

TRANSCRIPT

LEGISLATIVE COUNCIL ENVIRONMENT AND PLANNING COMMITTEE

Inquiry into the 2022 Flood Event in Victoria

Melbourne – Wednesday 25 October 2023

MEMBERS

Sonja Terpstra – Chair

David Ettershank – Deputy Chair

Ryan Batchelor

Melina Bath

Gaelle Broad

Wendy Lovell

Samantha Ratnam

Rikkie-Lee Tyrrell

Sheena Watt

PARTICIPATING MEMBERS

John Berger

Ann-Marie Hermans

Joe McCracken

Evan Mulholland

Rachel Payne

WITNESSES

Brad Drust, Chief Executive Officer,

Rohan Hogan, Executive Manager, Strategy and Partnerships, and

Camille White, Floodplain Manager, North Central Catchment Management Authority; and

Chris Cumming, Chief Executive Officer,

Guy Tierney, Statutory Planning and Floodplain Manager, and

Joel Leister, Manager, Flood Plain Implementation, Goulburn Broken Catchment Management Authority.

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 provide 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 people, 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 please be respectful of proceedings and to please remain silent at all times.

For those of you who are giving evidence to us 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 committee members will then 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 North-Eastern Metropolitan Region.

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

Melina BATH: Good afternoon. Melina Bath, Eastern Victoria.

David ETTERS HANK: Hi. David Ettershank. Western Metro.

Ryan BATCHELOR: Ryan Batchelor, Southern Metropolitan.

Wendy LOVELL: Wendy Lovell, Member for Northern Victoria Region.

Samantha RATNAM: Afternoon. Samantha Ratnam, Northern Metropolitan Region.

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

The CHAIR: Thank you all for those introductions. Now I am going to hand over to all of you on the panel. I understand each of you catchment management authorities have 10 minutes for your opening remarks. Could I also just get you, when you begin your opening remarks, to please state your name and the organisation you are representing for the Hansard record. I will be keeping an eye on the time, so when your 10 minutes expires, I will let you know. On my list I first have North Central CMA, so if I could hand over to you first for your opening remarks. Thank you.

Brad DRUST: Thank you, Chair. Brad Drust, CEO with the North Central Catchment Management Authority. Thank you for the opportunity to present to the Legislative Council's Environment and Planning Committee as part of your Inquiry into the 2022 Flood Event in Victoria today. As I said, my name is Brad Drust, and I am the Chief Executive Officer of the North Central Catchment Management Authority. I am joined by Rohan Hogan, who is our Executive Manager for Strategy and Partnerships, and Camille White, who is our Flood Plain Manager. I have been employed at the North Central CMA for 20 years, holding the position of CEO since 2015. Rohan has worked in senior roles in natural resource management for more than 20 years and has oversight of our flood plain management functions as well as being our flood response manager for much of 2022 flood event. Camille has worked in government-sector flood plain management roles since 1996 and has held the position of Flood Plain Manager at the North Central CMA since 2007.

The North Central CMA is the lead natural resource management agency in north-central Victoria, and our region covers 13 per cent of the state and specifically includes the Campaspe, the Loddon, the Avoca and the Murray river systems, which are within the terms of reference for this inquiry. The north-central region includes the traditional lands of the Dja Dja Wurrung, Barapa Barapa, Wemba Wemba, Yorta Yorta, Taungurung, Wadi Wadi and Wergaia, represented by the Barengi Gadjin Land Council, and I would like to acknowledge these traditional owners as well as the Wurundjeri people, on whose land we are meeting today. I pay my respects to elders past, present and emerging.

For some context, during the 2022 October flood event approximately 25 per cent of the north-central regional was inundated by flooding. All river systems within the region experienced major flooding, with the Campaspe River experiencing its highest flood on record and our other major river systems experiencing approximately their third-highest flood on record.

I would like to recognise the impact of this major flood on our regional community; township residents whose homes were flooded and who have had to navigate through complex rebuild processes; farmers whose crops, livestock and farm assets were damaged; or traditional owners who were excluded from their country and whose cultural heritage may have been impacted. I recognise that recovery from floods has a long tail, and I recognise that this process is ongoing for many.

To the North Central CMA, the North Central CMA was established as a statutory authority in 1997 and performs a wide range of natural resource management roles. Our role in relation to flood plain management is outlined by the *Water Act 1989* and the associated statement of obligations issued by the Minister for Water and framed by the *Victorian Floodplain Management Strategy* of 2016. Essentially our role comprises four key parts. The first part is a strategic role through which we develop a regional flood plain management strategy and coordinate its implementation with a range of regional partners; the second part is a referral role, where we provide advice about developments on flood plains to councils and advice on other technical matters; the third element of our role is an emergency management role through which we provide technical support to the incident control centre and structures established during active flooding; and the last part is a flood recovery role, where we lead programs that assist the recovery of the region's natural resources following floods where there is public benefit and subject to government funding.

I will talk briefly about examples of our work relevant to these roles. As I mentioned, the North Central CMA led the development of a regional flood plain management strategy for our region, which was finalised in 2018 following the Victorian strategy of 2016. Guided by a high-level steering committee, we undertook extensive community consultation and worked in partnership with the 14 councils in our region and other agencies to identify priority actions to reduce flood risk across the region. A mid-term, or five-year, review of this strategy has recently been completed and confirms that around half of its priority actions are complete or in progress. Close to \$7 million of investment directly linked to the work plan actions has been secured in the region, with some highlights being: since the flood events of 2010–11 there have been 30 flood studies and management plans undertaken in the north-central region of Victoria, improving flood intelligence and planning for over 50 townships; planning scheme amendments to include an understanding of flood risks from these studies and plans in town developments have been completed for 10 townships; and significant investment has been secured for flood-mitigation infrastructure design and construction, with works undertaken or underway in nine communities to physically reduce the impact of flooding. Two key examples include Donald and Quambatook – two townships that would have otherwise been inundated in the recent 2022 flood event if the mitigation works had not been completed.

The October 2022 flood event provided a timely opportunity for us to work with local councils and other regional partners to assess whether the remaining actions in that strategy were still a priority and whether there were any new actions that needed to be added. The result is that we have an amended work plan, and the next five years of implementation will be guided by 141 prioritised actions, of which 73 are high priority based on risk and urgency.

In times prior to a flood event, the North Central CMA provides development and flood advice to local government, developers and the community to raise awareness of potential flood risk and ensure that new development is built to minimise the impact of future flooding. We responded to more than 800 referrals last financial year. The North Central CMA also provides technical support to local government in undertaking flood studies and mitigation plans, and we support the development and review of municipal flood emergency plans.

During flood events the North Central CMA plays a support role to the lead response agency, VICSES. For example, during the October 2022 flood event, North Central CMA supported the response effort with a number of our staff being deployed as flood analysts and liaison officers within the incident control structures and centres at Bendigo, Swan Hill and Mildura, and we deployed our staff to collect flood intelligence in the field.

Lastly, following a flood we support recovery of the region; however, our key role focuses on the recovery of the region's natural resources that are impacted by flooding. We assess damage to those resources and the work that we have done over many years to protect them, and subject to available funding we deliver recovery programs to repair the damage. For example, we may replace fencing along rivers or repair river erosion threatening a public asset.

In my opening statement I also wanted to take the opportunity to note the things that the North Central CMA does not do in relation to flood and flood plain management. In particular I would like to note that we do not, as a largely project-funded statutory authority, allocate funding for priorities in the regional flood plain management strategy. Those decisions are made by governments and departments through grant processes. We do not manage water specifically for flood mitigation during a flood, and while we play a role in the management of water for the environment and consider flood risk where and when this water is used during a flood, we do not have a role in managing the flow of water beyond ceasing environmental water deliveries. We do not lead incident control centres. That role is performed by the incident controller, and our role, as I mentioned earlier, is to support their decision-making in line with our flood analyst role. We do not make determining or final decisions about flood plain developments. That role is currently performed by councils, who consider but are not obliged to adopt our recommendations. Lastly, we do not undertake flood mitigation works in township areas. In line with the 2016 *Victorian Floodplain Management Strategy*, that role is performed by council.

Obviously it is important that we reflect on this flood and identify the things that could be done better to ensure that our community is better prepared to respond to future flooding. I will align our view on these things with the terms of reference for your inquiry. Firstly, in relation to terms of reference item (4), the implementation of the *Victorian Floodplain Management Strategy*, we recommend that planning scheme amendments to incorporate the latest knowledge about flood risk into flood-related overlays are introduced as a priority through timely and efficient processes. In relation to terms of reference item (5) around engineered structures such as flood walls and rural levees, we recommend that the levee flood readiness and response project be delivered as a priority and this opportunity be used to increase clarity regarding level of service that can be expected from levees and the arrangements, if any, for management. Of note, we have recently received funding from the state government to work with local government and communities to progress this important work. Lastly, in relation to terms of reference item (8) around the implications of climate change, we recommend that all flood studies which are the basis for understanding flood risk consider extreme events and climate change scenarios and specifically include modelled flood scenarios up to the probable maximum flood. Perhaps most importantly, we also recommend that work be completed to bring all existing studies up to this standard. That concludes my opening statement.

The CHAIR: Great. Thanks very much for those opening remarks. Perhaps we might now go to Goulburn Broken CMA. Thank you.

Chris CUMMING: Thank you for the opportunity to talk to this inquiry today. I am Chris Cumming, the CEO of the Goulburn Broken Catchment Management Authority. I start by acknowledging the Wurundjeri people, the traditional owners of the land we are on today, and paying my respects to their elders past and present.

The CMA is a statutory authority which has been delegated flood plain management functions under the *Water Act*. I have with me today Guy Tierney, our Statutory Planning and Flood Plain Manager, and Joel Leister, our Manager, Flood Plain Implementation. Our region stretches from the outskirts of Melbourne in the south to the Murray River in the north. The catchment includes Lake Eildon, our major water storage, and seven municipalities – Benalla, Shepparton, Campaspe, Mansfield, Mitchell, Moira and Strathbogie – and includes the lands of the Yorta Yorta and Taungurung people. I acknowledge the significant impact of the 2022 spring floods on our communities, on our agricultural landscapes and on our environment. Having attended a number of the parliamentary inquiry hearings, as well as many community meetings during and after the floods, it is clear the impacts are large and ongoing for our traditional owners and our rural and urban communities, particularly but not limited to the towns in our CMA area of Seymour, Murchison, Barmah, Mooroopna and Shepparton.

My comments are particularly relevant to terms of reference (4), (5) and (6). The 2016 *Victorian Floodplain Management Strategy* built off the technical work of the 1998 strategy and recognised the need for regional strategies to be developed with consistent statewide guidelines. The ultimate aim of the Goulburn Broken regional strategy is to help better plan for floods through strategic and statutory land use planning for new development and to manage legacy flood-affected areas through structural mitigation, total flood warning systems and emergency management. Flood intelligence information sharing is an important focus of the regional strategy to assist community and agencies to support flood resilience. The flood study process is a fundamental piece of this work, led by local government and supported by the CMA to meet the priorities of the regional strategy.

Flood intelligence models and mapping products are the end result of this work. They provide insight into understanding the flood hazard and associated consequences for a suite of flood magnitudes. The flood study process includes hydrologic modelling, so rainfall and run-off, and hydraulic modelling – how water then interacts on the flood plain – to produce flood models and maps. The flood models are developed and tested against historical flood data such as recorded peak flood heights, aerial flood photography, discharge records at gauging stations and local community knowledge. Flood studies are advertised through media, and there are many opportunities for community input, including multiple community meetings, paper surveys through letter drops and online surveys. In our region we have comprehensive coverage for most of our urban centres and are constantly adding new and renewed studies. Flood studies inform municipal flood emergency management plans and local flood guides, with flood data uploaded to the statewide flood zone platform to allow interoperability between emergency agencies. In our area emergency plans contain good flood intelligence and are continuously renewed following major floods and completion of flood studies.

Through planning scheme amendments, flood studies inform flood zone and overlay controls to ensure development does not unduly add to legacy problems – that is, not making things worse. The planning scheme amendment process can be challenging to implement. In our catchment there are 10 studies awaiting planning scheme amendments. Flood studies are the basis to prepare flood plain management plans, including structural mitigation measures such as levee schemes in Euroa, Cobram, Nathalia and Numurkah, and those not implemented, such as Violet Town and Seymour.

Flood studies provide important flood intelligence as part of the total flood warning systems in terms of local flood guides, regional fact sheets and the public-facing Goulburn Broken community flood intelligence portal. Where possible, flood intelligence and mapping is connected to river gauges. The Goulburn Broken catchment is generally well served, with good coverage of rain and gauge networks to assist with the development of flood warning services by the bureau. I note that the bureau's flood prediction services are built from rainfall and run-off models developed and calibrated on historical flood events.

The CMA has a flood response action plan that sets out how we will assist VICSES in an emergency and what flood data is to be captured, such as peak flood heights, discharge measurements and aerial flood photography. A roster of four CMA flood analysts supported VICSES at the Shepparton incident control centre for some 10 weeks, with additional support staff also provided. They use flood warning information and current

knowledge of what is happening in the landscape and linked this to flood studies and modelling to predict floodwater behaviour. This work supported the decisions of various agencies in the ICC and provided the incident controller, the planning, intelligence, mapping and media teams with flood intelligence.

During the flood event we worked to make flood data meaningful and available through the flood portal for the community to use. The portal provides flood information such as flood coverages, floor depths and floor levels to identify land and property exposure at various gauge heights. This use during an emergency event was a first for us. The concentrated demand on the portal exceeded our expectations. The portal's bandwidth was temporarily overwhelmed following a community information session at Shepparton and was offline twice, for 2 and then 4 hours, and there were intermittent issues over a few days. Multiple improvements were quickly implemented, and we also rapidly developed a second community information option, producing online web maps with predicted flood extent and depth information. These were provided to key partners and published on the authority's public website. The two options created a step change in information provision within the ICC and community during a flood event, and feedback was very positive. The portal has now been updated, with improvements in speed and functionality, in collaboration with the six local government partners. In October 2022 the portal was viewed 21,420 times, with 5800 reports downloaded and the maps viewed 9300 times.

During the flood the CMA also assisted the SES and local government at public information sessions. A flood analyst worked in the ICC over 12-hour shifts and attended community meetings in the evening to share current knowledge. We also attended seven pre-flood presentations, have provided 10 post-flood presentations to groups and stakeholders and continue to attend public meetings with flood-impacted communities.

Within the Goulburn Broken catchment there are four urban levee schemes managed by local government. There is one managed rural levee scheme, Loch Garry, and around 500 kilometres of unmanaged rural levees. Some 46 rural levee breaches were recorded. Rural levees would be expected to fail or overtop with a flood of this magnitude. The failure of levees impacts the time it takes water to move through the system. In terms of flood intelligence, pre-flood mapping is carried out, including for a range of levee breach scenarios. During the event live information, including verbal reports and aerial observations on levee breaches, was collected to support the flood analyst role.

Our observations from the flood event are that the *Victorian Floodplain Management Strategy* is working. While legacy areas were badly impacted by the 2022 flood, new growth corridors operated as designed, including for a one-in-100 flood event, with allowance for climate change built in since the early 2010s and additional freeboard requirements for buildings. Information sharing is occurring and improving, and community are engaged in planning and flood studies. Structural flood mitigation is explored and implemented if viable and supported by community. New information is continuously incorporated and flood models are being recalibrated based on the data collected from this flood event. In addition to our existing 11 current flood studies, a multitude of new projects have been initiated in our catchment, and we are also involved in nine after-action reviews and operating rule reviews for Loch Garry and Lake Eildon.

Our action investment plan for implementation of the flood plain management strategy was updated in mid-2023. The Victoria planning provisions have served flood plan management well since 1998, given the array of tools available, such as flood plain policy, flood zone and overlay controls, schedules and local flood plain development plans. This is a significant improvement compared to earlier planning schemes that had no or little flood plain management considerations. Thank you for your time, Chair. This concludes my remarks.

The CHAIR: Great. Thanks so much for those opening remarks. Now we will hand over to questions from members. I have got to say, thank you for those opening remarks. I found them to be really comprehensive, so I actually do not have any questions at this time. So I will pass, and I will go to Mr Ettershank with a question, please.

David ETTERS HANK: Thank you, Chair. I am also going to actually, if I may, reserve my right to come back later. I think our colleagues from Northern Victoria probably would be best to lead this charge.

The CHAIR: Yes, no worries. All right. Ms Lovell, with a question please.

Wendy LOVELL: Okay. I am going to start with the Goulburn Broken catchment, and I am going to ask about the flood levels at Shepparton. The official flood levels were 12.06 in 2022 and 12.09 in 1974. Page 21 of the Greater Shepparton emergency plan tells us that the gauge was moved from upstream of Daintons Bridge to

downstream of Daintons in 1986 and that the draughts through Daintons Bridge would lower the level of measurement by about 100 millimetres. That means that the flood level in 2022 was actually higher than the flood in 1974. What I am really interested in is Loch Garry operating, and I know that that is Goulburn–Murray Water, but the 1925 agreement says that at 34 feet, or 10.36 metres, 24 hours later we start pulling the bars. Why was that never adjusted given that we knew of this difference in the level at the Shepparton gauge, which is where that 10.36 metres is measured? In fact we were not acting until under the old gauge it would have been 10.46.

Guy TIERNEY: We have done some reviews following the floods, and we actually confirmed two different gauge sites. We actually know now that the difference between the two gauge sites for large floods, as in 2022, is around about 65 millimetres. But as the flood flows drop – what happens through a bridge structure like Daintons Bridge, we get head losses all through the bridge, so the water levels downstream are slightly lower than they are upstream. But as the floods become less and less and less, or smaller magnitudes, the head losses become reduced, so the amount of head loss for a small flood – 10.36 is only quite a small flood – the differences would probably in the order of around about 25 millimetres. So when you look at the time for a rising limb of a flood height graph, the moving water hitting the gauge quite steep, it is non-discernible what that time difference is. We are probably talking minutes. So in the scale of things, I know what you are saying – ‘Why wasn’t it adjusted?’, but in reality when you are talking about 25 millimetres on a steep rising limb, the time difference is probably very marginal.

Wendy LOVELL: Thanks. Guy, have you been on the committee that has been looking at the operation of Loch Garry?

Guy TIERNEY: Correct.

Wendy LOVELL: Can you tell us what recommendations have come out of that committee for the operations of Loch Garry?

Guy TIERNEY: Yes, they are public. It is quite a simple change. There are two things, quite simple really: when you get a gauge prediction of 11 metres at the Shepparton gauge and it is going to be exceeded at level, then you take the bars out that day, okay?

Wendy LOVELL: Not 24 hours later?

Guy TIERNEY: No, that day. So what it means is those bulk boards are going to be moved out much earlier, once you know you are going to get beyond 11 metres. Now, if you are going to get a prediction which is 11 metres and less, then we revert to the current rules, because we have got a lot more time to manage that system.

Wendy LOVELL: I have lost my train of thought on that one. Has there been any talk of any automation of Loch Garry?

Guy TIERNEY: The review and the repairs of the levees of Loch Garry included money accessed through the DEECA process to do a strategic review of Loch Garry. That process has not started, and I know Goulburn–Murray Water are actually writing the terms of reference for that project as we speak. That will obviously be one of the questions.

Wendy LOVELL: All right, terrific. Lenne Street, Mooroopna, and that area there, which has been a significant issue in a number of floods now – what work has been done to look at that around drainage and improving the outlook for people in that area?

Guy TIERNEY: Drainage management is a matter for the local government to look at, and I know through the sessions we had in Mooroopna that was raised at a local post community meeting, and one of the engineers from Greater Shepparton did outline that they are looking into that. I do not know the details or any more than that.

Wendy LOVELL: Okay. Have you done any work on flood modelling in that area post the floods to assist the council with that?

Guy TIERNEY: Yes. Look, the models are there. We are currently using the models for all sorts of purposes, so they are there to test options for management, if you like. Greater Shepparton are constantly revisiting those models.

Wendy LOVELL: Also, congratulations on the flood portal. It is incredibly accurate. I know from my own property report that it was very accurate for our scenario and our neighbour's scenario, who were not as lucky as I was. I only had water under the house; they had water through their house. But I am just wondering how we can better get that information. I did not know that existed until I went to that public meeting on the Friday night before the flood, and then I spent hours trying to get it to work when it was down. How can we get that information out better to residents? Would it be possible to work with our local government partners to include the property report in a rates notice, or at least include some information on how to access your property report in rates notices, so that everyone is actually aware of that and we are not all trying to access it at once?

Chris CUMMING: I might talk to that for a moment. We have certainly been hearing and listening to a lot of feedback that people really valued the information in the portal but also that a lot of people either were not aware that they could access that information or do not have necessarily the technical skills or computer knowledge to be able to, once they are aware of it, utilise the information. As you indicate, it was developed to help people prepare for floods in advance and to think about their vulnerability either if they are thinking of purchasing a property or if they are planning ahead for their response plan themselves. The portal is fairly new. We have been working with the six local government areas to develop that. We got it to a certain point by the time of the flood. We promoted it through radio, we promoted it through television, and that was not just promoting the portal, that was promoting the looming flood risk. We attended community meetings.

We are reluctant to provide hardcopy information, because it changes all the time. Floods are different all the time, and the vulnerability of any property can change based on different things that happen in the landscape. If a levee is built, for example, then a place is less vulnerable. I do think that we want to keep exploring how we work with the CALD communities and with different community leaders that might help support their communities to understand or access information, particularly in advance. How do we work with council – we were just talking about this the other day – and the SES on the information they provide to communities to have some of those linked to it more clearly? We have updated the portal itself to make it a lot more user-friendly, so that has all been relaunched in the last couple of weeks, and we have developed guides for the use of the portal. But we are definitely, as part of the reviews that we are doing, looking at exactly what you are saying: how we help people to understand what is out there to support them – and the portal is not the only thing – and support them in advance, because often people are not thinking about floods until the water is really close. It is not a very visible thing. It is not as frequent as fires, and it is not very visible in water in the landscape until it is suddenly right there. I have not got all the answers yet, but we are working on it.

Wendy LOVELL: No. Thank you. Levee banks are always contentious. The levees that failed at Loch Garry are obviously government-owned levee banks and have been repaired. But there were families in Bunbartha and Kaarimba that were flooded through the failure of those levee banks, families that were not even in flood zones. And Guy, you and I have had a chat about the Wickham family. You said that they built in an old riverbed, but the reality is that was no longer considered a flood plain. They built where the council say they could build, and they built to the right levels and everything. What can be done to support families in those sorts of situations?

Chris CUMMING: I think the support of families in those situations probably is outside the remit of the role that we have, which is –

Wendy LOVELL: Sorry. I will reframe that: what responsibility do you as flood plain managers have to make sure that people are not caught up in those situations?

Chris CUMMING: Where they have built in old flood plains?

Wendy LOVELL: Yes. Well, the Wickham family – Guy and I were discussing it in the ICC. He said that 130 years ago this was the riverbed, right where they have built, but when they applied for their building permit – or whoever built the house before they moved there – it was not even in the flood zone. It is not in the flood zone now. They are not considered to be a property that is going to flood, yet they had 1.2 metres of water right through their house and sitting there for weeks.

Guy TIERNEY: It is quite interesting. This is the very reason why we want to see planning schemes be expedited in terms of getting information into planning schemes that is transparent. There are a lot of flood plains out there where they simply do not have any overlay controls whatsoever. We are probably seeing developments today going into areas where they probably should not be. In that particular case in the Kaarimba–Bunbartha area, there are no overlay controls within those riverbeds today. We are constantly improving our flood knowledge through new flood studies, and at the time of the mapping for that area that flood information was based on probably 1990s mapping; it has not been updated. My conclusion is there are a lot of flood plains out there which are not in planning schemes at the moment and need to be.

Wendy LOVELL: So is that work being done?

Guy TIERNEY: Well, at the moment we have got 10 planning schemes fully – all the line work is completed in the LSIO flood plain zones, all ready to go, but we cannot get them into the planning schemes.

Wendy LOVELL: Okay. And the existing levees – Guy, you know that in 2016 the levees from Strathmerton through to Barmah were an issue. They are all on Crown land. They are like Swiss cheese – there are rabbit burrows right through them and everything. The responsibility for maintenance of those and for improvement to those, because state government assets benefit from those levees as much as landholders benefit from those levees, so what is your understanding of the responsibilities? Who is responsible for them? Because everyone is saying, ‘Oh, it’s recommended local government should’, and local government is saying, ‘We don’t want to touch them with a barge pole’ because of the cost of it. What is the answer here, and should the state be contributing?

Chris CUMMING: There are multiple issues with the levees, but I might go to Joel, if you would?

Joel LEISTER: Thanks for the question. I know you spoke this morning to DEECA, and Andrew Fennessy I think outlined some of the levee management requirements as outlined in the *Victorian Floodplain Management Strategy*, in particular obviously referring to the multitude of unmanaged Crown land levees, of which the Goulburn Broken CMA has about 500 kilometres, mostly along the lower Goulburn and the Murray River. The policy is clear in terms of who is responsible for that management: it is a beneficiary-pays approach, so the local landowners, if they believe there is a benefit in maintaining those levees, they can apply for a permit through the CMA, where we engage with both the landowner and then the Crown land manager to work out the various conditions required and then issue a permit to enable that landowner who sees the benefit to undertake the maintenance themselves.

Wendy LOVELL: So what is the –

The CHAIR: I am sorry, Ms Lovell, but the clock has beaten you, so we will go to a question now from Mr Batchelor. Thank you.

Ryan BATCHELOR: Thanks, Chair. Mr Tierney, you said that you had a series of flood overlays that were not incorporated into planning schemes. Why is my simple question – what is stopping it? What is the hold-up?

Guy TIERNEY: The process has been caught up in a couple of matters. The preparation of a planning scheme amendment normally goes through a request from council to the planning department. We get an allocated planning scheme number, a C number for local planning schemes, and we work with planning to produce the exhibition maps from a technical viewpoint – get the line work right, so to speak. In parallel what normally happens is then we work with the planning department to work out the consultation time frames and planning scheme hearings and the exhibition process. It is actually stalled at that location. The exhibition process just simply has not got traction because there is a –

Ryan BATCHELOR: Who is responsible for the –

Guy TIERNEY: Local government is responsible in that, to prepare that amendment and move things forward. I think the last amendment we have done was 2016, and some of the –

Ryan BATCHELOR: Sorry, the last amendment that you –

Guy TIERNEY: We had done one in 2016, but –

Ryan BATCHELOR: That was the last one that had gotten through the process?

Guy TIERNEY: Yes, gone through the process properly. We have got 10 dating back to 2013. I think it highlights some of the issues of local government –

Ryan BATCHELOR: Sorry, so local government is just taking too long to get through? I am trying to find out why.

Guy TIERNEY: I do not want to point the blame, but I think that local government has got a lot of –

Ryan BATCHELOR: The purpose of this inquiry is to find out where the blockages are in the system and then unstick them.

Guy TIERNEY: Yes. Can I say I am not pointing the blame, but local government have a lot of turnover in the regions, and they have got so many priorities, it just does not get through the system. I think the other, to be fair, we had been working with the planning department within DEECA, at the time before they transferred into the Department of Transport and Planning, to look at a pilot program called a statewide pilot approach, which would look at the carriage of planning scheme amendments done by the state.

Ryan BATCHELOR: Would you have an expedited process where at a statewide level there can be some sort of fast-tracking to make sure of that? What strikes me from the evidence that we that have had in the past – and Mr Drust, this sort of comes to a comment you made where you basically said you do not make decisions on development, they are decisions made by council, which I think is an accurate assessment of what happens. As the catchment management authority, you do the analysis of the flood plain risk, but ultimately decisions on development occur by council. It strikes me over the course of this inquiry that there is a bit of responsibility allocation interplay – that is probably the polite way of describing finger-pointing – that says it is their decision. Council says ‘We rely on the CMA advice’ and CMA says ‘It is council’s decision’. We need to unpick this a little bit.

Brad DRUST: Happy to offer a comment on that.

Chris CUMMING: Maybe if I wrap up on what Guy was talking to there and then pass to you, Brad, if that is all right. The flood studies which we support council with – so what we are talking about in the case of those waiting for planning scheme amendments there is it has been identified for a flood study to have been done. It is either a new area or it might be a re-do of an existing flood study for a range of reasons. That ends up with a series of potential maps and things related to that. Council then determines whether they want to apply to have that added as a planning scheme amendment. Then there is a process that goes to the department – it was DEECA, but now transport and planning – where they allocate a number to it and set up some processes around how that will operate. Then there is a certain amount of work which includes community consultation, development of products to engage with community on that, all sorts of bits of work that are led by council that need to happen. That is an extensive body of work; it is not just quick and easy. It is quite time-consuming and resource hungry. That has to happen for it then to go back and be put in as a planning scheme amendment.

That is the process where at that time we can see some delays. For the council it is not through lack of wanting, because as Guy said, with the councils in our area, I think it was six or seven councils wanted to do this pilot of how we can do this and get that bit of it – so very comfortable with the flood studies being done locally, the maps and the ordinance arrangements all being prepared locally, but how do we actually then shift this so it is not sitting with local government? We were piloting over a couple of years this group planning process, which could have been done. That is actually not proceeding now, and it is reverting back to individual councils.

Ryan BATCHELOR: Does council ever not take your advice on the application of a flood overlay in a planning scheme?

Guy TIERNEY: To put some context into it, the flood plain managers across Victoria were originally determining authorities. There was a change. All the CMAs were then changed to recommending authorities, except for Melbourne Water – they retained their determining status. I think with that in mind, we do 1600 referrals a year, and when you look at how many years we have been operating – the last five years – that is many, many thousands of applications. We have come across probably two applications where our advice has not been followed, so it is quite rare. I think they do value our advice in that particular area.

Ryan BATCHELOR: How long have I got, Chair?

The CHAIR: You have got about 5½ minutes.

Ryan BATCHELOR: Excellent. Did you want to say something?

Brad DRUST: The comment I was going to make – Guy just mentioned in terms of the CMA role in that planning permit process when we get to the point of a referral. You mentioned there was some lack of clarity around the roles. We are quite clear around the role that the CMA plays, and Guy has mentioned it: we are a recommending authority rather than a determining one.

Ryan BATCHELOR: Sorry, probably I did not mean lack of clarity around roles, I meant lack of clarity around responsibility. Certainly my impression from the evidence we have had is that the councils tell us that they just follow the advice of the water authorities, and the water authorities say that it is the council's decision. That is what I am reflecting upon.

Brad DRUST: I would certainly say, the way the system works, that is strictly true – it is council's decision at the end of the day as to whether they apply the advice that we offer. When we receive a referral, our experience in the North Central region has been the same as that reported in the Goulburn Broken. It is in a very small number of applications where the council might choose to do something different to the advice that we offer. Of the 800 or so that we receive each year – you know, we could count on one hand the amount that are inconsistent.

Ryan BATCHELOR: One of the other things that has come up in the course of the inquiry are instances – not in your regions but more generally, so I am interested in it from a policy level rather than a practice level and rather than a specific individual instance – where there has been a triggering of a sort of reassessment of flood risk. You know, where there are changes to studies that then lead into changes in planning overlays. What are the sorts of things that prompt, from your perspective, a reassessment of the flood risk in a particular area?

Camille WHITE: Do you want me to have a go? You can chime in at the end, Guy. I think the key thing would be if a flood has happened and things are different. A specific example is the *Rochester Flood Management Plan* done in 2013. Following these flood events, it is in the process of being redone. So one is a flood event. Then where the rainfall figures have changed – for example, in 2019 there was a shift in the rainfall figures that we use as more data became available – and there is a change in practice. So that was a change in practice. They are probably the two key things. Or development – obviously development has happened and things in the landscape have changed, whether there has been construction of a development or urbanisation and the like, so when things in the landscape change.

Ryan BATCHELOR: And just on that, from a practical level, who initiates it? How do you initiate this change? Is it a regular cycle of review? Is it people sitting around in a meeting at some point with new data? Like, what initiates it? Change is not just spontaneous combustion. How do we get to the change point?

Guy TIERNEY: That is a very good question. With our mid-term review we did on our 10-year strategy, we sat down with local government and said, 'Okay. Well, this has happened.' It is a good point. Some of our towns are changing rapidly with urban growth. Shepparton, Mooroopna and Kialla are some of those examples. We review our investment and action plans – 'Okay, this has now become a priority because of X, Y and Z.' We are doing these reviews every 10 years and then every mid year, and that is what informs our funding bids.

Camille WHITE: Yes. Just on that point, you would not say that every flood study would need to be reviewed on a regular basis. Certainly in townships that have regular growth, your Bendigos and your Sheppartons of the world, but in other townships – for example, in our region, Bealiba – no development is happening and there is nothing really challenging in the landscape, so it probably would not warrant that same level of review. Sorry, Chris.

Chris CUMMING: I was going to say that the regional flood plain management strategies do outline a 10-year plan for works and actions related to looking at the landscape and what else might need to be considered or what might need to be done. Those are developed with other stakeholders and community and then they are in there. Then it happened to be after this flood – although we probably would have done it anyway, but it was a mid-term review of that. That is able to then bring it in and pick up on all these pieces. In practice, too,

collegiately you are in a region. We are talking all the time with council and we are seeing the developments that are happening at a regional level with what is going on there. So we are talking all the time about what else we might need to be doing or thinking about. I guess a lot of that is relationships and –

Ryan BATCHELOR: I mean, you would make the decision to initiate the review?

Chris CUMMING: We would not make the decision, but we would be talking with people, saying ‘What else?’

Ryan BATCHELOR: Who would initiate a new flood study?

Guy TIERNEY: The conversation is normally with the planning team and us, but can I just say that when the flood study finishes, the detailed hydraulic models are available. In our area we are doing the structure precinct plans over broad areas of flood plains, and we are using those models once those flood studies are finished. They do not go to bed; we still use them to inform strategic land use planning to get really good outcomes, and that has been very successful in this master planning.

Camille WHITE: I would say in regional Victoria who instigates a plan – obviously, as Guy said, we work with the regional partners, councils and others to work out what the priorities are. It would be up to the local council to apply for the funding. We would support them to apply for the funding, but it would be up to the council to apply for funding.

Ryan BATCHELOR: Who do they get the funding from?

Camille WHITE: It is through multiple avenues, but risk and resilience grants are the key ones at the moment to obtain funding. Also, DEECA makes money available to contribute to and to support that process.

The CHAIR: Okay. Thanks, Mr Batchelor. The clock has beaten you. Dr Ratnam with a question, please.

Samantha RATNAM: Thanks very much for being here. It has been really useful and insightful as we put the pieces together on quite a complex system. But I would have thought on these questions around the planning scheme’s ability to both mitigate and now respond to increasing frequency of disaster events, noting the comments you made before about some of you feeling that you are confident in the planning scheme’s ability to respond – well, it has improved its ability to incorporate the likelihoods of floods. On the previous discussion about planning scheme overlays we have had various stakeholders, including councils, calling for statewide flood overlays like we have for bushfires for consistency and to reduce the risk of flood mapping and planning schemes becoming out of date. Is this something you all support? You talked about the pilot, which I want to get to as well, but do you also support a statewide system for flood overlays as opposed to an individual council process?

Chris CUMMING: We certainly support looking into this and looking at how we can expedite it. We certainly saw benefit in trying to pilot that and seeing if there was some collective way of being able to get those planning scheme amendments through. So I definitely consider that there is some value in that as a model.

Samantha RATNAM: Great.

Camille WHITE: If I could add to that, I think the key difference between doing a statewide amendment and the traditional way of doing an amendment is that there is a really good opportunity in the normal, traditional process for the community to be engaged and provide input in the process. That is the bit we probably do not want to lose by doing the state amendment, enabling community members to comment on the process, because obviously it is an overlay that affects their properties. There have been plenty of instances in the past where the overlays may have changed slightly to accommodate changes in the landform. That is probably the bit that we do not want to lose going into the state amendment side of things.

Samantha RATNAM: Great. That is a really important point.

Guy TIERNEY: The statewide system certainly maintains that submission review by the community, so that is really important.

Samantha RATNAM: Yes. That is consistent as well with the Department of Transport and Planning, who appeared before us – they were not as in favour of a statewide system because they wanted to be able to value the local knowledge. I guess what I am hearing is if you maintain a system where the community has a meaningful ability to contribute and we do not lose the local knowledge, there is value in some sort of greater coordination across the board. Thank you.

Could I ask about the pilot program, because I have not heard about this before: have you got any more detail about the nature of that pilot? You mentioned that it is not proceeding. I would like to know a little bit more about, if you know, why that is. How big was the pilot? Where was it piloted?

Guy TIERNEY: For many years. It even stems back to the Comrie review in 2011, where it says we should be looking at a strategy to expedite flood mapping into planning schemes. So this topic has been around for a long time. Also, it is recognising the *Victorian Floodplain Management Strategy*. There have been meaningful discussions, but no traction has been taken. This came out of the planning and our regional planning – we have regional centres as well. We had discussions with them, and we listed all the studies which were ready and thought, ‘Okay, this could form a good pilot.’ Looking at consultation, a very good point Camille raised was we do not want to lose the consultation component. When you do flood studies, it is usual practice to involve the community during that process in any case, but the thing is, under the current system you are required to notify every single landowner by mail. So that may still be the statewide process, and you still have a submission review. All we are doing is really trying to group more together in one more efficient manner.

Samantha RATNAM: Great.

Chris CUMMING: It included 11 studies in our area, and I think Rochester –

Samantha RATNAM: In your area?

Guy TIERNEY: Ten plus one, with Rochester. I was going to include Rochester in that one too.

Chris CUMMING: Yes, and we have just been informed recently that it will not be progressing as a pilot. I think that is partly because – I am not sure, but I know there are other mechanisms now being resourced to support local government to do planning scheme amendments. So it has obviously been felt that they want to explore that, and I think there have been resources made available to local government to help them to expedite those studies through and those planning scheme amendments through. So I think that is being explored first, but we are not privy to the background of that decision.

Samantha RATNAM: How far did the pilot progress? What stage did it get to?

Guy TIERNEY: Not very far.

Samantha RATNAM: Not very far? So the concept was there, and then we have got – okay, which is consistent with what we have heard from the department as well, who want to maintain the existing system. I am glad to hear they are putting more resources into it, because we have heard not only that there is a benefit in terms of greater coordination for timeliness, or expediting, it is also very costly and time consuming – as you talked about, (1) there is the flood studies and (2) there is the planning scheme amendment process, which costs a lot of money to each council, and particularly for rural and regional councils it is a significant impost when you look at your broader budget that is available, right? So there is a real systems issue here that we have got. Plus you have got the need to update those flood studies quite consistently, because our weather patterns are changing quite significantly as well. So we have got all these issues now bearing down on this process. It will be interesting for us to consider what kind of recommendations we make around that. Just following up on that in terms of the flood mapping, are the catchment management authorities in your view adequately funded to keep the flood mapping up to date – speaking of costs?

Guy TIERNEY: They are normally built in as part of the flood study process, where the outcome of a flood study is to produce flood mapping. It does require quite a bit of CMA expertise to review those maps to make sure the overlays apply correctly in terms of guidelines. I will leave it there.

Samantha RATNAM: So are you all able to do the work that you need to do at this stage, resource wise?

Brad DRUST: I would say the work that we need to do is the work that is set out in our regional flood plain management strategy. As I mentioned, there is a reasonably significant list of activities that are proposed in the regional flood plain management strategy. As organisations, we are project-funded organisations by and large, so the significant majority of the resources that we have available come to our organisation for specific projects. We access that funding through those grant schemes that were mentioned earlier – so the risk and resilience grant schemes, by and large, to do the work of implementing our regional flood plain strategy. That is the avenue that we use.

Camille WHITE: And in terms of an overarching funding model, after the 2011 floods there was significant funding – \$25 million in funding – that was basically a big change in flood plain management in Victoria. So across the state –

Samantha RATNAM: After 2011, you are saying?

Camille WHITE: Yes, directly after the 2011 floods. That helps to fund the flood studies as well as mitigation works, and that has continued on. It is over four years, that \$25 million, so that level of funding is basically covering off on the needs at the moment. I suppose it is just an important thing to consider going forward.

Samantha RATNAM: Was that \$25 million as a one-off, or spread over a number of years?

Camille WHITE: Yes, it was over in that funding cycle, so that EC4 initially, going into EC5, the same level of funding, and now obviously we are going into the next funding cycle that is being considered at the moment.

Samantha RATNAM: Right, so that does not sort of roll over? You will be looking for that kind of quantum – that is the kind of quantum you are saying was necessary to be able to respond?

Camille WHITE: Yes.

Samantha RATNAM: So it is something which we might want to keep an eye on?

Camille WHITE: Yes.

Samantha RATNAM: Great. A couple of specific questions about Carisbrook – the levee, I understand that it was not a complete levee but it was kind of a partially complete levee. Do you feel like the levee performed in the floods? It might be a hard question, because it was not completed, but do you have a view on that in terms of that levee?

Brad DRUST: Can I just offer some initial comments –

Camille WHITE: Yes, go for it.

Brad DRUST: and then I will throw to Camille to answer the specific ones. The CMA's role in flood plain management has changed over time. In 2013, I think it was, the CMAs in Victoria and specifically the North Central CMA had a more hands-on role in the work around flood studies and then flood mitigation planning. The CMA led a flood study for Carisbrook in 2013. Post the Victorian strategy, in 2016, that role shifted to largely a local government led role. What has been generally consistent is the role of local government in the implementation of the infrastructure that might result from that mitigation planning. That levee is a levee that has been constructed by Central Goldfields shire rather than the CMA. As to its performance, I will hand to Camille.

Camille WHITE: Yes, and that is the thing – it is hard to comment on something that has not been completed. Unfortunately, we will not know until the next flood about how effective it has been. But it is important to note that the levee itself is protecting against frequent overland flooding, and that is the key component of it. It is not protecting against riverine flooding from the two river systems that affect the township. But that said, from the riverine side of things, it has got quite a good level of protection. It is only really in what we call a 1 per cent flood event where it would overtop the road and affect the township. That was the key thing to address, the overland flooding through that levee system.

Samantha RATNAM: Great. Thank you. Just one more specific question regarding that area in Carisbrook: are you all worried about the Pyrenees Highway, Carisbrook, potentially being flooded in the future if there was a larger flood? Have you all done any work around that area?

Camille WHITE: There are probably two components. As I said before, there are two flooding mechanisms in Carisbrook, one from the riverine flooding, and certainly it has got the potential to overtop the Pyrenees Highway, like it did in 2011, from the riverine flooding. The overland flow is where it comes in, and the way that the mitigation works have been designed is to hold the water up behind the Pyrenees Highway and basically retard it back to be then let through. So it is conceivable in a bigger storm event greater than the design of it that it would overtop the road.

Samantha RATNAM: Okay, because we have heard evidence about what happens when transport routes are cut off by flooding – quite significant consequential impacts in terms of food and supplies et cetera and being able to get to respond services and incident control centres et cetera, hence my question. Thank you. I think that is it for my questions. Happy to come back later.

The CHAIR: Thanks very much, Dr Ratnam. Ms Bath with a question, please.

Melina BATH: Thank you very much for being here. We are learning a lot as we go along, and after many days our brains are quite full of noise and words. Here we go. I know in April 2021 the then Andrews government looked at modernising channels. It was called the Goulburn–Murray irrigators, about removing channels as part of that modernisation and all the benefits that were going to come from it. Would you like to speak to that, in terms of whether there was any modelling done to assess the changing impact of floods? Now, you may say it only impacts you a little bit. Could you speak to channels and pipelines?

Brad DRUST: I am happy to go initially. It is not just in the Goulburn–Murray irrigation district that works have been undertaken to change the configuration of our channel network.

Melina BATH: Hence my question. Thank you.

Brad DRUST: We have had that experience in other areas. I am aware that in that work there has been some consideration of the role that the channels might play in influencing the distribution of water across the landscape. I might ask Camille to talk about some of the specifics in terms of the way that it is being considered.

Melina BATH: Are you happy to take it to notice if there is some background research?

Guy TIERNEY: We did work collectively, Camille and I, and with Goulburn–Murray Water, through the connections project, modernisation project and rationalisation project. What we ended up doing is actually assessing all those known irrigation channels which could have the potential to be removed. We did a traffic light report on each of those ones, whether it is green, amber or red. The red ones were certainly ones where if you removed them, they were going to have an impact.

Melina BATH: Significant impact.

Guy TIERNEY: Yes. Those traffic light reports are on our website. You can actually go and drill down and have a good look. It was all done spatially, and it was done against all known information, such as flood photography and overlay schemes. We have got a great deal of ground contour information – lidar, imperial contours. All sorts of information was used for that assessment, but we did not actually do hydraulic modelling. We did it from the known information source, and that has been working quite well. I think it has slowed down a bit now, but it was certainly used quite a bit.

Camille WHITE: Yes, certainly.

Melina BATH: So when you say you used all the various pieces of information and you had your traffic light, does that mean the green ones have been removed so far?

Guy TIERNEY: The green ones means it would be safe to be removed, yes. And the amber light – we had a few amber lights, and I am trying to recall what that meant. It is ‘May be removed providing the landowner gives consent’; that is right.

Melina BATH: So to date, how many kilometres of channels have been removed – or is it zero?

Guy TIERNEY: I do not have that information. Goulburn–Murray Water probably will have that.

Melina BATH: We can put that to them. And in that part of the rationalisation and investigation was there community feedback on this as well or was it purely sort of scientific tabletop research? I am just trying to get the feel of the community or the council's feeling about the removal of these as well.

Guy TIERNEY: We partnered on the technical work. Goulburn–Murray Water would have other processes it would carry out with the general landowner's consent.

Melina BATH: Sure. Thank you. All right, we will put that to Goulburn–Murray Water. We have talked a lot to and heard a lot from council, ratepayers and human beings, and we have had submissions as well, about 17d of the 2016 flood management strategy, where it talks about levees on Crown land not being maintained into the future unless those benefiting – and I want you to talk about benefiting; this is everybody's favourite number, 17d, not – apply for a permit and then look to maintain that. I am just interested – from a CMA perspective do you feel that that is the best way to support community? This is a sticky discussion. I just want to open it for you to give us some feedback.

Chris CUMMING: There are probably a couple of things in the background here around that. I mean, in terms of when it gets to a policy decision around public benefit and user pays, that is a big sort of policy decision in there, and there are a whole lot of criteria in there about how that public–private benefit is determined. So that is one component of it. But I think the other component too is just understanding those current levees that are in the landscape and actually what protection they provide to various –

Melina BATH: Provide to –

Chris CUMMING: Yes, and I think Joel, you might talk to that as well before we continue to respond to your comment there.

Melina BATH: Thank you.

Joel LEISTER: Certainly. Obviously, we have discussed this before, and I know you spoke to Andrew Fennessy at DEECA this morning about the Crown land levees. As I said before, we have about 500 kilometres in our catchment. I know North Central have a lot more than we do in their catchment.

Melina BATH: 2000. It is significant.

Joel LEISTER: And it is a significant issue.

Melina BATH: A significant – dot, dot – headache.

Joel LEISTER: It is a significant issue, and we do know the challenges that members of our community have with the policy position of the government in terms of managing these levees. We do try and facilitate the permitting process where we can.

Melina BATH: Is that coming from the CMAs?

Joel LEISTER: The CMA issues a permit. Since the policy has come into play, the Goulburn Broken CMA has issued five permits, four of which we issued prior to the flood and one since. And we do know –

Melina BATH: Just for clarity, to councils or to private landholders?

Chris CUMMING: To private landholders.

Joel LEISTER: To landowners who see the benefit in maintaining the levees for their private assets.

Melina BATH: Thank you. Fabulous.

Chris CUMMING: Some of those levees were built in 1890. They are of various construction and quality, and they probably would be reliable for one in – what, 10 or 15 –

Joel LEISTER: It varies. It is a good point to make. When we saw the flood go through the lower Goulburn, as an example, we had a flood event go through Shepparton –

Melina BATH: Give me a town, please. Lower –

Joel LEISTER: Going through Shepparton, so going through Loch Garry. We had a flood event in the order of about a one-in-70 AEP go through Shepparton. Through various studies we have done historically we know that if all the levees downstream of Shepparton were in perfect condition and fully maintained, they would have all been overtopped. At best the level of protection is about a one-in-40 between Shepparton and Loch Garry, and as you go past Loch Garry it diminishes really quickly down to about a one-in-seven or one-in-eight AEP. So having the levees perfectly maintained is not the answer for big events like we experienced, because the levees would have overtopped, and as soon as you have levees overtopping, they are prone to failure because of the overtopping mechanism.

Melina BATH: We stood where we could drive a car through one of the gaps in the non-maintained levees.

Joel LEISTER: Certainly our team, like, we have spent days out with some of the landowners down in that lower Goulburn area inspecting a lot of these levees. We have inspected over about 50 holes or so in the levees. Yes, they are big, and they will require a lot of work to repair under the arrangements that the state government has done.

Melina BATH: Thank you.

Chris CUMMING: We do have a new strategic project looking at those levees, and that is going to be a big opportunity to talk with community about the levees and the values that those levees are providing – as well as local government – and doing some assessment and then categorisation of those to see if there are some that actually should and could be managed.

Melina BATH: Thank you. Do you want to jump in and say – of your many thousand.

Brad DRUST: I am probably going to reinforce the comments already made by my colleagues from the Goulburn Broken CMA, but we do have, of the estimated 4000 kilometres of levees in that category in the state, about 2000 of them – so around half. They are a complex network without any particular design standards or level of service. We have not issued any permits. We have had one application, but it did not make its way through to an issued permit because the development it related to was withdrawn. Yes, I reinforce those comments about our interest in that strategic levee project, which I referenced in my opening statement, to work through categorising those levees better.

Melina BATH: There are many people very interested in this topic, which is why we are drilling down into this. With the whole ‘beneficiary pays’, one could argue the government is a beneficiary if they work, because there is not damage of infrastructure as well. So is it the next person over the edge of the levee or is it downstream and upstream and all of that? That is a Melina Bath comment, but I just want to go to another question. You can respond to it, please. But do you believe the process of maintaining these levees then, if we look at that, is working to ensure community safety and infrastructure safety, and if not, please, what could be done better?

Chris CUMMING: In terms of whether the process is working to maintain the levees, there is no process to actually maintain the levees, so I guess that is not there. And I think the issue around safety – look, to me, you see community and people have farmed or made decisions around where they are and positioned themselves on the basis of those levees that are there, so there is true and real pain, concern and worry about this, absolutely. In the conversations with local government, at the time in 2016 when the first categorisation of those levees occurred, part of that was identifying with DEECA whether there were any of these that were actually critical to the protection of human life and safety and the continuation of social services that need to happen in flood events, and at that time those rural levees were not identified as providing those services. Now, that is not for me to judge or to know, but I think what this review will do is actually unpick that a little bit more and have that conversation with community and with agencies and say, ‘Where is the public benefit in this, and where are they providing those critical services?’ so that we all can feel a little bit more on the same page or confident or understand the decisions that have been made.

Melina BATH: Clearly in the past the mitigation effects have been beneficial for public safety and infrastructure safety.

Chris CUMMING: To a certain point.

Brad DRUST: In some instances.

Melina BATH: In some instances, that is right – when they are working and the like.

Chris CUMMING: To a certain height, yes.

Melina BATH: Can I just ask, Chair – I have not timed – how many minutes I have got?

The CHAIR: You have 1 minute left.

Melina BATH: Good. Lovely. I just want to put on record, in case we do not get time, that there are some very good people from Carisbrook in the audience, and they have probably written to you before. But if we do not get time to put these questions on notice, I will send them off to you so that they feel that they have been validated and heard. I just want to put that on record.

It seems to me that if we look at local government – local government roads have been smashed. You would have heard that and seen that because you live in your area. We have got planning overlays that need to be worked through. They need to be sent off to state government – those amendments. It seems like there is a huge squeeze on planners in local government. They are getting smashed. They have a role to play. If you were making recommendations – we are going to make recommendations – what can you see that could support your local government areas to support your work and therefore public safety and flood mitigation?

Brad DRUST: I would say we already provide a lot of support to local government in terms of taking on some of the work that is required to make some movements in better protecting our communities from flood risk. We have our team supporting them in a whole range of different technical matters, writing specifications for tenders and supporting planning scheme amendments. There is a very close existing relationship with local government.

Melina BATH: Okay.

The CHAIR: Thank you. The clock has beaten us on that. I will now go to Mrs Tyrrell with a question, please.

Rikkie-Lee TYRRELL: Thank you, Chair. I am going to start with the North Central Catchment Management Authority. Early on – this was in your opening statement – you mentioned that there were 73 high-priority projects you are working on. You said there were 73 that were high priority.

Brad DRUST: That is correct.

Rikkie-Lee TYRRELL: Look for the number 73 and you will find it.

Brad DRUST: That is correct, member Tyrrell. I mentioned that we completed a mid-term review of our regional flood plain management strategy. That mid-term review establishes a new work plan for priority actions across a range of different things. There are 141 prioritised actions in total, and of those 141, there are 73 which are of the highest priority.

Rikkie-Lee TYRRELL: Okay. And can you narrow it down and just kind of tell us what they are, roughly? What specifically makes them high priority?

Brad DRUST: They are high priority because they address the highest flood risks in the region. So we start there, then we establish priority based on the risk but also the urgency and the willingness of a partner. For many of those actions there is a lead organisation other than us. So we consider that in establishing the priority of the actions included in the work plan. The actions generally go to a range of different categories. There are actions that update planning controls, as we have spoken about, actions that construct new flood mitigation

infrastructure and actions that improve our knowledge around flood risk and flood behaviour. They are categorised actions.

Rikkie-Lee TYRRELL: Okay. Thank you. No, that is all right. I caught the number 73 and ‘high priority’, and then I missed it as I was jotting it down. Also, you mentioned that there was a certain amount of money that was invested – it was in the millions. I just want to know what that funding and those investments go towards. What have they been put towards recently to help with flood mitigation and whatnot?

Brad DRUST: There are two streams. There was \$7 million or something in that order that has been invested through the strategy in its first five years of life. There are two primary streams there. The first one is investments in building that knowledge base and undertaking the work to amend planning schemes, and then the second stream of work is around the actual construction of infrastructure. I mentioned a couple of examples where flood mitigation infrastructure has been constructed in our region – Quambatook and Donald were the two examples that I used there – so projects like that, constructing levees and changing culverts under roads. And then on the other side there have been 30 flood studies in 50 towns that have got better flood information over time. They are towns of Bendigo, Castlemaine and Carisbrook, and there is work in Echuca underway, so a whole range of towns across our region have benefited from that funding.

Rikkie-Lee TYRRELL: Beautiful. Thank you. This is directed at all six of you – I would like your opinions on this. Considering that in the lead-up to the flood the dams were full and we knew a lot of water was coming through rain, what went wrong and how can we prevent this from happening again? Specifically, what are the key factors that led to this flood event and so many people being caught out?

Chris CUMMING: It is a really big question you have got there, and I cannot answer that in terms of a whole lot of SES or water storage managers or anything else; I have not got that information to begin to unpack all of that. But I think the biggest thing that I would say is that there is a whole community preparedness piece around that that we want to keep focusing on as an organisation – working really well to support SES in that function around education and awareness and pre-planning and knowledge. All of that from our perspective we really see as critically important – how we get information out at the time as well. We want to keep focusing and improving on that. I think there are some role and responsibility clarifications in there, and when I say ‘clarification’, I think it is clearly described in a lot of the emergency management plans what the roles of the different agencies are and what local government’s role is. I think there is probably – I do not have the solutions – some work to do to unpick that, and that was one of my recommendations: given that those things are clearly documented but in reality on the ground there was confusion, both within some organisations and local government as well that we are hearing through this process, and within community, what can we do better to actually unpick why that was and put some things in place to make sure that those involved in the response are better prepared together?

Rikkie-Lee TYRRELL: Anybody else want to add?

Brad DRUST: I do not at all want this comment to take away from the significance of the impact of these floods on the communities in our region, because we know we have seen and we have heard those impacts, but the comment I would make that I would not want us to lose sight of is that we are much better placed now as a state – this certainly applies to the North Central region – to respond to flooding than we were prior to the 2010–11 floods. There has been a lot of work that has been undertaken over recent years. As I mentioned, about half of the actions in our flood plain strategy are complete: \$7 million of investment, planning scheme amendments in 10 townships and 50 townships with updated flood studies post those floods. So we have come a long way in the 10 years since 2010–11.

Rikkie-Lee TYRRELL: Okay. Do you think that the dam storages being so full prior to the downfalls happening, when we knew that those downfalls were coming, contributed greatly to the flood event?

Guy TIERNEY: Do you want to talk to that?

Camille WHITE: You have got Goulburn–Murray Water. I think we would best leave that to Goulburn–Murray Water to answer that question. I just wanted to add to this: can we stop it from ever happening again? I think it is unrealistic to say that we can prevent flooding, from all floods. Obviously floods are different. If we are talking in Rochester, it was far in excess of a 1 per cent flood. I think the important thing, to reiterate what Chris was saying before, is preparing the community and managing that residual risk, even if we cannot prevent

flooding from happening, and working with the community to prepare them for future flood events in a meaningful way – you know, the information and the warnings that are meaningful to them would be a priority.

Chris CUMMING: I would add to Brad's comment around the new developments, and I think I made that in my opening statement, that based on the more recent flood studies and the planning and the new developments that have happened that do factor in climate change and do build in a range of freeboards and things with development, they did manage as planned for and expected. There are a lot of legacy issues that we are dealing with in the landscape, but in terms of what went well, our experience and observations were that the new work that is happening did operate as designed for.

Rikkie-Lee TYRRELL: All right. Yes, I know that we cannot stop floods, but I know that with professional management we can reduce the severity of them. I was just seeing if you had any advice on how we could potentially enhance the management of future events. No? We are all good. Okay. Thank you, Chair.

The CHAIR: Thanks very much, Ms Tyrrell. Ms Broad with a question, please.

Gaelle BROAD: Thank you very much for coming in this afternoon, everybody. I do feel like there is a lot of knowledge in the room, so I have been writing down lots of questions as we have been going through, and sorry if we jump around a little bit. I guess a specific question about ring levees, because there was a program in the past that built ring levees around rural property to protect homes. That worked in the October 2022 floods, so what are your thoughts on a new program – a similar program?

Brad DRUST: I might start with some comments there, given that that ring levee pilot program, that earlier program, was in our region and it was associated with a program in the Benjeroop area in the lower Loddon catchment. I think our view on the ring levees is that they are very effective. We saw in the order of 80 per cent of the ring levees that were established through that program worked and they protected houses and farming infrastructure in a rural landscape. In some ways they are another line of defence and a more reliable line of defence beyond the rural levees that we were talking about earlier, where the landholder has good control over the ring levee. So yes, we have had a good experience with those types of levees and would support future work in that area.

Camille WHITE: Certainly they are best placed in the lower flood plain areas, where you have plenty of time and plenty of warning. Not so much probably in the upper catchment areas, but certainly in the lower catchment areas – because the ones we were saying about 80 per cent success, it took active management by the farmer or farmers to make sure that they were effective. They had good warning and they were able to prepare for it, and also they were not in really particularly problematic areas where they were putting themselves at risk. So there is that element to it as well that you would not want to necessarily promote development in really unsafe areas. It is about managing residual risk.

Gaelle BROAD: Okay, so there is no sort of funding for a specific program like that at the moment. That is a pilot that you would support seeing again?

Camille WHITE: Absolutely, yes.

Gaelle BROAD: That is excellent. Can you please explain to the committee the proposal that has been put to Pental Island landholders regarding the future funding and management of their levees?

Brad DRUST: Yes, happy to do that. We had this work planned prior to the floods, but we have had to defer it a little in time given the floods. What we are doing there is picking up the policy of the state flood plain management strategy around the potential for some different management arrangements in areas where we might consider levees to be strategic levees or where we might clearly be able to identify the beneficiaries. So in Pental Island there are two ring levees that effectively circle parts of Pental Island. We are working through a process with the community there and other stakeholders to see whether there is an appetite for an increased level of service or a more reliable level of service from those levees and then a willingness to pay in line with the beneficiary pays principle. So we are working through a process with a steering committee seeking the views of the steering committee members and also the community more broadly on those two matters, and then that process will make some recommendations that we will consider.

Gaelle BROAD: Okay. And just with the critical levees that you have been talking about, and the research and the work that has been done with different groups on that, how many structures have actually been identified so far as critical?

Brad DRUST: In the case of Pentland Island, or more broadly?

Gaelle BROAD: No, more broadly. I guess across the program, because there was a program announced earlier this year for that purpose, so I just want to know across your two regions how many have been identified – because it does mention CMAs being involved in that process.

Brad DRUST: Yes, that is right. We are leading that process at the North Central CMA, and I know that Goulburn Broken have a similar process underway. It is relatively early in the rollout of that process, and I could not give you a specific number for your question at this point.

Gaelle BROAD: Well, it was announced in May, the program, so at this point has anything – nothing has been provided?

Camille WHITE: Yes, certainly there are two parts to it. There is the initial desktop analysis that we are doing at the moment, without then going to the community. So there are two parts to this: one is the desktop analysis, which we are doing at the moment, and that needs to then be confirmed by the community, because there are two elements to it. Technically we can say what we believe is strategic, but it is also for the community as well to say, ‘Yeah, we believe it’s strategic.’ So just to give you a rough ballpark, of those 2000 kilometres in the North Central region, you are talking about 200 to 300 kilometres that would fit within that strategic role. We are talking about 10 to 15 per cent. That is early days, and obviously that has not been checked with the community.

Gaelle BROAD: Okay. No worries. In the Victorian government’s submission they talk about, on page 64:

Flood studies under regional floodplain management plans have identified the potential for approximately \$115 million to be invested in a further nine levees; two in Bendigo and the other seven in Charlton, Violet Town, Wodonga, Numurkah, Seymour, Rochester and Maryborough.

Is that different to that program or is that part of it? Are they the critical ones?

Brad DRUST: There are three categories of levees in the way that I think about them. There are township levees. As far as I understand the levees that you mentioned there, member Broad, they are all township levees. I think the management arrangements for township levees are quite clear, and in our region we have local government taking responsibility for the establishment and maintenance of those assets. Then there are strategic rural levees, and then there are unmanaged rural levees. These are the three categories.

Gaelle BROAD: Okay. That is a good summary of the three.

Camille WHITE: So different funding, effectively.

Gaelle BROAD: Okay. I am interested that Seymour township has had a lot of discussion about building levees and has decided not to. What are your thoughts on that? Should it be rebuilt?

Chris CUMMING: We would certainly support relooking at that.

Gaelle BROAD: I should not say ‘rebuilt’ – built.

Chris CUMMING: The Seymour levee was a viable option in terms of the protection that it would provide to the Seymour township. Under the level of the flood that did happen, that levee – if it had been built at that point, because it may not have been built by then – would have protected the town, largely, from the impacts of the flood. I think it is an option for the town. Whether it is built or not, again it goes to the local government and the community’s level of risk and benefit that they are seeing from that and whether they decide they want to proceed with that. We would consider it a viable mitigation option for the town, and certainly, if they wanted support in relooking at that or any support in revisiting that, we would be happy to provide that support.

Gaelle BROAD: Yes. Okay. That is interesting. Thank you. Just on levees, you mentioned risk. I have heard that local councils would not have any kind of cover if they did do work on a levee. I know they have been

given the job of maintaining or that is pushing onto them. State government I think are not liable if they do the work. Do you have any comment on that? Do you know about the legal aspect?

Chris CUMMING: I do not understand liability issues, but I know there is concern around the liability issues as well. Because some of these were built in 1890, their structural integrity is not known and they have all been done in different ways. So doing work on one component of those levees does not mean that just next door another bit will not break or another bit will not give way. There are lots of questions about that, and I have heard that there can be concerns around liability. But I cannot answer any more. I am just confirming that I have heard similar conversations.

Guy TIERNEY: Could I just add to that that the other aspect is where local government do get concerned. Violet Town is a good example, where the mitigation scheme, if in place, we can model the impacts of the changes to the flood plain. Through modelling it can show very little adverse impacts or no impact, but they are still worried about being sued because of the perception that they are pushing water onto somebody else. It happened in Euroa and the Castle Creek levee in the previous floods. There are VCAT cases over this – taking council – and having this liability problem. All those questions around liability were certainly raised during the Victorian flood plain strategy, so that is a real concern for local government.

Gaelle BROAD: So it is unresolved?

Guy TIERNEY: Unresolved.

Gaelle BROAD: Okay. You talked about your role in the recovery side of things, and this is probably more your region. I am interested in Bendigo Creek and what has been done there. Do you cover that? There is a levee on the side – and suburbs like Epsom and Huntly with thousands of homes – and concern about if that breaks. But there is a lot of debris in the creek itself. Just in that role and recovery, locals have certainly raised that issue, that there have been so many studies done over the years – just study and review after review. A good many locals spend their time participating and communicating and putting down their thoughts, but then they see no action. So is there work to be done on repairing that section? Because it is a huge township and growing and has a big impact on what happens further down the stream.

Brad DRUST: Yes, you are right, it is an important section of the creek. In terms of mitigating flood risk, our view would be that the levee is the most important thing to address. The levee in that area probably fits into the category that Chris mentioned earlier around being established quite some time ago without any particular design standards. I think that is the most critical piece of work there around managing flood risk. In terms of the waterway itself, Bendigo Creek in that area is quite a large creek that can carry a lot of water, and what is in that creek is largely vegetation that will lay down when the water moves through. I do know there are a couple of isolated instances of erosion and that we have been in conversation with partners.

Gaelle BROAD: Yes, the creek is getting bigger by the day.

Brad DRUST: So we have been in some conversation with land managers and council about addressing that erosion.

Gaelle BROAD: Okay. Do you think there will be work done within the next 12 months to resolve that?

Camille WHITE: Council has funding to do the design of that critical section of levee through that Epsom area. They have the funding to do that. It is a council matter to lead that process.

Gaelle BROAD: Okay. I am interested too – do you all have hydrologists? CMAs – do they all have their own hydrologists?

Chris CUMMING: We do not call them hydrologists. We have a specialist flood plain analyst, which is part of the team that we have here today, but they are not specifically hydrologists.

Gaelle BROAD: Just at that recovery phase, a number of locals in different parts mentioned the challenge with insurance claims and having to get evidence and hydrologist reports. A person did suggest: ‘What about getting a town hydrologist to cover our region?’ Say, if Melina puts in a claim and I put in a claim, she cannot share the information, and that makes it harder on the neighbour trying to get the same; they have got to go out

and get their own information. Do you support something like that in future to speed up the insurance claim process?

Camille WHITE: To answer that, certainly – and I would assume that Guy and Joel are the same – we do provide, when asked for, information to the community, and we have provided a number of reports where community members have asked for information they can take to their insurance agency. But we cannot guarantee the insurance company will accept that. We do not have that hold over them, if you like. So we provide information – certainly that is fine – but we cannot guarantee they are going to accept that.

Chris CUMMING: We do the same.

Gaelle BROAD: Okay. So lots of individual –

The CHAIR: Thank you, Ms Broad. The clock has beaten us on that. I will just go back to Mr Ettershank. Mr Ettershank, did you want to use your time up?

David ETTERS HANK: I am happy to give my time to Ms Broad and Ms Lovell in terms of it being more in their patch.

The CHAIR: Okay. So who do you want to give to – how much to whom?

David ETTERS HANK: I think Gaelle has the bit between her teeth.

Wendy LOVELL: I think Gaelle can keep going. She is on a roll.

The CHAIR: How much, if you are going to split it? Six minutes to Ms Broad?

Wendy LOVELL: No, no, it is all right. Just let Gaelle keep going.

David ETTERS HANK: Go for it, Gaelle.

The CHAIR: Thank you for making my life easier. Good.

Gaelle BROAD: Well, I am not sure that I will use all the time. I was a bit concerned to read this section in the Victorian government submission. I will just read it, and I am interested in your thoughts. It is to do with new flood mitigation infrastructure, and it talks about accountability for ongoing management. It says:

... The three tiers of government will only invest in building or upgrading flood mitigation infrastructure if the accountability arrangements for ongoing management, maintenance and assurance are agreed and clearly documented. These arrangements should allow for measurable outcomes to be established, evaluated, and reported.

It says:

In practice, it is easier to demonstrate a *prima facie* case for these community benefits for urban areas. Hence, the three tiers of government, working together, will only continue to fund flood studies and cost-effective mitigation measures for urban areas. Large-scale rural flood mitigation infrastructure is no longer considered best practice for rural areas.

And I just thought: you are representing rural areas – what is your take on that perspective?

Camille WHITE: This is about establishing new levee schemes as opposed to maintenance of existing, so we are talking about developing new schemes. That is where my understanding of that lies. Certainly it is much easier to provide that business case, if you like, for an urban area as opposed to a rural area. I do not think that is to be applied to managing existing systems.

Gaelle BROAD: No, I guess I was just concerned that with new mitigation work – and mitigation is part of your role – you have got a long list of priorities, over 70 of them, but this clearly indicates that it is no longer being considered for rural areas. Where does that leave the whole region that actually supplies food and fibre and everything to the city? Floods, obviously in this case, had a huge impact on 63 local government areas, many of which are in northern Victoria. So what are your thoughts on trying to get mitigation work up? Are those priorities going to be funded?

Brad DRUST: There are no priorities that would align with new rural mitigation infrastructure in our flood plain management strategy as far as I am aware. What that statement does not preclude, as Camille said, is

work that is looking to bring existing infrastructure into more clearly defined management arrangements. We spoke about the Pental Island example earlier, and there are other places in our region where there is existing infrastructure where there might be interest from the community to bring them into those more defined management arrangements. The other comment, which we have already made, is that benefit of ring levees in a rural context and the important role that they can play in protecting critical rural infrastructure – so farm assets, houses and the like.

Gaelle BROAD: Okay. Did you want to comment?

Chris CUMMING: No, I did not have anything to add to that except to say that there is a prioritisation process that always happens with these things, because funds are not unlimited to invest into flood mitigation works. So that prioritisation even in rural areas tends to go to where life is, and human life is the biggest prioritisation, so that tends to go where there is a concentration of people, which is then those towns, cities, smaller hamlets et cetera, and then different mitigation measures are thought about in terms of individual scattered areas such as the ring levees.

Gaelle BROAD: That is helpful.

Guy TIERNEY: If you put it into context a little bit, the rural levees generally offer agricultural protection – one in 10, one in 15, maybe one in 20. So we do get a benefit, getting rid of that nuisance flooding, if you like, from agricultural production. So the idea of protecting the engine room or a home in some of the properties Brad Drust was talking about does make sense to me, because that ring levee would have a much higher level of protection for those critical assets for the farmer. What I am trying to highlight is they are not a silver bullet, these rural levees. They are only going to give you a certain amount of protection, which is nothing like the one in 50s or the one in 70s or what we experienced.

Gaelle BROAD: That is helpful. I will just, I guess, open it to you guys for the last remaining minutes, because we are looking at recommendations to make moving forward, and I know Rikkie-Lee referred to that earlier. You talked, Chris, about the clarity of roles being a recommendation. Are there any other key things – I mean, you may want to speak to Lake Eildon and Lake Eppalock. There is a lot of concern about the water storages; I do not know if there is other mitigation that could be done to assist with that. But are there any recommendations that you would say moving forward would help us be better prepared for floods in future in both your regions?

Brad DRUST: I made my recommendations in my opening statement, so I might defer to Chris on this one in the first instance.

Chris CUMMING: Yes, I think for me, it was that planning scheme amendment process and trying to get those amendments through. One of the critical things that a planning scheme amendment does is once it is there, it triggers a referral when somebody applies to do a development in a flood plain, and if the planning scheme amendment has gone through and it is there, then councils are required to trigger that referral to us and to get that flood advice. They are still required to consider the flood impact and a whole range of things when they are assessing any application, but this creates that trigger, so we think that is quite important.

The clarity of roles and responsibilities – as I said, it is not to say that the clarity is not there in the documents, but how do we get that in practice? I think that is the piece that really will help with things. One of them we have not really mentioned, but for us I think what we are trying to do at the very top end is save people – human lives – and keep people safe. Within the Victorian planning provisions there is some inconsistency around how floods are treated compared to fires, from that perspective. So fires and human life are integrated in the decision-making framework in the VPP – it says that human life has to be prioritised. It does not say that for floods, and we think that that would be an improvement in terms of the decisions that are being made across the flood plain and the way that flood studies and flood mapping and everything are actually being interpreted to enable people to be protected as number one.

Gaelle BROAD: Do I have much time left, Chair?

The CHAIR: You have got just under 5 minutes.

Gaëlle BROAD: Oh, that is fine. I did want to just get your insights into local implementation committees, because they help roll out the flood plain strategies. How often do you meet, and how do they work? Are they still active?

Guy TIERNEY: There are two things. There is the flood study, which is the technical body of work which looks at the nature of flooding. The next stage is what we call flood plain management plans, where we establish a working group or a reference group – a community-based one. What we come up with is discussion with those local communities: ‘What do you think is worth exploring in terms of mitigation?’ A whole raft of options are then explored. That is managed by the local government with support from the GBCMA, and all the other CMAs have the same process. What normally happens is we still have the consultant on board who runs all these models. What we then do is run the options. We look at the effectiveness of all those options in terms of reducing damage to the towns, keeping people safe and making sure you do not have third-party impacts to neighbouring properties and minimising all of that. Then we look at the viability and whether you can actually build these things in a practical way. The viability might be an economic assessment – is it cost-effective? And then you go through the process of community consultation to drive acceptance of a particular preferred scheme. So there is a lot of input, and then it ultimately gets endorsed by the local government authority. Then funding is explored to implement those works going forward. So that is the process. We tend to have working groups or community reference groups when we do those mitigation option assessments.

Brad DRUST: Can I just quickly comment on the arrangements in the North Central region? We do not have a dedicated ongoing committee around the implementation of our regional flood plain strategy, but what we do have is a dedicated role within our organisation, a member of Camille’s team, who coordinates the implementation of the strategy. That is a role that is funded by the department for us. That role does one-on-one work with our council partners and the other organisations that are identified as lead agencies in the regional flood plain strategy, and we have got 14 councils, I think, as I mentioned. That role for us is an essential one in moving the strategy forward, and the person who occupies that role for us is very proactive in working with councils, building partnerships and drawing their attention to the opportunities as they arrive to tap into those grants programs that I mentioned earlier and then supporting the applications for those grants as well. So we are very proactive in that area in the implementation of our strategies.

Camille WHITE: Something else to mention that we do really well that is quite unique is I know in the Gannawarra shire we have what we call a flood observer network, a long-term floodwarden network, and that worked really well in both the 2016 and 22 flood events where we got them together. They were meeting on a daily basis. We meet with them at least annually to go through our municipal flood emergency plan. They actually sit on the committee with us to go through the actions on an annual basis. During the flood event they met daily and they input directly into the operational unit to provide advice. Obviously they had the benefit of time being down in the Gannawarra and that led through to the Swan Hill area. That is something that worked really well, and it is something that we would ideally like to replicate in other municipal areas.

Gaëlle BROAD: Just with your contribution to ICCs, did that work well? Is there anything that could be improved in that space, in that communication?

Camille WHITE: What do you reckon?

Guy TIERNEY: You go, Chris.

Chris CUMMING: Look, it did work well. I think it would have been problematic had there been a couple of ICCs. I know there have been discussions raised about ‘Why was there not a Seymour ICC as well as a Shepparton ICC in our catchment?’ We were challenged with having the staffing, rostering through and providing enough staff and then attending community meetings, because we think it is really important that the trust of people with the local knowledge and that have been in the central day are the ones that are actually turning up and talking to the community about what is happening and sharing whatever knowledge we have. It worked well but those were some of the challenges. Access became a challenge for everyone in terms of being able to bring in staff from areas when roads were blocked. But the actual ICC experience – I think we had some technology issues in terms of internet access, which we dealt with, but largely our experience was it worked well.

Camille WHITE: I think what worked really well was we had the bureau predicting what the level was going to be, and the value of having the flood analysts within the incident control centre – both us, Joel, Guy and me, but also consultants – is that we helped the incident control centre understand what that means on the ground. It is a vital link as well so we can interpret what that means and access all the mapping and stuff like that. There was actually an independent person from Brisbane who reviewed the role that we played and provided some input. I do not have access to that, but he provided some input on that role that we provided in the intelligence, so –

Gaelle BROAD: On the last floods?

Camille WHITE: Yes, exactly.

Gaelle BROAD: I have got some other questions –

The CHAIR: Sorry, Ms Broad. The time has beaten you. You have had quite a lot there. In the last 8 minutes that we have got left for this session – I did not any ask any questions; I was just listening and thinking while everyone was talking – but perhaps the most useful way I could use my time is to ask all of you: what would be your top three recommendations for us if you were wanting to say to this inquiry where we should focus our minds? What would be the most useful thing that we could do in terms of recommending to government any changes or improvements? What would they be? For each of you there –

Brad DRUST: I am happy to kick that off. In some ways I am restating what I said in my opening statement, but just to make sure they are in focus. The first one is to ensure that flood-related overlays post flood studies are introduced into the planning scheme through a timely and efficient process, and we have covered that in some detail. The second one for us is around rural levees and clarifying arrangements for those levees and arrangements for management so that the community is really clear about what they might be able to expect from those levees and working through that process to change those management arrangements where there is an appetite from the community to do that in line with government policy. The last one, which we have not dwelt on too much from my point of view, is just around making sure that our flood studies – we have got a significant base of flood studies that help us understand flood behaviour and flood risk. Some of those were completed some time ago and the standards for those flood studies change, particularly as we contemplate climate change and more frequent and more extreme flood events. So we would like to see all of those flood studies that were completed prior to the contemporary standards brought up to those contemporary standards and to factor in climate change so we have the best possible knowledge base around risk to work from.

The CHAIR: Anyone else want to add to that?

Chris CUMMING: I think just to have that at this point reiterated, but yes, the first one for us is also those planning scheme amendments and that process for getting known flood information and overlays that have come out of flood studies into the planning schemes in a more expedited way – that would be great. The inconsistency in the treatment of fire and floods: so for floods it is treated as for fire – human life is the number one priority in decision-making. Floods are frightening. It is really scary for people in the community when water is coming up. You are not expecting water to come up – you are not prepared for that – and then you are not clear where to get information and who is in charge and all those things that we have heard, just adding to the absolute trauma that is happening anyway through that whole flood event. So unpacking how we better get that knowledge across and that understanding between all the stakeholders, agencies, community groups and community around how this is going to unravel – not unravel in a bad way; I mean, how this is going to actually happen – and what the roles and responsibilities are and what you can expect are really important, I think. So yes, having some attention on that would be fantastic.

The CHAIR: Anyone else? No? All right. Fantastic. Thanks so much for coming and giving your presentation to us today. It has been excellent and very thorough. It is really good to hear all of the good work that you are doing as catchment managers, the important work you are doing working in those flood plain areas. Thank you very much again for your presentation. You will obviously receive a copy of the transcript for review within about a week's time before it is published on the committee website. Just let the secretariat know if there are any issues with the transcripts once you receive them. The committee will now take a short break, and I think we will be returning at about quarter past 3. Thank you again.

Witnesses withdrew.