on notice out of here.

Ryan BATCHELOR: That would be great. That is it for me, Chair.

The CHAIR: Great. Thank you very much. Dr Ratnam, a question.

Samantha RATNAM: Thank you, Chair. Thanks, everyone, for your submission and presentation today. Firstly, a question on the AEP flood maps: the 1 per cent AEP flood map does not seem to take into account the flood wall, from our reading of it, instead showing the Flemington racecourse being under water. Does this mean that the map is inaccurate for homes in the area near the 1 per cent AEP boundary?

Nerina DI LORENZO: No, and I will refer to my colleague.

Tim WOOD: We have done a substantial review of that – that is the lower Maribyrnong model – and have taken the learnings from the event and overlaid that, and that has informed the map that is behind us. What that has highlighted is that even though the map shows the Flemington impact before the wall, what it does show is that the 2022 event actually followed that original modelling exercise even with the wall included. As a result of the wall inclusion and the compensatory works downstream, the areas that were subject to flooding risk before the wall look like they still are now, and the ones that were not subject to flooding are not now either. So the learnings of that flood-mapping exercise at this stage, given the fact that we need to do the more detailed work that will be available in April next year, say that there were not any others that are impacted than were before.

Samantha RATNAM: Thank you. In relation to that modelling work that you are currently undertaking, to be finished in April, will this modelling be made publicly available, and if so, when?

Tim WOOD: Yes. It will be made available as part of that normal process. Once it is released and it has been tested and we have had peer review of it and we have got confidence in the output of that work, then we will be sharing that, particularly with council, because it is a joint mapping exercise with all of the councils in the catchment. Then we will be using that to go into the planning processes, which will obviously then involve public consultation.

Samantha RATNAM: It will be publicly available?

Nerina DI LORENZO: It will. We will reassemble the panel again to just go, 'Okay, there's another data point of scrutiny,' and that will be public.

Samantha RATNAM: Okay. Thank you very much. I am interested in the application processes around a couple of decisions that have been referred to previously, particularly the flood wall and the Rivervue decision. These both seem to be applicant-led processes, and I am trying to unpack what is happening, because we are getting different versions of it and there is lots of fine detail. I also want to acknowledge that all of you I think probably would not have been at Melbourne Water at that time – it is a number of years before, but obviously we have got to look at decisions that were made even two decades ago, because they could have had disastrous impacts for the future. For example, with the VRC and the flood wall decision, it looks like VRC kind of initiated that – they went and got some analysis from GHD. We had some earlier witnesses say that there were some issues with that, and the council said there were issues with the GHD modelling. We had two former employees of Melbourne Water say that they sat down with Melbourne Water at that time and said, 'Look, even your person you have gone to check it with, they have made an error.' And we have also got the Rivervue

example around the 2011 and 2015 decisions around GHD modelling being used and then ultimately the quite disastrous impacts for residents. Are there any lessons for the processes that Melbourne Water uses for the checks and balances – particularly the veracity of this analysis, particularly the outsourcing of analysis like this and if there is more outsourcing in the future? Are you all doing anything differently now to make sure this does not happen again?

Craig DIXON: I will take that one if that is okay. I might answer them separately if that is all right, because I think they are quite different. So with the VRC process: the VRC went through a completely normal process, as any applicant would do with an intention to do development. It is incumbent on them to engage whoever they choose to use to develop the modelling to underpin their development application. That development application was performed by GHD, who are a highly regarded and reputable player in the industry. As you would all appreciate, in any field of highly technical specialisation there will always be differing views. That is a normal thing that occurs, and certainly in hydrology that is no different. So it is very common for there to be alternate views on these types of things. The information submitted by VRC came to us for review and we reviewed that. We equally received the alternate views that came through, and we considered those extensively at the time. It was both our consultant and collective view – the view of the organisation through its professional expertise in the area at the time – that on balance the modelling that supported the application held up. But again –

Samantha RATNAM: Do you still stand by that?

Craig DIXON: Based on the information that we have got today, and as Mr Wood just pointed out, the modelling of the flood event indicated that the flood zone behaved exactly as was expected. At this stage – and it is to be reconsidered again when we have updated modelling in April next year – at this point, the model predicted as the flood plain behaved.

Samantha RATNAM: So if you are looking at whether the model predicted the flood behaving as it should, but then you still have these consequences that were unforeseen – for example, Rivervue was not meant to flood to that level, and the flood wall had these inadvertent consequences for a significant part of the township – where does the accountability lie for that? Wherever the error was made – if you are saying the error was not made at Melbourne Water, where was the error made?

Craig DIXON: So again, I think we have got a couple of things in there – if that is okay, with all due respect. In terms of the flood wall, as we have stated: the flood wall, as per our modelling at the moment, did not have an adverse impact on the Maribyrnong township or the neighbouring area. That is both based on what our modelling predicted, and it is also based on what the observations were from the flood event and how they compare to the models. So that is the flood wall. Rivervue: as we have said, Rivervue appears to be a very unusual case, and clearly the flood plain behaved differently than what was expected.

Samantha RATNAM: My understanding is: ultimately you were the planning authority, but you all had a really important referral authority responsibility, and from the evidence we have heard, people really relied on that expertise and the approvals you all therefore gave for their subsequent decision-making. So it is very interdependent. I am just going to move on to another question. You mentioned the 2014 overland flow drainage model that was updated, which then gave rise to the 2015 C151, the LSIO change. How is that initiated? Is that an automatic process, and in 2014 did people go, 'Right, we have to do this because it has been four or five years'? Who instigated that process?

Craig DIXON: I will take that. So again that is Melbourne Water. Whenever we have an updated model, just as we did at that time for the overland flow and drainage model, it would be normal process for us to reconsider how the model predicts the flood plain will behave, and if we see differences in terms of the overlays that currently exist, then that would be normal process for us to initiate that. And indeed, as you would appreciate, it would probably be wrong for us to leave overlays in place or not in place that do not reflect the latest information.

Samantha RATNAM: Yes, if you had the new model.

Craig DIXON: Exactly.

Samantha RATNAM: So it was an internal process that triggered that. We have had some different evidence around this, so I am seeking your views if there are records available, because this is probably prior to your time: did Tigcorp, or the prior owners of the Rivervue site, Retirement Services Australia, or Metricon, approach Melbourne Water seeking a change to the LSIO that subsequently led to C151 – but I also know there are 2011 changes – and if so, how many times? How does Melbourne Water manage the propriety of these types of representations when you are balancing significant private interests versus public outcomes?

Craig DIXON: I think I will take that, and I think there are two parts to the question if I listened correctly. So the first is: did Tigcorp approach Melbourne Water? No, they did not. We do not have any record of that. So all the records we have – that was not any influence in terms of the submission we gave to Moonee Valley council. As I stated earlier on, we do understand that Tigcorp did go to Moonee Valley council when they gazetted C151 with an objection. Moonee Valley Council passed that on to us. So that is the interaction in that regard.

The CHAIR: And I am sorry, but your time has expired.

Samantha RATNAM: Yes. Thank you.

The CHAIR: Ms Lovell with a question, please.

Wendy LOVELL: Thanks. Mr Woodland, in answer to the Chair's question regarding the difference of opinion between yourself and Mr Crapper, you offered to provide the technical detail. I wondered if you could provide that to us in writing.

John WOODLAND: Yes, we can absolutely do that.

Wendy LOVELL: That would be good. And I would also be interested in your views on section 2.3 of Mr Crapper's submission, on the RORB modelling.

Nerina DI LORENZO: Yes. We will take that on notice –

John WOODLAND: We will take it on notice.

Nerina DI LORENZO: and we will come back with what we can do.

Wendy LOVELL: Terrific. Thank you. The 1986 *Maribyrnong River Flood Mitigation Study* recommended, if the area was to be protected, the building of a retarding basin at Arundel that has never happened. Can you give us the reasons why that retarding basin has never been built and whether you will now consider it going forward?

Nerina DI LORENZO: I will open if that is okay and then hand to my colleague who has got some more detail about it. But we initiated several months ago a scoping study, early study, to have a look at all of the previous options that were considered. The scoping study looked at Arundel – and again, just at a high level first-up – prior to the detailed modelling landing in April. And what the advice of the scoping study – and we are happy to share that so you have got that – basically says is that the issues that meant Arundel did not stack up at the time are still issues. So there are issues around its impact from an environmental perspective – you know, the Organ Pipes National Park – and its impact in relation to community and compulsory acquisition of properties and those sorts of things. Our current scoping study says they are still in place, and they were the issues at the time. And I might just hand to my colleague with a bit more detail on that.

Tim WOOD: Yes. We have revisited those mitigation options a couple of times since the 1986 report, on an ongoing basis, including the most recent one following learnings from obviously the 2022 event. Arundel basin is a significant project and would provide some great advantage around, obviously, flood mitigation. But there are a lot of other factors – some significant factors particularly around environmental impact and particularly around cultural heritage impact. To give you an idea of the type of project that it is, it is a 37-metre-high wall covering the whole Maribyrnong River. It would require a 60-metre spillway to protect the dam. The backing up of the water as a result of that basin filling would actually go something like 9.5 kilometres up the Deep Creek and up to 10.5 kilometres up the Jackson Creek, so it is quite a significant project that would have a number of impacts.

That is not to say that there is not benefit in the mitigation, but we need to balance all that out. There needs to be multicriteria analysis around that. So there are working assumptions. As we get more information, we continually review those assumptions, as we have just done recently.

Wendy LOVELL: Terrific. Thank you. Your advice on C151, which led to the removal of the LSIO, has now left residents at Rivervue with severely devalued properties or perhaps properties that they cannot even sell. And I just wondered what Melbourne Water is doing to protect those 47 dwellings in the longer term, what plans you have.

Nerina DI LORENZO: I will open. I met with Rivervue residents in August to share what we had learned, even prior to the report coming out. So as we learned from our review of past records, I went and met with the residents there to show that and talk to them about that. We have embarked on a site-specific flood risk management plan. We have sent our engineers in through with Mr Woodland and are looking site-specifically about what can happen to help manage flood risk there. It includes things like – one of the Pagone recommendations considers one-way valves and all of those sorts of things. We will leave no stone unturned. We will be working that through. That is currently happening at the moment. It will take a little while to complete, but we are absolutely in contact with those residents and recognise that there is something that has happened here, and we are working with them on managing flood risk on their site.

Wendy LOVELL: So you are going to invest in some sort of mitigation strategy to protect those properties?

Nerina DI LORENZO: Well, that is what we are working through now. It is difficult to say. As I said before, we often talk about infrastructure. Anything that is infrastructure related has real challenges, so we are always just really careful about recognising that all things need to be considered carefully. Through Mr Woodland's work and through the work of the engineers that we have sent in, we are looking at all the different ways you can manage risk, knowing that there are lots of different levers, and that is currently in place. Or that is the work that is happening now.

Wendy LOVELL: What are your views on the pondage that they refer to as 'retarding basins', which as far as I can see are not retarding basins, they are just management of stormwater.

Nerina DI LORENZO: Yes.

Wendy LOVELL: They referred to them something like 10 times as 'constructed retarding basins' in their submission.

Nerina DI LORENZO: You can answer that, Craig.

Craig DIXON: I will take that. Again, I think we just have to continue to open with the acknowledgement that things behaved differently than what we probably expected. Certainly at the time that the planning application was made and our assessment of it, based on the modelling that we had available and based on the best available information and understanding of the flood plain we had at the time, the retarding basins were built there, but additionally there were extensive earthworks on the site. They were all part of the conditions that formed basically our non-objection to the planning permit application. The net effect of all of those – again, based on the best information we had at the time – was that it would provide the appropriate level of protection. That stands to be reconsidered. The long-term model was updated in April. But clearly, as we said, again, we can see that 47 residences and a community centre were impacted, which was not expected, so there is a discrepancy.

Wendy LOVELL: To be retarding basins they should empty. They are pondage – there is water in them. They are complaining now about carp breeding in them.

Craig DIXON: Yes. We will probably have to take that on notice. I am not as familiar specifically with how it is operating today.

Wendy LOVELL: Okay. I was also just interested in: you are in a very unique position that you are both the water authority and the CMA. In my home town of Shepparton, we have two different water authorities, one managing storages and rural water delivery and one managing town water delivery and also a CMA

managing the waterways. So I was just wondering your views on whether it is really appropriate that Melbourne Water fill both roles.

Nerina DI LORENZO: I think I would speak generally. It needs a bit more time to consider that more deeply, but any model will have advantages and disadvantages. I would have to think a bit more deeply to respond to that, but one of the things we do know as the water authority that also looks after flood plains is it does afford us an opportunity to consider water in a much more integrated way – for example, things like integrated water management and how we might capture urban water and use that for other purposes to offset potable water supply. They are the sorts of things that we are in a position to be able to do as a result of having those responsibilities. That is something that we focus pretty hard on. I would probably need to think a little bit further in terms of cataloguing an ultimate view about that, but any model is going to have upsides and it is going to have things to manage.

The CHAIR: All right, thank you. Time has expired, Ms Lovell. Ms Tyrrell with a question.

Rikkie-Lee TYRRELL: Thank you. You were talking before about how there was a 24-hour rating system on the water gauges that help you predict – or at least warn of the flood levels and whatnot. I just want to go a bit more in-depth on that. How often is a person reporting back or assessing those readings?

John WOODLAND: Okay. We have a comprehensive SCADA system. Basically, what that does is it picks up signals from gauges and takes them to a central location so we can see what is happening in real time. For the Maribyrnong catchment, we have 10 river gauges which are live, feeding real-time information into that system, and we have another eight rainfall gauges. So we have very good intel. We also are able to set specific alarms when certain thresholds are crossed so we can react in real time. As I was mentioning earlier, we actually have people who can watch what the rivers do in real time because our gauging is actually very sophisticated and very comprehensive. We certainly have a world-class system in that sense. So we have got very good insights into what is happening in real time, 24/7.

Rikkie-Lee TYRRELL: Okay. So how many people were watching those and reporting back? How many specifically over the flood event?

John WOODLAND: We had what we call an all-hazards incident for the organisation, so we had many people doing many roles. But if I just go to the point that you made about the function around monitoring rivers and flood warnings and modellings, we run a 24/7 roster. For that event we had six people on that roster at any given time. We had two flood modellers dedicated to just the flood modelling, and then we also had an observer who was available to watch those alarms and pick up anything that was going on to feed that in. So they were essentially the resources that we had on for that event, notwithstanding we had a whole range of other resources supporting our response to the flood event given that we were also focusing on sewerage operations, water supply, the way the drainage system was operating and a whole range of other services that Melbourne Water supplies.

Rikkie-Lee TYRRELL: So during the event you had people on the ground consistently reporting back any changes.

John WOODLAND: Absolutely, yes.

Rikkie-Lee TYRRELL: Okay. Thank you for that. Now, just so I can gauge the relationship between the two parties – Melbourne Water and Ron and Geoff – when they left Melbourne Water, did they retire or were they terminated?

John WOODLAND: Look, that was 20 years ago. I cannot honestly speak on behalf of Ron because I actually do not know Ron. I do know Geoff, and I worked with him for a short period of time. He was in my team. My understanding at the time was that there were changes made; he chose not to be a part of those changes. I do not know his reasoning, to be honest about that. I have never spoken to him about his reasoning, so unfortunately I cannot answer. That was more than two decades ago.

Rikkie-Lee TYRRELL: Does anybody else know? No. All right. They mentioned that the Arundel retarding basin – I hope I have pronounced that right – is a viable solution in a future flood event. What is your opinion on that?

Nerina DI LORENZO: Just in relation to the scoping study that we have done – and that landed not very long ago – it concludes that the issues it had at the time, which were really around its broader impacts, its community impacts, its environmental impacts and that issue of cost benefit, are still a problem today. So at the moment it is currently sitting there as an option that does not look like it is going to stack up. We will complete our April work. The April work is then what sends us back to 'Okay, let's have another look now with this fresh information. Is there something different here?' And my colleague can talk a little bit further about the Arundel retarding basin if you would like more detail.

Rikkie-Lee TYRRELL: Okay. Thank you. The previous gentlemen were not sure of how much it would cost. Do you have a better idea?

Nerina DI LORENZO: Yes.

Tim WOOD: We have got a high-level view of that based on similar projects that we have been involved in but also I guess other like projects throughout Australia. At a high-level view it is something in the order of $200 million for that type of project today.

Melina BATH: Small change.

Rikkie-Lee TYRRELL: That is a huge change to what it was previously.

A member: Twenty years ago.

Rikkie-Lee TYRRELL: Yes.

Nerina DI LORENZO: A lot has changed in 20 years, and this estimate is based on contemporary data from what is happening around the country on similar projects. So it is not offered lightly. It is not a speculation, but it is an estimate, and that is the point I was making before. We have done a very early scoping study. We would call that 'early days'. It is high level, but it gives you an indication, and they are the best benchmarks we have got at the moment.

Rikkie-Lee TYRRELL: And is there any infrastructure that you see could help in the future for Melbourne Water to do their job more efficiently?

Tim WOOD: Well, that same report highlighted a number of other options, not necessarily to the extent of mitigation of the Arundel dam, but there are things like levees. There are some smaller retarding basins. There were even options looking at I guess deepening the river or widening the river in certain places. One of those options – well, the most likely option – is a levee-type system, but once again, to give you an extent of what that would look like, it could be 4 metres high and 1.7 kilometres long, and you can imagine the impact that would have on a recreational and amenity perspective within that environment, not to mention even, once again, the cultural heritage values that could potentially be impacted. So look, it is an option, and once again we are managing I guess the high-level assumptions around that. As we get new information we will continue to test those options.

Nerina DI LORENZO: And we will provide the scoping report to you, so you will know what we know.

Rikkie-Lee TYRRELL: Okay. Thank you very much. Righto. Chair, may I please cede my time to Ms Bath?

The CHAIR: Yes. Go, Ms Bath.

Melina BATH: Hello. Thank you.

The CHAIR: You have got 1 minute and 50 seconds.

Melina BATH: What have I got?

The CHAIR: One minute 50 seconds.

Melina BATH: Okay, that is very good.

The CHAIR: Get your skates on.

Melina BATH: I may only take a minute. Thanks, Chair. We know that the *Emergency Management Act 2013* sets up regional emergency management committees. The north-west metro is in your catchment, we will say – and I will just leave that word for a moment – and the government guidelines for stakeholders put CMAs in there, so in regional Victoria there are CMAs in those REMPCs. Now, we have heard from Maribyrnong City Council. They are saying that they would really like Melbourne Water to be in the REMPC. I am interested if you are favourable to that, or is that something that you have avoided and will run away from, noting that, as Wendy said, you are both the regulator and the CMA? Can you give us some feedback on the wish list of Maribyrnong City Council's submission?

John WOODLAND: In terms of our connection to emergency management, there is a clear connection through a range of means. We are certainly open to being a part of any forum or committee that can add value.

Melina BATH: Sure. Has it just been left off, do you think? Or was there an opposition initially?

John WOODLAND: I do not believe there was an opposition; I am not aware of that. What I would imagine is there are many ways that we connect in with council's emergency services in a whole range of different ways. For example, we work very closely with the SES and the council and support the updates to the municipal emergency response plan. Our information feeds into that and certainly the storm and flood sub-plan, and then the storm and flood guide that informs the community. So we are well involved –

The CHAIR: I am sorry, your time has now expired.

John WOODLAND: so if this adds further value, we certainly have to look at it.

The CHAIR: Thank you, Mr Woodland.

Melina BATH: Fabulous, Thank you.

The CHAIR: Mrs Broad, a question, thank you.

Gaelle BROAD: Thank you very much for appearing today. I know it is a very complex topic and I appreciate there is a lot to consider in the work that you do, so thank you very much. It has been interesting, and you have addressed a number of questions that I have already had. You have talked about world standards and best practice. We met with residents yesterday that literally opened their back doors to water – no warning, 500 places flooded. So with the modelling, I guess you have talked about it being reviewed, but when will that be made available? And the assurances to people that are living there of getting that – early warnings are so important.

Nerina DI LORENZO: Can I just say something beforehand, and I will do this quickly. When we talk about the major model update that is coming in April, that is to the model used for informing planning decisions. The model that is about forecasting is updated pretty dynamically in real time. So that is already –

Gaelle BROAD: So you are saying that that is the best standard we have now, and that will continue?

John WOODLAND: I can add to that. For flood warnings and the function that Melbourne Water currently does, which is the modelling and the forecasting, we then give those to the bureau, who disseminates that, and also to the SES. We are in the process of transferring the modelling and forecasting function to the Bureau of Meteorology. We have an implementation group working on that and we are working very hard on an implementation plan to make that happen. I mentioned earlier that there is a next-generation evolution in flood modelling, which is continuous, probabilistic modelling. It is quite technical, but what that means is you get real-time 24/7 modelling. We are very hopeful in our discussions with the bureau that once we hand our models over to them, those will form a part of their broader program which they are doing more broadly.

Gaelle BROAD: Do you have a time frame for that?

John WOODLAND: Unfortunately, I cannot speak on behalf of the Bureau of Meteorology, but I can assure you we are working very hard. It is quite technical and quite detailed, and we are working rapidly

through an implementation plan. Once we understand exactly what we need to do, that will then inform the time line. At this stage, unfortunately, I cannot give a definitive time line.

Gaelle BROAD: This committee runs for some time, so if you can update us on the time frame as soon as you know, that would be really helpful. And happy for you to take it on notice, but Wendy mentioned you are providing a response to Geoff Crapper's submissions. He talked about some correspondence that he had sent; he has shared some emails. Are you able to on notice provide a response to that from Melbourne Water?

John WOODLAND: Certainly. Geoff has sent two emails to me, and both times I have responded to him saying 'thank you'. I will respond to him if I need to or catch up with him. But what I have noticed is the information that he has given me is similar to what he has put in his submission. I was relying on the fact that we had an independent review. I have spoken publicly about the rating tables and put that on the record, and I am hoping that is enough to put that to bed. But certainly we can come back with further information around the technical analysis from our end as to why what Geoff has put together just does not add up. We can do that.

Gaelle BROAD: If you can share some insights into that, that would be great.

John WOODLAND: Absolutely.

Gaelle BROAD: Now, I understand that the SES are the body that kind of communicates – you are giving them the information, and they communicate it to the public.

John WOODLAND: Yes.

Gaelle BROAD: But they downgraded the warning the night before the flooding. Was that based on information that Melbourne Water provided?

John WOODLAND: I think there is a bit of confusion there. I think what might be referred to are the warnings that went out for the upper and lower catchments. As I mentioned, we put out a flood watch for the Maribyrnong catchment on 11 October. On the 13th, in the morning. we put out the first major flood warning, which was for the upper catchment, and then proceeded to maintain a major flood warning right through. Then in the lower catchment of the Maribyrnong we had a moderate – we sent two of those out every 6 hours. That was the one that was upgraded subsequently to major, I think, just after 2 am on the 14th. So both catchments were under major flood warnings. I think there has been a bit of confusion around the upper and lower – I think people are getting that confused. That is my view.

Gaelle BROAD: Okay. So maybe the public took it as 'Rest easy', but it was not.

John WOODLAND: They could have, yes. I do not know how the public took it, but there is a chance that people can read things differently, for sure, yes.

Gaelle BROAD: Thank you. Just, also, recommendations – Geoff talked about how 10 or 15 of the recommendations were things that they used to do on a daily basis at Melbourne Water. Would you be happy to provide a response on notice to those?

John WOODLAND: If that adds value, we are more than happy to do that, yes.

Gaelle BROAD: Thank you very much. Have you been invited to participate in a review by Emergency Management Victoria? You have got a very key role in delivering information to a huge population. Has there been any review after that you have participated in?

Nerina DI LORENZO: Not to my knowledge. But I think separately we initiated some work with the councils and also with a range of other agencies, including SES, Red Cross and others. We met at the most senior level, including the CEOs who gave evidence today, and we have basically undertaken two forums with that group. They were really focused on the work we are doing in this space and looking to work out how we might continue improving in the things we do together.

Gaelle BROAD: Okay. So you initiated that, but not –

Nerina DI LORENZO: I cannot comment more broadly, but I know what we have done. We have initiated that review and that discussion, and really what was very useful about that was specifically focusing on how we communicate with the community, what voices are used to do that and how we strengthen each other's capacity to do it so we get clearer information and so it is clearer for people, because that was the biggest piece of feedback and that was why we initiated that discussion. It was really on the functions that we are part of. We initiated that, we held two forums and we have got a number of issues that came from that that we will work on together. We think they will be good improvements, particularly to communication.

Gaelle BROAD: I am interested too – John Thwaites has been the chair of Melbourne Water, and I think it is just recently that that has changed. But because he has had that position of being Deputy Premier and Minister for Water, do you think there should be a separation in those roles because of the significant role Melbourne Water has and the very close alignment to planning decisions? Should former politicians be appointed to something like that? What are your views?

Nerina DI LORENZO: I cannot really offer views on that type of thing. That seems much broader than something I can comment on. I do want to say that Mr Thwaites recused himself from these matters when the flood happened; he declared that and recused himself. That is basically what I know of the matter, and I could not comment more broadly, I think.

Gaelle BROAD: I am just looking at recommendations that we can make moving forward. It seems to be a very close relationship – and perhaps that is recognised by that action. So I appreciate that. I do not have any further questions.

The CHAIR: All right. We have got 18 seconds to go, so it is probably a good time to pull up. Thank you all very much for coming in and being so candid and providing very detailed evidence to us. We really appreciate it. It has been very insightful. Thank you.

Committee adjourned.