REPORT ON PROCEEDINGS BEFORE

SELECT COMMITTEE ON THE PROPOSAL TO RAISE THE WARRAGAMBA DAM WALL

INQUIRY INTO PROPOSAL TO RAISE THE WARRAGAMBA DAM WALL

CORRECTED

At Sydney on Tuesday 30 June 2020

The Committee met at 12:30.

PRESENT

Mr Justin Field (Chair)

The Hon. Wes Fang
The Hon. Shayne Mallard
The Hon. Rod Roberts (Deputy Chair)
The Hon. Adam Searle
The Hon. Penny Sharpe

CORRECTED

The CHAIR: Welcome to the second hearing of the Select Committee On the Proposal to Raise the Warragamba Dam Wall. This inquiry is examining a number of aspects relating to the proposal to raise the dam wall but today we will be focusing on the recent impacts of fire and flood in the Warragamba Dam catchment and downstream. Before I commence I acknowledge the Gadigal people who are the traditional custodians of this land. I pay respect also to Elders past and present of the Eora nation and extend that respect to other Aboriginal people who might be present or watching today's hearing.

Today we will hear from representatives of the New South Wales Government. Before we commence I will make some brief comments about the procedures for today's hearing. Today's hearing is being broadcast live via the Parliament's website. A transcript of today's hearing will be placed on the Committee's website when it becomes available. I also remind media representatives that they must take responsibility for what they publish about the Committee's proceedings. It is important to remember that parliamentary privilege does not apply to what witnesses may say outside of their evidence at the hearing. I urge witnesses to be careful about any comments they may make to the media or others after they complete their evidence as such comments would not be protected by parliamentary privilege if another person decided to take an action for defamation.

The guidelines for the broadcast of proceedings are available from the secretariat. All witnesses have a right to procedural fairness according to the procedural fairness resolution adopted by the House in 2018. There may be some questions that a witness could only answer if they had more time or with certain documents to hand. In these circumstances witnesses are advised that they can take a question on notice and provide an answer within 21 days. I welcome our first witnesses.

PETER CINQUE, Principal Advisor, Hawkesbury-Nepean Strategy, NSW State Emergency Service, on former affirmation

SIMON DRAPER, Chief Executive Officer, Infrastructure NSW, on former affirmation

MAREE ABOOD, Head of Hawkesbury-Nepean Valley Flood Risk Directorate, Infrastructure NSW, on former affirmation

MARK BABISTER, Chief Executive Officer, WMAwater, affirmed and examined

DANIEL AUSTIN, Deputy Commissioner, NSW State Emergency Service, affirmed and examined

FIONA SMITH, Executive Manager Water Catchment Protection, Water NSW, affirmed and examined

DAVID HARPER, Project Director, Water NSW, affirmed and examined

The CHAIR: Mr Draper, or whoever is taking the lead for this session on behalf of the Government, would you like to make an opening statement? It might be useful for those watching to understand that the Committee received a substantial briefing from you this morning. You may like to put some of that information on the record. I suspect that we are going to be asking questions to elicit some of that information for public information anyway.

Mr DRAPER: I will make an opening statement. I will try to keep it brief so as not to take up the Committee's time it has set aside today. It is worth getting some of this on the record. We are pleased to appear before the Select Committee today, some of us have never appeared before. As we discussed before Infrastructure NSW is overseeing the whole of government implementation of the flood strategy for the Hawkesbury-Nepean Valley. In line with best practice the strategy addresses the four elements of disaster risk management; prevention, preparedness, response and recovery. There are nine integrated outcomes or elements of the strategy. Warragamba Dam raising for flood mitigation is one of those elements, and it is a key element of the strategy.

I would note that the Environmental Impact Statement [EIS] for the proposal is currently with the Department of Planning, Industry and Environment for review. This is an important step in the planning assessment process to ensure the EIS is consistent with the detailed requirements set out by the secretary of the department. While this process is ongoing our responses to the inquiry cannot draw on detail from the EIS or from the department's current consistency review. As we discussed at the hearing last year flooding is a very significant and ever-present risk to tens of thousands of people who live and work in the flood plain. Since the Committee's last hearing we have experienced the first flood of significance in the valley since the early 1990s.The Committee has expressed an interest in finding out more about the flood and we are pleased to respond to your enquiries here today. I would like to provide some context for that. Firstly, to talk about the rainfall event that happened in February.

The region was still in severe drought and level two water restrictions were in place for Greater Sydney. It also came on the heels of the worst bushfire season New South Wales has experienced—I think probably in all of our memories—and in some parts of the catchment the rain put out the fires. The rainfall moved across the catchment from north to south, varying in intensity across the region. Some locations in the lower catchments experienced more than 500 millimetres of rain in total. The Warragamba catchment further to the south generally experienced less intense rainfall and lower totals. However, because of its large catchment size—at 905,000 hectares—inflows to Warragamba Dam were still substantial.

Storage levels rose significantly with more than six hundred billion litres of inflows captured—that is around a year's supply for Greater Sydney. As the dam levels were low at the start of the event—at around 43 per cent—the dam was able to capture all of the inflows, much as it would with the proposed dam raising for flood mitigation. As the dam did not fill there were no upstream impacts from the dam storage or operations. Dam storage levels rose to around 75 per cent during the February event and to 83 per cent in following weeks, and they remain at around that level. With follow up rainfall February was the wettest month since June 2016.

In terms of the flood itself the February 2020 flood was a small event in the context of the region, driven as it was by the smaller catchments rather than the Warragamba catchment. It had a likelihood of approximately one-in-five—or 20 per cent—chance of happening in any year or an almost 100 per cent chance of happening in the lifetime of an 80-year-old person. By way of comparison the largest flood in living memory in 1961 had around a one-in-40 chance per year, and the largest flood on record—the so-called "great flood" of 1867—had around a 1-in-500 chance per year, and peaked at10 metres higher than the February 2020 event. Based on the Bureau of Meteorology's categories the February flood peaked in the minor to moderate range across most of the flood plain. Subsequent calibration of the event has shown it was within the range of the thousands of floods

modelled in our flood study. Given the last major flood was in 1990 many people in local communities had little or no experience of regional flooding. While this was a small event, it was perceived by many in the Richmond-Windsor flood plain as a major event.

As is the case even with these small floods bridges were closed and local roads flooded, causing community concern and disruption. There has also been anecdotal community feedback that this was a one in 100-year flood, when in fact it was much smaller. Such a flood, a one in 100-year flood, would have reached 17.3 metres at Windsor—that is eight metres higher than the February flood—and roughly the height of a two-storey building. In February evacuations were only issued for around 65 homes in low lying areas where people could have become isolated and without services. No urban areas were required to evacuate and there were no major impacts on regional infrastructure or services. Had Warragamba Dam been full at the start of the event flooding would have been about three metres deeper for the Penrith-Emu Plains and Richmond-Windsor flood plains.

This would have caused major flooding and increased impacts for people and communities. Evacuation would have been ordered for between 2,500 and 3,000 people from around 1,000 homes. Multiple roads would have been flooded and the Richmond rail line closed. The mass care facility at Olympic Park would have been activated, along with two local evacuation centres. There would have been interruptions to essential services, including loss of power to around 6,500 homes in areas not directly impacted by floodwaters. The clean-up and recovery, including repairs to people's homes, would have taken weeks to months, with significant personal and economic loss. Since the February flood there has been speculation that the proposed Warragamba Dam raising would not reduce flood risk in the Hawkesbury-Nepean. This is simply not the case.

While flooding cannot be prevented in this valley—as we saw in February—raising Warragamba Dam for flood mitigation would significantly reduce flood risk for many thousands of people, their homes and their communities. This is because the large Warragamba catchment is the major contributor to the most dangerous and damaging floods. The proposed dam raising would delay and lower the peak of floodwaters downstream, substantially reduce the number of people and homes affected and increase certainty of time for evacuation. To properly assess the dam raising proposal on its merits the Government is committed to completing the environmental impact assessment process.

Importantly, the final decision on the proposal will only be made after all environmental, cultural, financial and planning assessments are complete. I understand the Committee is also interested in the impacts of bushfires on the area potentially impacted by the proposed dam raising, and on the EIS for the proposal. Officers from the Department of Planning, Industry and Environment and WaterNSW will be available in the next session to address those matters. I ask the Committee to keep in mind that the area potentially impacted by a temporary increase in inundation with the proposed dam raising is a very small proportion of the broader Warragamba catchment—around one-third of 1 per cent of the area. Again, I encourage everyone to assess the dam raising proposal on its merits when the full EIS is exhibited for public review and comment. Thank you very much.

The CHAIR: Thank you, Mr Draper. Are there any other comments before we go to questions from the Committee? I might lead off. Firstly, I want to understand—you mentioned that if Warragamba Dam had been full there would have been a different downstream impact because there would have been flooding out of the Warragamba catchment. If the dam had been full but the wall had already been raised, what would the consequence have been? How much water would have spilled, if any, from that flood?

Mr DRAPER: I will refer that to Ms Abood or Mr Babister.

Ms ABOOD: I will go first. If the dam wall had been raised and if the lake level was at full supply level then from the February 2020 event 100 per cent of that water would have been captured.

The CHAIR: What a percentage of the airspace would have been filled by that water?

Ms ABOOD: Mr Babister?

Mr BABISTER: If we captured all of the water, including the bit that occurred a little bit later, it would be around eight metres.

The CHAIR: So 60-odd per cent of the airspace?

Mr BABISTER: No, it would be less than that because the airspace increases as the water level goes up because the valley is cone shaped.

The CHAIR: Sure. So we do not quite know what percentage of the airspace would have been occupied by that water?

Mr BABISTER: No, I can get back to you on that.

The CHAIR: Okay. But upstream it was still considered a minor event—sort of a one-in-five-year-chance event?

Mr BABISTER: Downstream.

Ms ABOOD: Downstream was a one in five—that is correct. Upstream would have been around a one in 20 at the dam wall.

The CHAIR: At the dam wall?

Ms ABOOD: Yes.

The CHAIR: So it was quite a substantial event and it would have consumed maybe 30 per cent to 40 per cent of the airspace?

Ms ABOOD: It certainly would have—around at least 50 per cent, I think. But we can confirm the number.

The CHAIR: That would be useful. I understand you are giving us a downstream comparison of what would have happened if the dam was full. I think it is useful to compare the two scenarios the other way as well, if the wall had been raised. If it is eight metres, the impact upstream would have been about eight metres. Has there been any modelling done to show how much of the temporary inundation area would have been affected by a flood had the dam wall been raised?

Ms ABOOD: That work has been done as part of the EIS. As part of the EIS they would be looking at all the flood ranges from one in five right up to probable maximum flood [PMF], in terms of the inundation impacts. That work is included in the EIS. Given that with this event in 2020 the dam did not fill and spill, it did not have an impact. The work that we have done has focused on the current event, but the one-in-20-year event—if the dam had been full and there was no dam wall, it still would inundate upstream and if the dam wall had been there it would have been, I think Mr Babister said around between 6 to 8 metres higher and would have inundated a slightly larger area. I do not have the exact number of hectares here.

The CHAIR: Sure. I am just drawing that—of course, there has been a benefit in terms of less flooding downstream but there would also have been an implication upstream as a result of this event.

Ms ABOOD: Absolutely.

The CHAIR: Particularly after the fires, given the amount of vegetation that has been lost, I assume. You showed us a very useful graph chart of the contribution of the different parts of the Hawkesbury Nepean catchment from this particular event. That would be very useful to be on record—if it is possible—to show the different proportions from the different parts of the catchment. Potentially, if you could just talk us through that as well? How was this particular event different to the average in terms of the proportion of water falling in different areas of the catchment?

Ms ABOOD: Okay, thanks. We presented a graphic earlier today, which we will make available. In that graphic we were basically showing the relative contributions of the different flood events—selective events—since 1961. Just for information, Warragamba Dam was completed in 1960 and there have been a number of events, ranging from fairly minor ones to some major events, in that time. The graphic shows that in terms of area Warragamba Dam contributes around 71 per cent of the area to Windsor, followed by around 14 per cent for the Nepean River to Wallacia, 5 per cent of the catchment area to Windsor is the Grose and 5 per cent for South Creek and Eastern Creek. The other contributing tributaries upstream represent 5 per cent.

In the graphic we have showed that the 1961 event, for example, which was the largest event that we have had in living memory, was roughly around a one-in-40-year-type event. The dam at that stage, because it was completed in 1960, was not completely full so there was airspace in that dam. The graph actually shows contributions from the flows for each of the different catchments and in the 1961 event 62 per cent of the flows would have come from that catchment. However, because the dam has an airspace, around 15 per cent to 20 per cent of those flows were retained. If the dam was not there or had the dam been full, the downstream impacts at Windsor would have, instead of being a 15-metre flood, peaked at around 16 metres. So it would have been larger.

The February event was different and unique in that there were no contributions from the Warragamba catchment so all of the flooding experienced downstream at Windsor was due to the contributing catchments of the Nepean, the Grose, South Creek, Eastern Creek and the other upstream tributaries. It is in what we call a moderate flood range but it was a small flood—it only has around a one-in-five-chance per year flood. Had the dam been full, 40 per cent of the contributions would have contributed to the flooding downstream, which would have resulted in the flood peak level being three metres higher.

The CHAIR: I think this is a useful case study, given that Warragamba did not contribute to this flood. We have still had moderate flooding in the Hawkesbury Nepean catchment. What is the highest maximum possible flood that could occur in that floodplain, without a contribution from Warragamba?

Mr BABISTER: I do not think we have ever completely looked at that because there will always be a contribution from Warragamba because it has such a big catchment. There is no possible way in a large flood to stop, no matter what you do—in medium and small floods, up to 100, 500 years you can capture a large percentage but in very big floods you will get some contribution from Warragamba no matter what mitigation option would be looked at.

The CHAIR: I guess my point was that it is possible to have major flooding in the Hawkesbury Nepean, either without a contribution from Warragamba or, even if the dam wall is raised, you could still have major flooding in the floodplain.

Mr BABISTER: Yes, you certainly could. But in most large floods Warragamba would be contributing about 60 per cent of the total flood volume. It varies a bit in different floods but that is sort of the rule of thumb—70 per cent of the catchment and about 60 per cent of the flood volume.

Ms ABOOD: Just assume that Warragamba was not contributing and if all the other tributaries were pumping at their maximum, the maximum you would probably get to is about—did we say 16 metres? It would be hard to get to a one in 100 without Warragamba contributing to that process.

Mr DRAPER: There is perhaps another way to say it. No matter how bad the flooding from the Grose, the Nepean and those other catchments would be, a contribution from Warragamba in a large event would absolutely make that much worse and probably by many more orders of magnitude.

Ms ABOOD: Yes.

The Hon. ADAM SEARLE: What are the realistic chances of the dam being completely full in future?

Mr BABISTER: You mean full to its full supply level?

The Hon. ADAM SEARLE: Yes.

Mr BABISTER: The dam obviously goes up and down with water supply and rain but most of our historical floods have occurred in wet sequences and the dam is usually pretty close to full supply level—only down a couple of meters, if not close to full. What normally happens when we have big floods is that we will have three or four and the first one, like this one, will fill it up, and then we will have one or two follow-up floods. So there is very little natural airspace from operation.

The Hon. ADAM SEARLE: Okay, so these references to "one in so many years" are a bit misleading; it is really a probability calculation.

Mr BABISTER: Yes.

The Hon. ADAM SEARLE: How many times in the past, say 10, 20, 30, 40 years has it actually been full or overfull?

Ms ABOOD: The dam was full—it spilled slightly—in 2016. It spilled in 2013. It spilled in 2012. It has not spilled since then. I think it would have been 1992 and then it was 2012 before that that I think we saw a spill from Warragamba Dam. There was a spill in 2007, I think, from one of the upper Nepean dams, but it was not that often. Some 83 per cent of the time the dam is around about five metres below full storage.

The Hon. ADAM SEARLE: It has happened, what, three times since the dam has been in place?

Mr BABISTER: No.

Ms ABOOD: No, no. In the eighties and the seventies it was—

Mr BABISTER: We had extensive flooding in 1960 and 1961, floods in 1975 and 1978 and then we had a whole run in the eighties and one in 1990—big, substantial floods, much bigger than this. For all of those, other than one of those events, the dam was quite close to full supply level.

The Hon. SHAYNE MALLARD: That begs the question: Can the dam's capacity be managed? It seems that you are able to predict, as you said, the wet season, as it were; the dam is already full and then a flood event occurs. Could the dam water levels be managed to reduce the risk of flooding downstream?

Mr BABISTER: Unfortunately, no. We can work out when we are in a wet sequence, usually after the second event occurs. We have had one event; we do not know whether we are in a wet sequence or not. It is very

hard to look too far forward and know exactly what is going to happen. If we lowered the dam then we would be lowering the water supply and we would be entering the next drought with substantially less water.

The Hon. SHAYNE MALLARD: The community was pretty alarmed at the 50 per cent or lower level and we went onto level 2 water restrictions. Is there a legal requirement to maximise the water in the dam?

Ms ABOOD: The legal requirement is that you cannot exceed full supply level. It is managed to 116.72 metres. That defines the full supply level.

The Hon. SHAYNE MALLARD: The raising of the wall takes the dam from being a water storage dam for Sydney to being also a flood management dam. Is that right?

Ms ABOOD: That is correct, but it is important to note that the full supply level does not change under a proposed dam. It stays and operates as it is. Most of the time it would be a water supply dam and it also would have an environmental flow regime that would be introduced as part of that. The environmental flow regime would cease when the flood mitigation function starts and the flood mitigation function would stop when the event was over. Then it goes back to the normal operation introducing the environmental flow again. They still have to operate—

The Hon. SHAYNE MALLARD: You would bring it down to 100 per cent?

Ms ABOOD: Just down to full supply level, yes.

The Hon. PENNY SHARPE: Just to follow on from that, can I confirm then that the different arrangements will require legislative change if it was to go to flood mitigation rather than just water storage? Or does the way that you are proposing it mean that it will not require legislative change?

Ms ABOOD: It will be most likely dealt with through the water sharing arrangement. There will be some sort of regulatory or operational requirement of how that is operating. The operating protocols need to be regulated. There are a couple of ways that could be done. That will be part of the—

The Hon. PENNY SHARPE: But under the current legal arrangements it cannot be used for flood mitigation.

Ms ABOOD: That is correct.

The Hon. PENNY SHARPE: Any change—yes, okay.

The CHAIR: Correct me if I am wrong, Mr Babister, but other dams around Australia are used in that way for flood mitigation—levels can be changed, water can be released in advance of rainfall events. That knowledge and adaptability exists out there. We just do not do that for Warragamba.

Ms ABOOD: That is because Warragamba is quite different to the dams that operate in that way. Most of those dams, like—

The Hon. PENNY SHARPE: Burrinjuck?

Ms ABOOD: Yes, Burrinjuck. Most of those dams are—I guess one of the reasons we cannot do it for Warragamba is because of the large population downstream. Also, in the ones located on the western rivers we have much greater warning time. For example, you can predict the peak a week out or whatever, whereas here we do not have the same level of forecast time. It is an extreme risk because of the high population downstream. Any release of water has to be planned and has to be really careful, otherwise you are inundating areas earlier and potentially impacting the evacuation sequencing and everything else and reducing the preparation time to get pumps and things out of the river. There are very good reasons why Warragamba is different and we would not operate it in the same way that we would for one of the western rivers.

The CHAIR: That leads to the next question: Had the dam wall been raised and water had been captured in that airspace—as we understand it, water will be released over an up to two-week period. Your suggestion earlier today was that for this event, being a smaller event, it probably would have taken less time. What does that impact look like downstream as that flood water is released into the Warragamba River over the course of seven to 10 days?

Mr BABISTER: To make sure we do not make things any worse in terms of peak we wait for the flow to drop to about half—there is a complex set of rules, but basically half—and then we start letting water out of the mitigation dam. We piggyback on the tail of the flood. We extend it slightly—more days—but we do not increase the peak.

The CHAIR: Have those management rules actually been designed yet?

Mr BABISTER: There has been a series of rules that have been optimised to work, yes.

The CHAIR: Optimised to work for the purposes of the dam wall being raised and then the management of that flood water, or are they in operation now?

Ms ABOOD: No, it is to inform, I guess, optimising the design, minimising the impacts upstream and minimising the impacts downstream. It is an iterative process. Once it has been optimised and the final dam designed then the protocols for that will become part of the operational rules that will be adopted by WaterNSW.

The CHAIR: You often use the example of the—I think it was the 2011 Brisbane floods? Was it 2011? As I understand it, there were back-to-back east coast lows and they came quite quickly after one another. It sort of built upon itself—maybe I have got that a little bit wrong. But in the event that there was a second event that came—it is not unusual, either, from what I understand—you would obviously have to hold that water back longer in the airspace to manage an additional event coming that might come from the other catchment areas.

Mr BABISTER: We have had a good look at the extensive record for east coast lows, which are the major driver for flood events. The record goes back to about 1860 that they have been classified by the Bureau of Meteorology. There are no events where there was anything within two weeks of each other—major events. That is one of the reasons why we want the airspace emptied in two weeks. You will get most of it out in the first week.

Ms ABOOD: I can clarify about how much the airspace was used. Some 60 per cent of the airspace would have been used in the recent event.

The CHAIR: Did you say before 600 gigalitres—

Ms ABOOD: Gigalitres. Yes.

The CHAIR: That was what came into the dam as a result of that 10 days of rainfall?

Ms ABOOD: Yes, primarily between the sixth and the thirteenth or whatever it was. In that primary peak period that was around 600 gigalitres, and I think there was a further 200 gigalitres towards the end of the month, just from base flows and inflows coming from the tributaries. There would have been at the end of the month, depending—but we have to remember that water is actually being used over that time, as well, so it would not have stayed at—

The CHAIR: I had some questions on other issues, if members have questions on those facts first?

The Hon. WES FANG: I was just going to touch on what we spoke about a little bit earlier, which was the other option that has been proposed about keeping an airspace component in the dam and lowering the maximum storage level in order to absorb the impact of any flood that would inflow into the dam. I think we spoke about that the event that happened in February would have virtually filled that airspace. What capacity would there be to empty the dam back to that level and be prepared for another secondary flood impact if it were not there, versus what is currently proposed with the extending of the dam wall?

Mr BABISTER: We can empty the dam down to about 12 metres below its full supply level. The last bit takes forever, but we can get it down most of the way pretty quickly. You could recover that additional airspace after a flood event using the existing gates, but basically it will take a very long time because to get to the last bit the inflow coming in will be quite large compared to your ability to get that water out. Practically you cannot go past about 10 metres.

The Hon. WES FANG: With the new proposal of the raising of the dam wall, it has a greater ability to be able to recover that airspace in order to be prepared for the next event?

Mr BABISTER: It has a greater ability to recover the airspace and it has significantly more airspace as well. What you are talking about with lowering the dam would cater for something like a 20-year inflow, but for larger inflows it would not cater for that.

The Hon. WES FANG: Thank you.

Ms ABOOD: I think the point, too, is that lowering the water supply, you have to use the existing dam structure to try to get that water out. As Mark Babister has said, once you get towards the 10 metres then the hydraulic head, it gets very difficult to get that water out whereas, if you are designing and raising the dam, you are designing the flexibility there, too, to be able to get that out.

The Hon. WES FANG: Yes. That was certainly my understanding. To recover that airspace, if you were to keep the existing dam wall and reduce the airspace, the recovery of the allowed airspace is much harder to do than if you are extending the dam wall on the Warragamba.

Ms ABOOD: Yes. That is correct.

The Hon. SHAYNE MALLARD: Get a garden hose and siphon it out.

The CHAIR: I have a question on a slightly different topic, if people are comfortable with moving on. I was interested to hear that you must have done some work to understand people's perceptions of this flood event. You indicated before, Mr Draper, in your initial contribution that the perception was that this was a large event and that it resulted in part through the spilling of Warragamba. How did you come across this information? You have done some community assessment already since that flood event?

Mr DRAPER: I will let Ms Abood answer.

Ms ABOOD: Thank you. Yes, we have done that, just in terms of some post-survey work to get an indication of, I guess, some of the attitudes. But it also was being out in the field and feedback that was provided through networks as well. So it counts for a combination of different avenues.

The CHAIR: Are those survey findings available to the Committee in full? Where there are other things that were tested?

Ms ABOOD: Can I take that on notice because it was part of a different process? I will take that on notice and get back to you.

The CHAIR: Yes. Sure. I guess my question is: What is being done to correct the community assumptions? If the community believes that that was a large event and may not be preparing for larger ones, which I think everyone agrees is almost certain over time, what work is being done to address that? I know we have talked about the broader management of the floodplain as of this process.

Mr DRAPER: Ms Abood can answer fully, but I just want to mention that I said earlier there are nine elements of the strategy. Awareness and readiness are two of those elements. That is an important of our rural strategy but Ms Abood might want to go into detail about what has been done in response to this particular event.

Ms ABOOD: Yes. A large part of the work that we do, particularly under a couple of the outcomes and the strategy, one of the objectives is to provide contemporary flood risk information. But also the overarching principle of the strategy is to build community resilience. We know from social research work that we undertook in 2014 and 2018 that the levels of community awareness are low so we have designed a comprehensive resilience program and work very closely with our colleagues from SES, or the former Office of Emergency Management which is now Resilience NSW, to have very comprehensive strategic approach to building resilience.

That covers things from broadscale—we had the Get Ready for Flood campaign from September to November last year to raise broadscale awareness around people's risk. That was supported by a whole range of tools like apps that people could go to to work out what their flood risk is in terms of where they lived and to provide advice about things—what you needed to do to prepare—but also to encourage conversations with people, with your neighbours and your family to build the networks as well to ensure that people would be—at least it is in their consciousness and building up that awareness.

I guess it is a phased approach to building the awareness in the community because it is a dynamic community. We know from our social research that the turnover even in a five-year period is quite significant. There are people that are living in this community that have not experienced a flood. As I said, the last one was 1992 and that is several generations of people, particularly if you do not live close to the river. You may not realise that you actually have a flood risk.

Then we have very targeted campaigns. Through the work that we are doing we have identified the communities of concern. They range from aged care, child care, culturally and linguistically diverse [CALD] communities and working with animals. There is a whole range of different ones including homelessness and social housing. We are working with all the networks and the people to ensure that at least the carers and providers are aware of the flood risk and they know what to do and they have got plans in place so that when there is an event they can respond and assist in the preparation to respond to that event. We also have developed school curriculum as well so targeting young people. There is a young people's program so part of that school curriculum is understanding the risk in the valley and some of the issues and the challenges around how you might do that.

It is a very large part of the program. This has to be a multi-pronged approach. The infrastructure is a really important part of reducing the risk because there is a very significant risk but you would need to have a community that is aware and prepared. Our programs are really targeted around making sure that the community, key stakeholders and including Government stakeholders are aware of the risk. We are trying to make sure that we are building in that resilience now, and building our capability and capacity to respond.

The CHAIR: We know just how big the difference between a minor flood and a moderate and major flood is particularly for the Richmond area. It would seem to me that if the assumptions of people watching—and

we saw pictures of people watching the floodwaters go past—was that that was a major flood. Clearly the perceptions are out. What has been done since then to try to improve people's understanding of that risk? Many of those people were, if they were standing there when there was a slightly worse flood, well they would not have been there.

Ms ABOOD: Part of this floodplain because of the way it has been designed, like the bathtub, when it does flood, even with a minor flood, it covers quite extensive areas because a lot of the bridges are fairly low and a lot of the roads are in the low points of the floodplain. So it is easy or it is understandable why people would perceive that it was larger than it actually was.

Mr DRAPER: I think we take your point that it may be an opportunity of having people seeing that flood, for the perceptions they have, for them to be informed that actually that was quite a small flood by comparison with what might happen. That is a useful message. I take your point on that.

The CHAIR: When we travelled around and had a look at some of the areas that could be impacted even by a moderate flood we realised just how broad that floodplain is and how many people could be affected. I think everyone recognised that just raising the dam wall does not fix this problem either. You have already acknowledged that major flooding can happen even without a contribution from Warragamba. I certainly have an interest in making sure those other elements are not being missed and that not too much stock is being put in raising the dam wall, which ultimately could be overtopped and you could still have major flooding without it. It seems we are not quite there yet.

Ms ABOOD: I would say that the community resilience and increasing the risk awareness are critically important because the dam is there to reduce the peak and reduce the risk to people's lives and their homes and the community, but the community also needs to be able to be aware of their risk and respond as well. The community resilience program is something that needs to be ongoing. It is a critical part. It is one of the most critical parts of the strategy. It is something that should be sustained over time. You could even say with the bushfires: It is about how do we maintain resilient communities? It is a really important part of what we need to do.

Mr DRAPER: I think we should assure the Committee that the other eight elements of the strategy are certainly not being left un-pursued. Ms Abood referred to the fact there was a campaign, which caused a little bit of controversy in the latter part of last year when we had quite confronting signage up in the floodplain saying, "This area has flooded before and it will flood again". At the time we were in drought and we had stage two water restrictions and people were sceptical, I suppose, about that. But we have had quite active programs and sometimes people do need to be reminded in a reasonably confronting way that these events are quite possible.

The Hon. PENNY SHARPE: That leads directly to this. I mean, we have talked a lot about community education. I have to say I think it was a very tough gig to try to warn people about flood in the middle of a drought. I think that is very difficult. It is not like the Blue Mountains where people live with bushfires all the time. You can smell the hazard. It is very live in people's minds. I just do accept you have a very tough gig there, but I am very interested in this—and maybe this is not for you: maybe I need to ask Mr Gainsford this afternoon.

Clearly, there is a lot of building that has been allowed over a very long period of time on the floodplain. There are a lot of houses that are exposed on the floodplain. Part of the discussion about whether this wall-raising is worth it or not is about how much more is going to be built on the floodplain as a result of the building of the wall. My question is: What discussions if any are happening with Department of Planning, Industry and Environment around actually saying that there are just some places where we are not going to put more people in harm, leaving aside that there have been decisions made over a long period of time, that there is a lot of housing being planned in western Sydney and in a whole range of places. Is there actually a discussion in Government that says, these places, we are not developing them?

Ms ABOOD: There is an ongoing discussion, yes.

The Hon. PENNY SHARPE: Can you take me through how that is happening?

Ms ABOOD: Yes, sure. I guess the first point I would make is that we recognise that there is a very large and existing risk now and we have always said that Warragamba is around dealing with existing risk, it is not about providing for potential growth or making land available for growth. One of the major projects under the strategy is the land use planning framework. The Department of Planning, Industry and Environment is leading a regional land use strategy. The purpose of that regional land use strategy is to look at the cumulative impact of growth. But more specifically it is really looking at a number of elements around in the flood plain to say, looking at hazards, looking at risk to life, at a whole combination of factors. Because, coming back to this resilience thing, it is about how do we actually build resilient communities, and land use planning is a key element of that, and also to manage the ongoing risk.

The Hon. PENNY SHARPE: Which is good, but my question really is, is there a point where you say this land cannot, even with all of this framework, these discussions and land use planning is a constant and iterative process in New South Wales. There are thousands of houses being slated to go in there. Is it your view that there will be areas that perhaps have been pencilled in for development in the future but will actually say no, we are not doing that, with or without the dam wall?

Ms ABOOD: There are potential areas that may be, depending on the assessment of the hazards, all those factors I was talking about.

The Hon. PENNY SHARPE: And the final decision-maker on that is the Department of Planning, Industry and Environment?

Ms ABOOD: They will be. The framework will be signed off by government anyway, so that will be embedded and councils will have to adopt that as well. I think part of the challenge here is that we have got multiple councils. We have got the State Government in the planning space and that is why we have got this regional planning framework to look at this from a more strategic point. It certainly will be identifying to ensure that we are not putting people in, allowing development to go into those areas but also if there are areas that we need to potentially look at maybe cutting back on some of the development in those areas, then that certainly will be something that the Government will have to consider.

Mr DRAPER: Perhaps also to Ms Sharpe's question, and the evidence I think has been given here before, maybe not by Mr Gainsford but I think it was one of the other officers.

The Hon. PENNY SHARPE: Yes, we have had a lot. Forgive me, it has been a little while since I have had my head right in the middle of this.

Mr DRAPER: I think their evidence, and this is our understanding as well, is that there are current restrictions on where development can happen, and no-one can develop below the one in 100-year flood line and that will not change, regardless of whether the dam wall was raised or not.

The Hon. PENNY SHARPE: I am familiar with that trigger. I suppose given all of the discussion about if this was a one-in-five it was considered to be relatively low, still had significant impact, leaving aside the discussion we have been having about the dam being full and how much it would have taken. I still wonder whether anyone at any point is saying if we are going to have more frequent intensity and these are going to happen more often, which seems to be the case, how much more beyond the dam wall and community education and all of those things is actually being done, are we actually putting some lines on the paper to look at expanding the trigger from just one in 100?

Ms ABOOD: The Department of Planning is adopting a more risk-based approach to this as well. Because the one in 100 is a very coarse level for planning.

The Hon. PENNY SHARPE: Yes, I agree.

Ms ABOOD: So really you need to look at the risk and that is what this framework is trying to do. It is challenging.

The Hon. PENNY SHARPE: There is no disagreement from me. What is the time frame for that, do you know?

Ms ABOOD: We are working very closely with councils on that. It is probably another six- to 12-month program, because it has got a lot—

The Hon. PENNY SHARPE: You see my question is also you are trying to do the EIS, which I have not asked you and I apologise if I missed it, what is the time frame currently for the release of the EIS?

The Hon. SHAYNE MALLARD: They did not answer that.

The CHAIR: We did not ask before.

The Hon. PENNY SHARPE: Better to ask then.

Mr DRAPER: It is currently with the Department of Planning for assistance—

The Hon. PENNY SHARPE: We need to ask someone else then.

Mr DRAPER: And even they may not be able to answer precisely, but we would certainly hope to have it out in the second half of this year, if only because there is so much information in the EIS. Everyone has been expecting it for a long time and we refer you to it often to say that is where all the information is going to be. I think the sooner it is out there and can be examined by the public the better.

The CHAIR: Before you continue, Ms Sharpe, I think we heard evidence earlier that portions of the EIS are with the department but not the whole EIS, is that correct? The EIS has not been submitted for adequacy or consideration yet but parts of it have been for guidance.

Ms ABOOD: May I refer that?

Mr HARPER: The whole EIS has been submitted, since May.

The CHAIR: It has been with the department since May in full?

Mr HARPER: Yes.

The CHAIR: I wanted to continue on from where Ms Sharpe was. I think we heard from you in the briefing, Mr Babister, that climate change is having an impact in terms of what a one in 100-year chance event is. It seemed that by the end of the century essentially those sorts of events would be likely to be a one in 60-year event. I know that may not be the official line but climate change is changing the sorts of events and the regularity of them. How does that get factored into this planning assessment, because if you are making planning decisions on one-in-100, but that then becomes more normal, or you have mitigations in place that change it to a lower chance event, but then you get an anomalous event which puts all of those people at risk. It seems to me there are a lot of moving parts there.

Mr BABISTER: There certainly are a lot of moving parts and generally in New South Wales climate change is not factored into house floor levels at the moment. At some stage it will have to be.

The Hon. PENNY SHARPE: Is that done elsewhere?

Mr BABISTER: In other countries, yes.

The Hon. PENNY SHARPE: But not in Australia?

Mr BABISTER: It is done higgledy-piggledy in different places, and even some councils do it as well. Generally it is done where the amounts are so small so people will not get too upset.

The CHAIR: Chapter 2.4 of the higgledy-piggledy climate change management strategy. To the second point, we have heard this event described as a one in five-year event on the flood plain, but more appropriately considered a moderate event, at the lower end of the moderate event scale. The fact that much of the floodwater was kept back behind the Warragamba Dam wall with a larger event there, it would have looked different had the dam wall not been in place, I get all of that. We have these mitigation strategies which change the level downstream. That one in 100-year planning event, if you raised the Warragamba Dam wall, that obviously changes the number of events and the size of the flooding that are considered one in 100-year events. I am trying to work out how that affects this planning consideration that is going on. How will the line change as a result of this dam wall from a planning assessment process? Will it mean you can effectively build lower, because we have mitigated some of that one in 100-year event?

Mr DRAPER: I think the answer to that is no. That is the evidence that has been given by the Department of Planning in the past. I think it would be worth, as Ms Sharpe suggested, taking it up with the Department of Planning this afternoon, but my understanding is the answer to that is absolutely not.

The CHAIR: Are there any other questions on that angle?

The Hon. PENNY SHARPE: I am okay.

The CHAIR: I asked some questions earlier about forecasting. I know that is also part of the suite of tools, getting better forecasting. I was wondering if you could talk to how the forecasting worked in this instance, how the Bureau of Meteorology forecast married up with what actually fell, where it fell, how that changed SES planning, if it did at all, just to get an understanding? We heard some of it this morning but I think it would be useful for the public record.

Mr AUSTIN: Thank you for the question. As we know, as the forecast a long way out is quite a dynamic and wide range of variables that they give us, as that gets closer and closer that narrows down to the point where yes, the forecast becomes quite accurate. From our point of view it is about working on the range of variables and then planning your response across that range of variables that we have been given.

The CHAIR: Can you give the Committee a sense of what that looked like for this event? A week out what were you expecting, three days out what were you expecting, one day out what were you expecting and did it marry up?

Mr AUSTIN: To put it in context, this was a part of a broader response. There was a storm event and flooding right up and down the majority of the coast. From our point of view it was a part of that. That forecast

moved and changed. As it got more and more accurate and it got closer and closer it is fair to say that yes, the range of figures that we were getting were getting much closer together, which was able to give us a reasonably good response and expectation of what was coming.

The CHAIR: The flood level that eventuated—let's take the Windsor Bridge as an example. At what point did you have a handle on, "We think it is going to get to that level"?

Mr AUSTIN: It is difficult to say exactly, "this number of hours out". However, what we were able to do was look at the fact that the dam was currently down on where it was—so there was a level of mitigation there and we were able to work with the bureau, because we have an embedded meteorologist within our State operations centre, to start forecasting some of those things and then we could start putting some of those warnings out. With the bureau putting its warnings out in advance, that gave the community another set of tools to work with, as well, and advance notice.

The CHAIR: At any stage did you put out warnings that were much worse than what actually eventuated or not quite get it right? I am just trying to understand.

Mr AUSTIN: I believe when we looked at it the warnings are about on the mark. As I said, the forecasting and working with the bureau gives you that ability to look at that and then continue to tighten those up and give as much notice as possible.

The CHAIR: Given how much water fell in the Warragamba catchment, was there at any stage concern that Warragamba was going to overtop? I know it was fairly well down, so there was a lot of space in the dam.

Mr AUSTIN: No, not from the discussions I was having with the bureau.

The CHAIR: Okay.

The Hon. SHAYNE MALLARD: Some misinformation or misunderstanding in the community is about why we have this proposal to raise the dam wall. One of the things that has been put to me is that if you get a major flood event the evacuation routes do not have the capacity to quickly evacuate the communities. It has been put to me that one of the reasons for that is the authorities—the SES and the police—do not support contraflow road arrangements to manage a faster evacuation. Do you want to address that view?

Mr AUSTIN: I am not aware that we necessarily have a position. From our point of view, raising the dam wall is potentially a mitigation measure that will buy more time to evacuate people. Anything that buys you more time is a good thing. Of course, the best evacuation to have is the one you do not need to have.

The Hon. SHAYNE MALLARD: Is there any capacity downstream, in terms of road infrastructure, bridge infrastructure and a more dynamic plan, to address the safety issues of the flood threat? I know that property is a great concern and we heard about the psychological impacts of being flooded, but are there other things we can address downstream?

Ms ABOOD: In terms of the road evacuation modelling work that we are doing, we have looked at more flexible arrangements and contraflow. The roads in western Sydney are a combination of single-lane roads and then you have roads such as Jim Anderson Bridge. The ability to put contraflow arrangements in place in a short period of time is challenging. You could do it on Jim Anderson Bridge but those roads then still go on to other parts of the road network. It is more of a challenge. We have looked at altering what we call "road furniture"—contraflow, all of those things—to look at how to maximise the existing system. But there are limitations around what you can do.

Mr BABISTER: It is worthwhile keeping in mind, too, this could be at night and it will probably during heavy rain so having something that is non-standard for people evacuating will add to complexity.

Mr DRAPER: It is also worth saying that one of those nine elements we keep referring to is local road improvements for evacuation—that is one of the programs.

The CHAIR: My next question relates to the speed. We saw on one of the graphs or charts you showed earlier that plotted all of the events you have modelled that will be in the EIS, as well as this real-time event, that this actually rose from the start of the event to the peak of the flood very quickly, especially given no water came from the Warragamba catchment. Can you outline what that chart showed and if you are prepared to put that on public record, as well, that would be useful. What was the time between the start of the event and the peak of the flood? If you give us a couple of points—maybe at Penrith and at Windsor Bridge.

Mr BABISTER: The exact times we will have to take on notice but this event did rise pretty quickly and that is really because most of it was generated by the Grose River, which pretty much puts water off that Grose catchment straight into the Hawkesbury Nepean right next to the major population centres, instead of water

gradually coming down the river from Warragamba and the Nepean. So the major input was straight into the system, which caused a fast rise. But it only caused a fast rise in the in-bank section of the river—it is one of the fastest events that we have seen. It is certainly within our modelling framework of what we anticipate could occur. It was not quite so dramatic at Penrith; it was largely in-bank and did not cause any dramatic damage or anything else. Penrith is a little bit unique because you can pretty much fit a one-in-50-year flood in the river without causing any substantial damage, so things do not get noticed as much there until they get to the one-in-100-year level.

The CHAIR: You have given evidence today that if the Warragamba Dam had been full and the dam wall raising was not in place, the height of the flood would have been three metres higher than it was otherwise. I think that was at the Windsor Bridge. How would that have affected the time between the start of the event and the maximum height of the flood? Because a key point that is often raised—and it was just raised again—is that the wall mitigation or the use of airspace delays the flood peak and gives us time to evacuate. What does the modelling show?

Mr BABISTER: For this particular event?

The CHAIR: Yes, for this event.

Mr BABISTER: If we had had the mitigation dam in place for this event and the dam was full, it would have been much the same as what we observed.

The CHAIR: No, sorry, Ms Abood spoke about how the height of the flood would have been three metres higher if Warragamba Dam had been full. I am trying to understand how under those same circumstances—without the dam wall raising, if that is going to be used as an example of how the dam wall would help reduce the flood—what the consequences of the speed of the raise of the flood would have been.

Ms ABOOD: If Warragamba was contributing to—

The CHAIR: Yes. Essentially, would that have dramatically reduced the ability of the SES to initiate evacuation procedures because of the speed of the flood?

Ms ABOOD: So it is about the timing and the consequence of when—

Mr BABISTER:. Yes. Because this was a small flood it did not really make a difference. If the dam was full it would have continued up at a very similar rate at North Richmond and Windsor.

The CHAIR: A similar rate? So the speed would have continued but the height would have been different?

Mr BABISTER: Yes. Just before the peak it would have slowed down quite dramatically but it would have gone up most of that three metres at a pretty similar rate to what we observed. Once it gets up to about that 12-metre rate, that is when the entire floodplain is engaged and storage is—

The CHAIR: It slows down.

Mr BABISTER: It is slowed right down, yes.

The CHAIR: How far were we from that with this flood?

Mr BABISTER: About a meter and a half, two metres. It varies a bit where you are in the floodplain: It is lower at Windsor and higher at North Richmond.

The CHAIR: .Okay. For those evacuations that did occur for this event—I think you said 65 properties were evacuated—at what point in the time between start and flood peak did those evacuations get initiated?

Mr AUSTIN: The evacuations took place late in the afternoon of 9 February. This event started somewhere at about the fifth, so about four days into the event overall.

The CHAIR: How far away was that from the peak of the flood?

Ms ABOOD: The peak was on the ninth, wasn't it?

The CHAIR: The evacuation happened just before the peak of the flood, really?

Mr CINQUE: No, the peak was around about Monday morning—through the early hours of Monday morning—but the evacuation decision process we undertook on the Sunday morning, based on the predictions in the scenario that the bureau provided. The bridge was closed in the afternoon. The evacuation decision-making and pre-warning of the populations happened through late morning into the afternoon on Sunday.

The Hon. ROD ROBERTS: Just following on from that, Mr Austin, approximately 65 homes, 200 people was the evacuation order. How did that work for you?

Mr AUSTIN: In what way?

The Hon. ROD ROBERTS: Was it successful? Tell me this: How many people refused to leave? Did you have anybody refuse to leave home?

Mr AUSTIN: There will always be people who choose not to leave under any circumstance. Some of that is because of their own history and their own knowledge, or for a range of their own personal reasons. My understanding is that only about 15 people presented at the Windsor evacuation centre. That in itself says not a lot of people chose to go to the evacuation centre. But we also know through history that a vast number of people will also choose to find their own personal alternative arrangements, be that friends, family or just an alternative location for themselves.

The Hon. ROD ROBERTS: Certainly, but taking that a bit further, though—notwithstanding that people do not want to leave and you cannot pick them up and physically carry them out of the residence, what sort of percentage of people moved and what sort of percentage stayed? I imagine that could be extrapolated out across the whole valley in terms of a major flooding—some 50 per cent of people decide to stay and only 50 per cent go?

Mr AUSTIN: There is an evacuation centre set up at the North Richmond community hall. Our records show that nobody attended that. As I say, there was one at Windsor that 15 people attended and another one at Richmond—I do not have any numbers on what did and did not attend there. Again, people understand what is in that space. Some people do have a knowledge of their own risk and they will choose to evacuate or not evacuate as they see fit sometimes.

The Hon. ADAM SEARLE: Mr Austin, just to be clear: You do not know how many people evacuated and how many people did not?

Mr AUSTIN: No, and we will never know exactly who has left the area without going to these points and registering.

The Hon. ADAM SEARLE: So when we see assessments of likely evacuation levels we have to treat that with a bit of caution because it is—what are those assessments based on?

Mr AUSTIN: They are based on a range of history and modelling of people who have done some analysis around what was the population present versus turning up at evacuation centres and other things.

The Hon. ADAM SEARLE: But if people choose to make their own arrangements or leave the locality altogether attendance at evacuation centres would tell you nothing, other than who chose to go to those locations.

Mr AUSTIN: That is why it is based on your best available data at the time.

The Hon. ADAM SEARLE: But if one of the inputs to the proposal to raise the dam wall is likely evacuation levels and public safety, how can the community have confidence in the information that it is being based on if you just do not know with any kind of reliability what evacuation levels are?

Mr AUSTIN: The warnings provided are provided to provide as much time for people to get out as possible.

Mr DRAPER: I think maybe I will seek some help from Ms Abood, but the numbers that are provided on evacuations in the assessments are the numbers of people who should, for their own safety and wellbeing, evacuate. I think Mr Austin is referring to the fact that some people do not take that action, regardless of the recommendations.

Mr CINQUE: Because most people do go their own arrangements—evidence shows about 80 per cent to 85 per cent—we do not register people leaving an area, because that will create more problems. That will slow down the rate of evacuation by registering, because it is a fairly dense area with limited roads. Only the residual people go to evacuation centres. In this one there were some more itinerant people who presented at the evacuation centre, those 15. They were not representative of the normal residents. It is very hard to measure except for surveys post-event.

The Hon. ADAM SEARLE: Yes, and that would be a useful undertaking, would it not, so you can get a more accurate assessment?

Mr CINQUE: Yes.

The Hon. ADAM SEARLE: Is that done?

Mr CINQUE: Not yet for this one, but that is part of the community engagement. We are constantly engaging to see how people respond to evacuation. Those surveys reveal their intent; it does not necessarily reveal their actions on the day but the intent. The evidence in the community engagement surveys we have done over the last 10 years shows there is a slight increase as awareness builds. There is a long way to go, but there is an increase. It shows how important that one of those nine outcomes, community engagement, is so important that it will reign there forever, basically, to keep that awareness up.

Mr ABOOD: The other thing I just might add there: We do know how many people are there and the number of people to be evacuated. I think that is also important. This flood was—there was a small number of people affected because this is very low on the floodplain. It is mainly agricultural lands. But had it been a one in 50 or more then the emergency services would have been doorknocking and there would be whole different management actions put in place.

The Hon. SHAYNE MALLARD: Mr Draper, I wonder if you could just step us through the government process of this approval. You are involved—it is prioritised through Infrastructure NSW amongst a raft of projects?

Mr DRAPER: We are sort of the coordinating agency, yes, but the proponent for the project and the agency that is lodging the environmental impact statement is WaterNSW. That will be considered by the Department of Planning, Industry and Environment.

The Hon. SHAYNE MALLARD: Has Cabinet—it has been ticked off to go to this stage, but it would need to go back to Government for a final decision. Is that right?

Mr DRAPER: Government will ultimately have to make a decision on proceeding after the assessment has taken place. Cabinet does see some of the elements that are going forward into the EIS as that goes through, as well.

The Hon. SHAYNE MALLARD: Has there been identification of the budget needed?

Mr DRAPER: There was an assessment done—I think it was in 2015—which was the initial thing, but it has got to go back for a final investment decision once we understand the final cost. There are a couple of processes happening at the moment. One is the EIS process. The outcome of the EIS will influence the final cost. If it is approved there may be conditions imposed. All of those things will affect the final cost. That would have to be taken into account. There is also a process happening that perhaps WaterNSW can describe further where it is engaging with civil contractors to help develop the final cost for building the raising.

The Hon. SHAYNE MALLARD: Would the funding come from your area, though, from Infrastructure NSW?

Mr DRAPER: No, the funding does not come from Infrastructure NSW. It will come from Government consolidated funds.

The Hon. SHAYNE MALLARD: Allocated to Sydney Water?

Mr DRAPER: To WaterNSW, yes.

The Hon. SHAYNE MALLARD: WaterNSW, sorry. I understand there is an environmental offset probably going to be part of that cost?

Mr DRAPER: There is a biodiversity assessment process. That process determines whether offsets are required and how many offsets. That has not been completed, as I understand it, or I am not familiar with it in any case. Yes, all the developments have to go through that assessment of whether they require offsets or not.

The Hon. SHAYNE MALLARD: That is legislated?

Mr DRAPER: Yes.

The Hon. SHAYNE MALLARD: It cannot be exempted?

Mr DRAPER: I do not think it is exempted, but there is a process for determining the offsets that would be required.

Ms ABOOD: Just to clarify, Infrastructure NSW will be responsible for developing the final business case, of which the Warragamba Dam raising project is a key component and will inform the final business case. The final business case is not just about the dam; it is about all the elements of the strategy that are required. The final cost will be determined on the conditions of approval—all of the things that we need to do, the final estimates for the dam design. There is a whole range of things that will inform the final cost and for the final business case for Government's consideration.

The CHAIR: I was going to ask this in the afternoon session, but since the Hon. Shayne Mallard has opened the door: Mr Draper, we heard evidence before that the EIS has been submitted to Planning. I think Mr Harper indicated it was completed in May and handed to Planning, though I know it has not been formally submitted to go on exhibition yet. However, you just suggested that the offset arrangements had not been finalised. I was under the impression that the offset arrangements were part of the EIS. Certainly when we have asked questions about that before the response has been, "It will be in the EIS". Has it been excluded from the EIS that has gone forward to Planning? Has it not yet been finalised in the EIS? Could I just get a clarification about its status?

Mr DRAPER: I will ask WaterNSW this. I said I was not aware of the detail of how that was being done. Perhaps WaterNSW can describe that.

The CHAIR: Thank you.

Mr HARPER: Just to clarify on that submission: It was made from WaterNSW to the Department of Planning for the consistency review. As pointed out by I think Mr Gainsford earlier, it is a draft format, but a final draft position. That is under review at the moment for feedback. That includes the biodiversity offset strategy within that EIS.

The CHAIR: It does? It has been completed to the extent that WaterNSW has come up with an offset strategy and submitted it, and it may well be considered to be adequate or whatever that process is that Planning is going through, and it will come back to you if it has got any concerns with it. Is that the case?

Mr HARPER: That is correct.

The CHAIR: I will have more questions about this this afternoon, I think, which you will be in, Mr Harper?

Mr HARPER: Yes.

The CHAIR: Yes.

The Hon. PENNY SHARPE: I am waiting until this afternoon for that, too.

The CHAIR: Okay. We might do that then.

The Hon. PENNY SHARPE: Can I ask one question regarding the business case? The time frame for the business case's conclusion, what is that?

Ms ABOOD: Pending. I guess a key element of this—

The Hon. PENNY SHARPE: I am just trying to work out what the order is.

Ms ABOOD: Yes.

The Hon. PENNY SHARPE: You have the environmental impact statement that is sitting here that you are saying is going to come, hopefully, by the end of this year. Where does the business case fit in with that?

Ms ABOOD: The business case would come after that so it is really—because we need the outputs of those in terms of the conditions of approval, offsets, and whatever—all the things that need to be factored into the final cost.

The Hon. PENNY SHARPE: So the business case is not finalised until it has been approved? Is that what you are saying? The EIS process, until it is approved?

Ms ABOOD: Well, the intention was that the planning—

Mr DRAPER: Maybe I could describe it. Generally in a lot of projects the final business case is approved in advance of the planning process or procurement process.

Ms ABOOD: Yes, that is right.

The Hon. PENNY SHARPE: Yes. That is why I am interested.

Mr DRAPER: Yes, I understand. That is normal. In this case, because of the clear interest in the project and sensitivity of the project from an environmental and Aboriginal cultural heritage perspective and all those aspects, I think we really need to understand what conditions could be imposed on it before we could really make an assessment for the final business case. So in this case we would rather take the case to Government once we understand all those details than speculate on what the outcome of the assessment process would be.

The Hon. PENNY SHARPE: Just to be clear: The EIS process will go in. It will go to Planning. Planning with give it either a tick or not. At that point it would then go or you would then take the sort of approval and the business case to the Government for final—how does that work?

Mr DRAPER: We would take the final business case. We would then have greater certainty over what conditions would be imposed and that would then inform the cost.

The Hon. PENNY SHARPE: No, I get that. I am just trying to work out what is the chain of decision-making with what document is before Government before they finally give it a tick?

Mr DRAPER: I guess what we would like to be able to say to the Government is that we now know. This has been through community engagement. It has been through an exhibition of the EIS. There have been submissions to the Department of Planning. The Department of Planning has made a decision on whether to approve it or not and these conditions have been imposed. The engineering contractors who are working with Water NSW have provided input on the costs of meeting those conditions and we have a fairly confident view on the cost of completing the project.

The Hon. PENNY SHARPE: I do not think that quite gets us there but that is okay.

Mr DRAPER: I am happy to sort of—

The Hon. PENNY SHARPE: No, that is okay. I will think about it a bit more and probably make something so I can get—

Mr DRAPER: But I agree. Normally we would—

The Hon. PENNY SHARPE: It just seems it is quite—and I do not really expect you to comment. The issue for me is that it is quite strange, it seems to me, that the Government would be pursuing the approval of a project when it has not completed the business case, but the business case will not be considered until it has actually been through the approval process. It is a chicken and egg. I do not quite understand how that goes.

Mr DRAPER: Well, it is fairly iterative. Most investment decision-making, planning and procurement—those things do intersect so there is always a decision at some point when the threshold has been met that it is worth pursuing at the planning and approval process and developing the project further so that it can be finally costed. There is always an interaction between those processes. In this case we are saying that we are taking the final business case after we have a better understanding of the environmental process.

The Hon. PENNY SHARPE: Is that really because essentially the issue is—and we will get a bit more into this this afternoon—there is a great range in terms of what is considered required under the offsetting policy?

Mr DRAPER: No. It is not related particularly to that but I think, as I said earlier, as witnessed by the fact that there is this select committee, there is huge amount of public interest. There is a high degree of sensitivity about the project and it is not like we are developing an office building in the CBD. It is something far more significant than that and we expect there is going to be quite a lot of commentary and input into the EIS process.

The Hon. PENNY SHARPE: Thank you.

The CHAIR: But that was not the process employed with, say, the Allianz Stadium when the business case was developed, I think, before final planning approval or they were developed pretty concurrently. It does seem like this is quite a unique process. Given the biggest cost factor, I think it has become clear to everyone that the cost unknown is the biodiversity offsets. What is the rationale for separating out these processes entirely? It seems to me that the cost benefit discussion is going to pretty much hinge now on the offsets.

Mr DRAPER: As I answered Ms Sharpe, it is not related to the offsets in particular.

The Hon. PENNY SHARPE: But they are an aspect of it.

Mr DRAPER: They will always be an aspect of the cost of any project.

Ms ABOOD: Certainly an input, yes.

Mr DRAPER: That is quite normal. I cannot recall the—and I should know because we are building the Sydney football stadium—

The CHAIR: We had another parliamentary inquiry about that. It is a pretty useful comparison, I suspect.

Mr DRAPER: Yes. I mean, look, there are processes which you might describe as more common but there are sometimes—sometimes, for example, procurement might happen before planning assessment and approval is complete and that procurement is subject to that planning assessment. So the order sometimes changes

depending on the circumstances of the project. I think I have described why we are approaching this one in this particular way.

The CHAIR: I would actually like to ask another question about the offsets while Ms Abood is here. I know the Committee has written to the Government and the Minister about seeking further information around the offsets. I personally have put in Government Information (Public Access) Act [GIPAA] requests and a lot of that has come back extremely redacted. I think it was made to Infrastructure NSW at the time and in particular it was about the decision-making around the offsets. I am just wondering why biodiversity offsets—questions about that and information about the analysis going into it and briefings—have been so significantly redacted. What is the rationale for keeping that information from public view at the moment?

Ms ABOOD: The first point I would make is just the redacted material that was in those documents was not about the offsets strategy. It was about other commercial-in-confidence and other sensitive materials not related. Those briefings and meetings covered a wide range of things. Primarily the redacted materials were not in relation to the offsets strategy. I guess the other point I would make would be that the offsets strategy is part of informing the EIS. It is an ongoing process. It was draft and it has now been submitted as part of the consistency for review.

The CHAIR: Under the GIPA Act though none of that justifies not releasing it to the public. Do you consider them to be Cabinet documents?

Mr DRAPER: I think we would have to go back through the documents you refer to. I think there was a discussion about this at Budget Estimates—

The CHAIR: There was.

Mr DRAPER: —with Minister Ayres earlier this year, so we would have to go back through that. Perhaps we will have to take it on notice today.

The CHAIR: This is just one of the documents. I have got all the meeting notes here. I know that this SMEC Australia Pty Limited biodiversity update was in the middle of last year, for instance. There are headings in there which show that it is about offsets, upstream impact in particular. That is what every page of the briefing is. I am just wondering why. I understand. The Minister's point made at Budget Estimates pretty much was, "I'll determine the timing of the release of this information and it will be when the EIS goes out on public exhibition", but that is not actually a rationale. That actually is not available to you under the GIPA Act in terms of decisions to release, or not, public information. I am just wondering why biodiversity offsets seem to be so close hold for this process.

Mr DRAPER: Can I suggest we just take that on notice? We certainly do not want to answer on behalf of the Minister.

The CHAIR: No, but this was not to the Minister. This was to Infrastructure NSW as a GIPA application.

Mr DRAPER: Yes, and we are happy to take that on notice and respond to you on that.

The CHAIR: You are welcome to take that on notice. I cannot force you to answer, Mr Draper, obviously, but I mean it is—

Mr DRAPER: It is not that. I genuinely cannot recall. I remember the event or the discussion at Budget Estimates earlier this year but we have not got the information to hand to answer the question. These sort of GIPA requests go through quite a thorough assessment before they are released.

The CHAIR: Oh, I can see it has gone through a very thorough assessment: without a doubt. Someone has made very specific decisions about how much of them to black out, yes.

Mr DRAPER: I will be able to give you a much more reliable answer on notice.

The CHAIR: I will put in some questions on notice about that. Thank you very much. Are there any other questions from Committee members?

The Hon. WES FANG: No.

The CHAIR: We might close this session and reappear later.

Ms ABOOD: Sorry, Chair: just a follow-up about what we were going to do post the February floods just in terms of building resilience. We did do an analysis of the February floods and we are refreshing the Get Ready campaign, probably around this winter around August or so, to refresh and build on the previous Get Ready

campaign and also to build on the awareness from the February flood, just to keep that momentum and keep that going.

The CHAIR: Another advertising campaign?

Ms ABOOD: Not in the way that we have—it is just a continuation of the work, and particularly one of the things that happened at the end of the Get Ready campaign, there was one element of the Get Ready campaign that we were not able to implement because of the bushfires. It is really just implementing that component, but repositioning it to be more relevant to building resilience and increasing on the awareness of the recent flood campaign.

The CHAIR: Ms Abood, I am sure you would be aware some of the cynicism of that advertising campaign was around the potential coincidental timing of, I think the EIS was due to be released around that time. When at this stage would any of the advertising likely occur as a result of the campaign you mention?

Ms ABOOD: As I said previously, we would try to coincide with the storm season and once again we are coinciding with the storm season is irrelevant of when the EIS happens. This is really around focusing on now and what we need to do with the community.

Mr BABISTER: Clan I clarify, Mr Chair?

The CHAIR: Sure.

Mr BABISTER: There was a question about what would happen if there was no contribution from Warragamba Dam. We had a probable maximum flood but no contribution from Warragamba Dam, we get to about the 100-year flood level, which is about 10 metres below the probable maximum flood level.

The CHAIR: You could get to a one in 100-year without Warragamba?

Mr BABISTER: Yes.

The CHAIR: Which is a pretty major flood.

Mr BABISTER: Yes, but it would be 10 metres less.

The Hon. WES FANG: Imagine what 10 metres in Warragamba would do.

The CHAIR: Sure, but the point is that all the decisions have to be made regardless.

Ms ABOOD: But that would be a PMF from every other catchment.

Mr BABISTER: That would be a PMF and that is one-in-100,000 chance.

The CHAIR: Sure, I understand.

Ms ABOOD: For each of those catchments, yes.

The CHAIR: I understand. Thank you for attending the hearing. If any questions have been taken on notice, I think there were a few, the Committee has resolved that answers to questions taken on notice be returned within 21 days. The secretariat will contact you in relation to the questions you have taken on notice. I think there may be a more general request for the presentations that were given to the Committee this morning, for us to put them on the public record as well.

Ms ABOOD: We are happy for it to be put on.

Mr DRAPER: We are quite happy for that to be used in any way you think.

(The witnesses withdrew.)

(Short adjournment)

DAVID HARPER, Program Director Major Projects, Water NSW, on former affirmation

ATTICUS FLEMING, Deputy Secretary, National Parks and Wildlife Service, Department of Planning, Industry and Environment, affirmed and examined

DAVID GAINSFORD, Executive Director Infrastructure Assessments, Department of Planning, Industry and Environment, affirmed and examined

FIONA SMITH, Executive Manager Water Catchment Protection, Water NSW, on former affirmation

The CHAIR: Mr Gainsford, do you have an opening statement for the Committee?

Mr GAINSFORD: No.

The CHAIR: For those who are watching at home, obviously we received quite a detailed briefing this morning. I appreciate that. There were some elements of that briefing that I think would be of a great deal of interest to the public, particularly a bit of an overview about how the area of potential inundation from this dam wall raising was affected by fire and the broader impacts on the Warragamba catchment from the fires. Potentially if you could start with an outline of that briefing. I will ask you at the end of the session what parts of that briefing might be able to be made available for the public. If you could start with an overview of that, either from yourself or Mr Fleming that would be very useful.

Mr GAINSFORD: I will hand over to Mr Fleming thanks.

Mr FLEMING: Okay, a quick summary, if you like, of the briefing this morning. The National Parks and Wildlife Service manages 320,000 hectares of the Warragamba catchment area, which is a bit over 900,000 hectares. Around 267,000 hectares, or about 83 per cent of the area managed by National Parks burnt in that last fire season. That is a very high level, the highest ever for the catchment area. About 100,000 hectares of that was burnt to a high or extreme level of severity. That is the high level statistics, if you like, for the impact of the fires on the Warragamba catchment area managed by National Parks. It is fair to say that represents a significant impact on the biodiversity of the area. That was followed by significant rainfall events.

The combination of those two things means access has been restricted, so that has limited our ability to fully assess the impacts up until this point in time. However, we have programs in place to protect, particularly the areas of refuge or vegetation that remain. Those programs include elevated levels of feral animal control. Over 500 feral herbivores have been removed over the last few months, over 200 kilometres of aerial baiting has been carried out and our planning for the next few years in terms of hazard reduction is focused on protection of refuge or habitat and will be focused on the protection of refuge or habitat.

You asked this morning during our briefing if we could provide a little bit more information about the area that was potentially subject to inundation. I made the point this morning that that is really a matter for the EIS, so I want to reinforce that point. Because the map we provided did have a breakdown of areas burnt by severity, we have done a quick and only an approximate assessment for you over the last couple of hours. As an indication if we work on an area of around 2,900 hectares subject to potential temporary inundation, and that is just a number that came from some early discussions so it will not be the final number, that is still subject to the EIS process. I want to flag this as preliminary and only approximate. Around 20 per cent to 30 per cent of that area is unburnt so, again, that is probably a slightly higher percentage than is unburnt across the balance of the property, but not by much.

The CHAIR: I take it from that 70 per cent to 80 per cent of the potential inundation zone has been burnt.

Mr FLEMING: Correct.

The CHAIR: Of the unburnt areas, can you give us a bit of a sense of the significance in terms of some of the threatened species in the area in particular?

Mr FLEMING: I cannot do that for you today. We are obviously taking a catchment-wide approach, so I think the question you are asking is one specifically for the EIS.

The CHAIR: Of course.

Mr FLEMING: I am sorry, we are really taking a catchment-wide approach.

The CHAIR: I understand. I guess the key question that I think the public will be interested in and one of the reasons the Committee called for this hearing today is to understand how the fires have changed the EIS process and the consideration of the potential impacts. Can I just get an understanding, so the public is aware, of

what has been done since the fires in terms of understanding the impact on those areas that would potentially be flooded or temporarily flooded as a result of this project? What assessment work has been done, if any—any on-ground assessment, any ground truthing that has been done—to understand the impact of the fires and how that might change the development of the EIS?

Mr HARPER: I will answer that question. The Department of Planning issued guidelines for plans affected by severe bushfire. Within those guidelines there are probably three criteria they look at. One of those—the purpose is to understand the biodiversity values that existed prior to the burning in the burnt area. Fortuitously for the EIS, all that survey work had actually been done well before the fires so that was all captured, which is in line with the guidelines. The guidelines allow the assessor to undertake a biodiversity assessment based on the data that was collated before the bushfire, which is what the EIS is compiled on.

The CHAIR: Am I hearing this right: The biodiversity assessment requirements for this project are based on the pre-fire conditions and there is no requirement, because of the issuing of these guidelines, to do any further assessment of the potential biodiversity impacts of this proposal, given that the impacted area has now substantially changed as a result of the fires?

Mr HARPER: The guidelines do not stipulate that you need to do anymore if you have already undertaken the survey prior to the bushfire.

The CHAIR: Okay. Mr Gainsford, I appreciate the public will not have heard our discussions this morning, but you outlined how there would be an iterative process of engagement with the proponent—WaterNSW, in this instance—to identify where potentially additional work would need to be done to understand environmental impacts. Some of those might relate to the fire. As much as you can on the public record, can you outline that for the Committee and the public to hear?

Mr GAINSFORD: Yes, sure. The process that is being undertaken for this project is the same process that occurs for all State-significant infrastructure and what I was emphasising this morning in my presentation is that we are at a point in that process where the secretary's environmental assessment requirements were issued approximately two years ago. Those comprehensive requirements, which go to about 32 pages, have informed the process for the EIS assessment. We are now at a point where the EIS is close to being finalised and WaterNSW has now submitted all of the draft chapters of the EIS.

We have received the majority of those chapters in the past six to eight weeks. We are now going through a process, as we would normally for these types of projects, of assessing, not to do a merit-based assessment, but to assess the consistency of those assessments with the requirements that have been set for this project. Once we have gone through that process, as I mentioned this morning, we will then give advice back to WaterNSW based on that feedback and that consistency review that we do. As a result of that, WaterNSW will need to respond to that and finalise its EIS, at which point we will exhibit for a minimum of 28 days. Once that exhibition period has finished, we will receive all of the submissions. We will compile those submissions we receive from the community and other interested parties or government agencies and send them to WaterNSW, as part of the response we will ask WaterNSW to prepare.

It may choose, depending on whether there is new information that becomes available as part of any additional assessment or any additional design work that it does or in response to those submissions that come in, to update its assessments. It can do that through a mechanism called a preferred infrastructure report. If we feel that the preferred infrastructure report has additional information that the community would be interested in, we have the ability at that point in time to re-exhibit that documentation and ask for further submissions. Once we have finished that process we will then do the formal merit-based assessment and make a recommendation to the Minister for Planning and Public Spaces, who is ultimately the determiner of this project.

The CHAIR: Just to be clear, there is no requirement at the moment for WaterNSW as the proponent to do any additional ecological assessments based on the fire impacts?

Mr GAINSFORD: Again, I would say that we have not finalised our advice back to WaterNSW. The guidelines that Mr Harper was referring to, he is correct that it does envisage those circumstances of where the biodiversity assessment was effectively completed before the bushfires had occurred and the process there is that that information is presented to the eventual consent authority and the consent authority then provides advice back to WaterNSW. Again, we are in the process of compiling that advice.

The CHAIR: So Department of Planning, Industry and Environment [DPIE] may require additional assessment work to be done?

Mr GAINSFORD: It is possible.

The CHAIR: Who would decide if that was the case or not?

Mr GAINSFORD: Again, based on the advice that we get from all the specialists—and I should emphasise that we are consulting with the Commonwealth, as well. This process is what is called an accredited process under the Environment Protection and Biodiversity Conservation Act. As part of that process we will compile all that expert advice that comes in on how consistent the assessments—not a merit-based assessment—are with the requirements that have been set. On the basis of that advice we get we will compile that and send that to WaterNSW.

The CHAIR: But who would be the ultimate decision-maker? If you were going to say, "The fires have changed everything, you need to go back and have a look at how that has changed the circumstances on the ground. We know there are some threatened species there, there are some areas there that might be the last remaining on burnt refuges for some species." Who will decide to make that direction back to WaterNSW as a proponent, if they do that?

Mr GAINSFORD: We will provide advice and then it will be up to WaterNSW to respond to that.

The CHAIR: Is it the Minister or is it a delegate? Who makes the decision?

Mr GAINSFORD: Ultimately we will be assessing what is in front of us and so ultimately we will be making decisions on the basis of the information that is in front of us. But if we feel that there is additional work or additional survey work that should be done, we will pass that advice on to WaterNSW.

The CHAIR: But that decision has not been made at the moment.

Mr GAINSFORD: That is correct.

The CHAIR: That is all happening behind now. I think the public saw the fires and said, "This has changed the world." There is a major project in an area very important to the public—World Heritage listed—and fires seen past that area that have never been seen before. We are trying to understand what actually happens here. I get the sense that if you do not make a direction back to WaterNSW as the proponent to do additional studies, potentially there could be no requirement for additional studies and the project is just simply assessed based on the pre-fire conditions.

Mr GAINSFORD: It is probably worth making the point that the assessment requirements that were set pre-bushfire were comprehensive. Without actually knowing the detail of what has come back to us from WaterNSW at this point in time, we would expect that if it is addressing those requirements we will have a comprehensive assessment and a comprehensive understanding of what those impacts on biodiversity are. How much they can be extrapolated to understand the impacts of bushfire is, I guess, the advice we are seeking at the moment.

The CHAIR: Is any more fieldwork or biodiversity assessment currently planned by WaterNSW?

Mr HARPER: Not at this stage.

The CHAIR: Not at this stage. If DPIE provides advice back to WaterNSW that more work is required to be done, would that be required to be done before the EIS would go on public exhibition or could those things happen concurrently? Could it then submit the preferred infrastructure report as part of that process?

Mr GAINSFORD: You are right: there are two potential options there. One is that the work gets done prior to the EIS, which would generally be our preferred approach, that that assessment work—if there is additional survey that we recommend—is done prior to the EIS going on exhibition. But you are right, and I guess that is what I was trying to emphasise this morning: Whilst the EIS is a really important point in time, there is an ongoing assessment requirement as part of the State significant infrastructure assessment process, which does allow for additional information to be made available as the assessment process continues.

The CHAIR: Potentially we could have a situation where the community is being asked to make a submission on a project and, at the same time, the proponent is being asked to go back and have a look at how the fires have changed that assessment process. Those two things could be happening in parallel.

Mr GAINSFORD: That is a hypothetical. I am not sure that is likely to be the case. We have not formed our view on that.

The CHAIR: I think we got some information on timelines this morning in the briefing, but perhaps if you could for the public record just confirm how long you think it will be before you give that advice back to WaterNSW and when you would expect at the moment that the EIS would be on public exhibition?

Mr GAINSFORD: Yes, sure. We have been having a series of inputs from various specialists, as I mentioned before, including the Commonwealth. We are compiling that advice, but there has been some advice that has already gone back to WaterNSW—not for Aboriginal cultural heritage and biodiversity, because they are

sections that have come in more recently, but we have been progressively providing that advice back to WaterNSW. I would envisage within the next month or so that we will have that advice ready to go back to WaterNSW. Depending on that advice, I guess, will be a determinant in terms of how long it takes to finalise the EIS ready for exhibition.

The CHAIR: Ms Sharpe, did you want to open the questioning on offsets?

The Hon. PENNY SHARPE: Yes. I wanted to ask about Aboriginal heritage first. Is that all right?

The CHAIR: Yes, go for it.

The Hon. PENNY SHARPE: This question might be for Mr Harper; it might be for Mr Fleming; it might be a combination. Obviously throughout this entire process there have been significant issues raised by the Gundungurra people about the Aboriginal sites in the areas that are likely to be inundated as a result of the dam wall raising. Mr Harper, you have given evidence to us today that essentially all that material went in, in May. Is that right? Was there any additional assessment done post-fire in relation to the impact on Aboriginal heritage?

Mr HARPER: There have not been any more assessments post-fire because of—

The Hon. PENNY SHARPE: At all?

Mr HARPER: At all, at the moment. Yes, at this stage.

The Hon. PENNY SHARPE: Okay. I just wanted to check that. Thank you. I wanted to ask you about the biodiversity offsetting issue. I understand that there have been Government Information (Public Access) Act 2009 [GIPAA] requests and a whole range of information about that. I am keen to understand the framework by which biodiversity offsets will be determined through this project. Who wants to answer that? Is that you, Mr Gainsford?

Mr GAINSFORD: I can talk about it in general terms. The process of biodiversity assessment is being done under what is called the Framework for Biodiversity Assessment. Because the application was received prior to the new Biodiversity Conservation Act 2016 coming into place the assessment is being done under the old Threatened Species Conservation Act 1995. The Framework for Biodiversity Assessment requires two documents. One is a biodiversity assessment report. Of course, the biodiversity assessment report, like all environmental issues, should be looking to avoid and minimise those impacts as much as possible. Where they are unavoidable, the expectation would be—as part of that Framework for Biodiversity Assessment there is also a biodiversity offset strategy. Again, I would make the point that we have received draft versions of those documents—

The Hon. PENNY SHARPE: Do they take into account—obviously this has been in the media. I am not trying to trick you here or anything. What is being considered in terms of offsets, and is it considered to be a direct or an indirect offset that will be required? Obviously the point that I am making is the inundated area and whether that will be offset, or if it is in the plans to deal with that.

Mr GAINSFORD: That might be a better—

Mr HARPER: There will be offsets for the impacts that are known. That is what is in the EIS.

The Hon. PENNY SHARPE: Right.

Mr HARPER: The offsets that are known, there will be offsets for those impacts.

The Hon. PENNY SHARPE: Sure. There is going to be inundation. It is going to be significant: over around a thousand hectares in the World Heritage area and around 3,700 hectares altogether. Is that all of that being considered for offsetting?

Mr HARPER: It is not all the area, because it is not all significantly impacted, which will be described in the EIS. It varies depending on the inundation—

The Hon. PENNY SHARPE: Are you able to tell me how much of it is in?

Mr HARPER: It varies depending on the inundation.

The Hon. PENNY SHARPE: Sure.

Mr HARPER: It is quite variable.

The Hon. PENNY SHARPE: Are you able to give me a bit more numbers on that?

Mr HARPER: Not at this stage. I would not be able to do that without reading the document clearly with those figures.

The Hon. PENNY SHARPE: Right, okay. In terms of the offset credits, will they be calculated for upstream impacts? How are the credits being dealt with?

Mr HARPER: The credits, if they are applicable for the impacts that are known, there is a calculator. I am sure you probably—

The Hon. PENNY SHARPE: The key point here, Mr Harper, obviously is there is a big difference between what is known and what is not known. I am getting into that terrible—I feel like that—

The Hon. SHAYNE MALLARD: Donald Rumsfeld.

The Hon. PENNY SHARPE: The point being that that is going to be very important. We could be talking about quite a small offset area if you are saying, "This is known, this is what is going to happen so we will offset this", as opposed to, "There is inundation. We are not sure what is going to happen, so therefore we do not think that should be included in the offsets area". What I am trying to understand is how much—given there are 3,700 hectares that are going to be inundated, can you give us any sense of how much is considered to be known?

Mr HARPER: I am not aware of the full areas that are considered in the biodiversity offset strategy that is in the EIS.

The Hon. PENNY SHARPE: Who is aware? Mr Fleming, are you aware? You would have had to have some input into this?

Mr FLEMING: Sorry, can you repeat the question?

The Hon. PENNY SHARPE: I am wanting to understand what—I suppose this is an Office of Environment and Heritage [OEH] question. When looking at what needs to be offset within the framework, has OEH considered that it is all of the inundation area—how much of that is considered in and out?

Mr FLEMING: I am not aware of whether that has been considered by OEH. Wearing my National Parks hat, it is not something that specifically has come to us. It is ultimately a question for Planning. I think to the extent we have been involved in offset—

The Hon. PENNY SHARPE: But you have been very involved in the species analysis and all of the—

Mr FLEMING: It has not crossed my desk. I think if I take a step back and look at the issues more broadly ,where we have been involved recently in offset issues involving National Parks I think the key issue for us is to ensure that the offsets are on park.

The Hon. SHAYNE MALLARD: Yes.

The CHAIR: Can I just follow up on that? Mr Harper, when you talk about "known" and "unknown" I get the sense that the known ones are those impacts at the construction site—you know that you are going to clear a certain area, you are going to build a certain thing—and that the upstream flooding depends on how significant the flooding is, so it is largely unknown. Is that the distinction that you are drawing here?

Mr HARPER: Not quite. The difference here with this approach for an EIS, as opposed to a typical EIS that you might have, is we are looking at the net incremental change from what happens now to what happens in the future with the project. At the dam, that is easy—that is quite clearly a clearing operation—but with the existing vegetation around the lake, it is already impacted by the existing dam flooding, to an extent. That is what I am saying when I say it is variable. The EIS explains in there the differential between the additional net change. That is the bit about the "known". Those impacts that are known above that footprint, if they are impacted then that is what gets offset, if you know what I mean. But the actual—

The Hon. PENNY SHARPE: That has actually been helpful. Yes, I understand.

The Hon. SHAYNE MALLARD: But is there a difference between—you are assessing it under the Threatened Species Act for the offsets. What is the difference between that and the newer biodiversity assessment requirement? Are you just identifying threatened species that might be impacted? Because that sounds like a much more constrained assessment.

Mr HARPER: No.

The Hon. PENNY SHARPE: No, I do not think so. I think it is a harder one.

Mr GAINSFORD: They are quite equivalent.

Mr HARPER: Yes, they are quite equivalent.

The Hon. PENNY SHARPE: I would argue that threatened species is much tougher.

The Hon. SHAYNE MALLARD: Would you? Okay.

The Hon. PENNY SHARPE: Yes. That is why we had that big fight about the Act.

The Hon. SHAYNE MALLARD: I think the Hon. Penny Sharpe has given new evidence.

The CHAIR: I wanted to get a bit more specific. The quote in the media this morning—we have been dancing around this for a while. I have been chasing information about how the offsets are being calculated since last year, through budget estimates and the like. We get totally redacted forms. I know some of you saw the last session where I asked those questions of Infrastructure NSW. To me, I do not understand why this is so secretive other than the fact that we know that offsets are going to change the cost profile for this project pretty significantly. So the quote today in the media is, "Water NSW, Infrastructure NSW and the former Office of Environment and Heritage, now DPIE, have agreed the project will be assessed as an indirect impact." Is that correct for the upstream environment?

Mr HARPER: In some of those areas that are not impacted by the project, there is a correlation between what is a direct and an indirect. There are definitions within the Framework for Biodiversity Assessment [FBA] that actually describe those requirements.

The CHAIR: Are temporary flood impacts considered indirect impacts in the EIS?

Mr HARPER: They are considered indirect impacts for the zones that are already impacted.

The CHAIR: That is right. So any additional impacts—we all know that if the Warragamba catchment floods with the current dam wall that there are some upstream impacts. You are going to raise the wall 14 metres. At minimum, if you have a big flood, it will be a 14-metre impact; it may even be greater in other areas. This is a significant area. The Hon. Penny Sharpe outlined the size of it before, which I think is pretty correct. Those impacts above what would currently happen with the current dam wall in a flood are considered to be indirect impacts. Correct?

Mr HARPER: Yes.

The CHAIR: If it is an indirect impact, that changes substantially the requirement for offsets. Correct?

Mr HARPER: The offsets are not evaluated in the EIS. What you get is a level of credits that are established from the surveys and from the quantum of the vegetation.

The CHAIR: But you would not be required for credits, for offsets for indirect impacts. Correct? There would be no legal requirement for you to offset those indirect impacts.

Mr HARPER: If the indirect impact becomes a direct impact from known impact, then it becomes an offset.

The Hon. SHAYNE MALLARD: I am confused.

Mr GAINSFORD: Can I maybe add to this?

The Hon. PENNY SHARPE: I am not that confused but I do not think we are going to get the answer. Mr Gainsford, what can you tell us?

Mr GAINSFORD: Yes, sure. I read that article this morning. I guess what I would add to what Mr Harper is saying is that the Framework for Biodiversity Assessment—and, again, I am not an expert in biodiversity—does acknowledge that where there are, and I understand the wording that you used is, "infrequent, cumulative or difficult to measure" impacts, there is the opportunity for the assessment and the proponent to put forward a different methodology around offsetting. I think what Mr Harper is describing is that they are attempting to put forward a methodology that reflects some of those issues that they are dealing with in these circumstances. As I said before, we are compiling some advice to go back to Water NSW with regard to that methodology.

The CHAIR: Would it be fair to say that there is a difference of opinion between DPIE and Water NSW and potentially the Commonwealth about how impacts from this project should be assessed in terms of the need for offsets?

Mr GAINSFORD: I think that is too early to say.

Mr HARPER: No.

The CHAIR: No?

Mr HARPER: No. There would not be because we have actually followed the FBA provisions for assessing those.

The CHAIR: I do have a little bit of information from the GIPA that I put in last year: Most of it is redacted, which seems strange given that it is about biodiversity impacts, but this is the meeting minutes from the Warragamba Dam Raising steering group. One of the bits that is not redacted states, "Water NSW has received an OEH letter confirming that the application of the biodiversity offset calculator is not appropriate." I should say that this is from October last year so you were a fair way down the track at that stage. It goes on to state, "Upstream and downstream biodiversity impacts will be subject to a risk-based assessment. Water NSW has since discussed a worked example of a proposed assessment methodology with OEH." Can you just explain what the outcome of that discussion was? Did you reach an agreement in terms of how the biodiversity offset calculator would be modified?

Mr HARPER: No, agreement was not reached. That was more advice and so what is included in the EIS is the ranges, I guess, depending on what the level of inundation would be. An indirect offset does not negate an offset. An indirect impact does not negate an offset. It can be applied. It is about understanding the amount of inundation on the vegetation and the capability for that vegetation to be tolerant, or not, with that particular inundation period.

The CHAIR: So did Water NSW then propose—I assume this is in the EIS and we will see it at some point—that upstream impacts be considered indirect? Was that the basis of putting forward a different sort of method of calculating them?

Mr HARPER: Well, that is all allowable under the FBA: that if it is unpredictable and uncertain, that indirect can be ascertained and then you undertake some further—

The CHAIR: So we have a definitional challenge here. Some people will look at it and go, "That's a direct impact. It is directly caused by the project. Water NSW says it is indirect." It has a direct financial implication on the cost of the project, though, right—that definition?

Mr HARPER: The financial impact on the project will vary day to day because it is market-based. All the offsets change like a stock market almost.

The Hon. PENNY SHARPE: Yes, but the areas—

The CHAIR: They just got more expensive, by the way, in a really big way—I suspect from the fires. Has that been modelled? Has the cost been modelled then?

Mr HARPER: No, because it is not within the EIS, the modelling cost. What is in the EIS is the amount of area and the associated species ratings.

The Hon. SHAYNE MALLARD: It would have to be in the business case.

The CHAIR: So there has never been a figure put on, "If we do it this way, it'll be this much", or "If we do it this way, it'll be another". There has never been a figure put on it.

Mr HARPER: No.

The CHAIR: So where did they get the billion dollars comment in the media?

Mr HARPER: I do not know.

The CHAIR: It is just made up. It does not exist.

Mr HARPER: I do not know—unaware.

The Hon. ROD ROBERTS: What article are you referring to?

The Hon. ADAM SEARLE: Can I ask a question about Aboriginal cultural assessment? The Government's submission says it is a vital part of the environmental assessment process and the EIS will have a section dedicated to assessing the proposal's effect on the cultural heritage. Was all of that able to be appropriately mapped and accessed before the bushfires?

Mr HARPER: In regard to the Aboriginal cultural heritage?

The Hon. ADAM SEARLE: Yes.

Mr HARPER: Yes. Prior to the bushfires, all that work was undertaken.

The Hon. ADAM SEARLE: Right. Do any further assessments need to be undertaken?

Mr HARPER: There are no planned further assessments at this stage because we have completed the draft Aboriginal Cultural Heritage Assessment [ACHA] report and consulted with the registered Aboriginal

parties, and amended it accordingly where there might be comments back from those registered Aboriginal parties. That has been submitted to DPIE for consistency review.

The Hon. ADAM SEARLE: Okay.

Mr FLEMING: I feel as though I should speak up at this point just because I was at Radiata Plateau with the Minister on the weekend.

The Hon. PENNY SHARPE: A very good addition.

Mr FLEMING: Thank you. Two of the traditional owners were there, Aunty Merle and Aunty Sharon. They indicated that they would like to see more assessments. I am just putting that on the record because we are partners with them.

The Hon. PENNY SHARPE: They have given evidence here that that is the case and we spent some time out with them.

Mr FLEMING: I do not want to verbal them at all. It is up to them to speak on that.

The Hon. ADAM SEARLE: Just in relation to that, because of the bushfire impact some of those places cannot now or currently be safely accessed. That is correct?

Mr FLEMING: That is correct.

The Hon. ADAM SEARLE: And it is not yet known when that may be able to safely take place?

Mr FLEMING: Look, I was advised today that we—some of our National Parks staff— are planning to go in with traditional owners in the next few weeks to do some work.

The Hon. ADAM SEARLE: That is good.

The CHAIR: I have another one for you. I think Mr Fleming would probably be best to answer it. Have you got any sense, given the loss of vegetation, and we have heard just how much that has been around the dam itself in the area of temporary inundation if this project went ahead. In regards to loss of vegetation, if that area was flooded now you can imagine it would have much greater impacts because of the erosion, loss of soil and the like. Has any work been done, or can you give us a sense of how long recovery would need to be before you would be minimising the impact of a temporary flood?

Mr FLEMING: Look, I am sorry: I cannot comment on that for the inundation area. Again, to the extent that is a question about the impact of the project, that would be something that should be considered as part of the assessment.

The CHAIR: Perhaps I could put it a different way. With fires having been severe over such a large extent, what does forest recovery with these types of ecosystems look like in terms of getting back to a point where there is enough vegetation to hold it all together and essentially for ecosystems to be restored to a point of resilience?

Mr FLEMING: I can only give you probably a very general response.

The CHAIR: Yes. I understand.

Mr FLEMING: I preface this by saying that I am not a scientist. The advice I have been given in discussions with our staff in general is that because there is such a variation in the level of severity of fires, if you like, and different habitats respond differently to that, there are some areas that have burnt during the last summer that will take years, a few years, to recover and there are some that people are concerned may never recover fully to the original extent. There is a huge level of variability there. That is the best I can do in general terms to answer your question, I am sorry. Obviously, to answer it specifically about a particular area I would need to get some expert advice.

The CHAIR: Then I will ask more broadly. I know it will take some time between the finalisation of the EIS and the consideration process, determination and then construction, but I think it is the Government's intent to have this project completed within six or so years. It might take a while before there is a flood but is someone going to work out flooding it in the first five years after a significant fire would cause this amount of damage, but if it were not done until those forests recovered it would change the impact significantly? How will that assessment be done? I could imagine that this would be the wrong time to see temporary inundation now, it would probably destroy those areas. Whereas it might have less of an impact if it was highly vegetated at the time.

Mr HARPER: Are you talking about undertaking another survey of the bushfire impacted zone based on—

The CHAIR: Yes.

Mr HARPER: —vegetation that may not be there?

The CHAIR: Yes. I am saying if you were to do this project now, I know it might be six years before it happens, but it might take 10 years for those forests to get back to some sort of form of resilience, given the significance of the burn and that the impact of a temporary flood event would be much greater now without any vegetation. Would I be wrong in saying it would effectively destroy a lot of these areas? You would lose so much of the soils, you would have so much erosion, you will lose a lot more vegetation. Whereas if it was a highly vegetated environment like it was before the fires some of the impacts of a temporary inundation would be negated by the stability of the soils and all that sort of thing.

Mr HARPER: I think we have already had that demonstrated by the February event when all the runoff and the inflows coming in on that open land, if you like, has demonstrated what would happen in a large rainfall event and the inflows. The lake rise itself does not cause that erosion, it is collecting the water as it falls down the side of the hills. It has already happened to an extent. You can see what that is.

The Hon. WES FANG: We heard before that the inflows into the catchment are more highly energised because of the flow and the shape of the valley, as opposed to the rising of the water, there was a difference.

The CHAIR: I understand that. I am trying to get an understanding of—it is not going to have no impact. If you inundate an area that has got no vegetation, versus inundate an area that has got vegetation, they are going to be very, very different impacts. I am wondering, has anyone looked at how long it is going to take for a degree of recovery?

Mr HARPER: Not to any degree of study, no. In terms of recovery?

The CHAIR: Yes.

Mr HARPER: No.

The CHAIR: Mr Fleming, in the earlier session you outlined a number of species, not just in the directly impacted area but in the broader World Heritage and national park area. I was wondering if you could outline some of those key species subject to national conservation legislation?

Mr FLEMING: I indicated that there were, I think it was 45 flora species and 48 fauna species that are on the New South Wales threatened species list that are in the catchment area managed by Parks, that is the 320,000 hectare area. On the fauna side I indicated there were 12 fauna species that have been identified as part of the Federal Government's assessment as species requiring some priority management post bushfires. There were a dozen of those that were found again within the 320,000 hectare. We have not done the analysis within the potential inundation, just across the 320,000 hectare area. They included Regent Honeyeater, spotted-tail quoll, greater glider, brush-tailed rock-wallaby, koala, grey-headed flying fox and—

The Hon. PENNY SHARPE: The frogs.

Mr FLEMING: There were some frogs, that is right.

The CHAIR: The broad-headed snake.

Mr FLEMING: Bear with me—the others were gang gang cockatoo, glossy black cockatoo, giant burrowing frog, broad-headed snake, Littlejohn's tree frog, stuttering frog. That was the 12.

The CHAIR: All the ones we like.

Mr FLEMING: I just emphasise that is across the 320,000 hectares.

The CHAIR: I understand that and you have said repeatedly that is not specific to the inundation, that is something that is subject to the EIS. This is your skillset to a degree. Have you been asked to provide some of that advice to Water NSW for the EIS? Okay, now that the fires have occurred and we know some areas have not been burnt, they could be critically important for these species, have you been asked to give them any support to help update the EIS or give them a sense of how the fire impact might be relevant to the EIS?

Mr FLEMING: We have participated in the process that Mr Gainsford has described examining the adequacy, if you like, of the draft EIS. I do not know if Water NSW can talk about any on-ground collaboration that has occurred, but otherwise it has been around really looking at the adequacy of the EIS.

The CHAIR: But post fires you have not been asked to do any on-ground work in support of that process in the inundation area?

Mr FLEMING: I would have to take that on notice. I am not personally aware of any, but whether something has happened at the local level, I invite Water NSW to indicate if they are aware, if they have made requests to us.

Mr HARPER: Not from the project level, but I am not sure from the catchment level.

Mr FLEMING: We work in collaboration in terms of as partners really managing the catchment as a whole, so certainly there is regular engagement at that level. But in terms of assessing the impact on that potentially inundated area, I am not aware of any but I could take that on notice and confirm or otherwise.

The Hon. SHAYNE MALLARD: The same question could be asked about the flora. When we toured the catchment area the ecologist who came along with us pointed to standard eucalyptus in the distance that would be inundated and he suggested not survive a two-week inundation. Do you have some assessment of the flora and do you know about those eucalyptus?

Mr FLEMING: I am guessing you might be referring to the Camden white gum, which is probably the species—

The Hon. SHAYNE MALLARD: Sounds familiar.

The Hon. PENNY SHARPE: Sounds right.

Mr FLEMING: —with the greatest focus. Again, the process is that the proponent does the analysis of the likely impact of their project and that is assessed by planning and consent authority. Our involvement has been to date to look at the adequacy of the draft EIS and that is the stage that we are at. That stage is not complete.

The Hon. SHAYNE MALLARD: The flora list that are identified as endangered, they are equally as endangered as fauna. People get very romantic about the koala, but we are talking about plant species that are rare and endangered in the national park.

Mr FLEMING: And less mobile, yes.

The Hon. SHAYNE MALLARD: And less mobile, of course.

The Hon. PENNY SHARPE: Mr Gainsford, we heard in the earlier session that there is work being done—this may not be you because you are assessment, so I apologise if it is not you—the regional land use strategy for western Sydney, trying to deal with all of the issues that are raised with flooding and those kinds of issues, are you able to tell me where that is up to?

Mr GAINSFORD: I am really not.

The Hon. PENNY SHARPE: It is not you?

Mr GAINSFORD: Yes. I know you have had evidence from Mr Whitworth earlier, so I am not involved in that strategic planning.

The Hon. PENNY SHARPE: I thought that. When I looked at your title I thought you were not the right person. I might stop then, because I had some questions about that, but that is not you so I will not put you on the spot.

The Hon. SHAYNE MALLARD: That is for estimates.

The Hon. PENNY SHARPE: Yes.

The CHAIR: We will conclude the afternoon. Thank you for your attendance at the hearing. The Committee has resolved that answers to any questions taken on notice be returned within 21 days. The secretariat will contact you in relation to those questions. I am not sure if any were taken specifically on notice. I ask if as much of those presentations that were given this morning could be made available for us to make public as part of this process, that would be greatly appreciated.

(The witnesses withdrew.)

The Committee adjourned at 14:58.