Transcript of Proceedings

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THE HONOURABLE JUSTICE C HOLMES, Commissioner

MR JAMES O'SULLIVAN AC, Deputy Commissioner
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IN THE MATTER OF THE COMMISSIONS OF INQUIRY ACT 1950

COMMISSIONS OF INQUIRY ORDER (No. 1) 2011

QUEENSLAND FLOODS COMMISSION OF INQUIRY

BRISBANE

..DATE 18/05/2011

..DAY 24

THE CCOMMISSION RESUMED AT 10.01 A.M.

MARK KENNETH BABISTER, CONTINUING:

MR CALLAGHAN: Madam Commissioner, I just seek to make an announcement for the benefit of the parties about the running order of the witnesses today. Mr Baddiley, who was scheduled to give evidence after Mr Borrows will now be called next Friday and the list of witnesses should be adjusted accordingly.

COMMISSIONER: Mr O'Donnell. Mr O'Donnell, can I implore you to speak up because you and the witness both actually tend to whisper at each other and it is I think causing the reporters some problems.

MR O'DONNELL: I will if he will?-- Okay.

Could I revisit two matters we discussed yesterday just briefly. One was the reliance on rainfall forecast. As I followed the thrust of your evidence you thing the rainfall forecast had useful information in them but they need to be tested as to the extent to which reliance can be placed upon them?-- Yes.

You would envisage extensive modelling testing in the course of the next manual review?-- Yes.

But that, of course, hasn't been today to date?-- No, it hasn't.

It wasn't done during the January event?-- That is right.

Would you accept in those circumstances the extent to which the engineers managing that flood event did place reliance on weather forecasting information was appropriate?-- Yes.

It would have been wrong to have made decisions about releasing water based upon weather forecasting?-- I don't know if it would be wrong. You would have to be very confident in those forecasts so I wouldn't make an absolute ruling of wrong.

So if the flood engineers sitting there during the flood event were not confident in the weather forecast information you would accept the extent to which they placed reliance upon that was appropriate?-- Yes.

Can we revisit another issue? We discussed yesterday the various manual reviews over the years and you raised the question; you haven't seen documentation that during those manual reviews there was serious consideration given to the strategies for managing the flood event?-- That is right, I have seen no documentation anywhere on how the current

strategy in its original form or its current form really is developed compared to other strategies or any modifications to it of any significance. Minor things were considered at different stages like FSL has been considered but not really fundamental challenges to any of the assumptions in the manual about trigger points and change over points.

That is not to say it didn't occur. It is just you haven't seen documentation?-- I haven't seen. I understand everybody has asked extensively. I would be very surprised if something pops up now because I have asked for it from the start.

You asked the Commission staff?-- Yes. Every document that we could identify that would have anything to do with looking at the operation and comparing it to alternative operations and where the operation came from, any document that has any bearing on that we put on our request list.

You didn't ask Seqwater or those who played an active role in the manual revisions over the years?-- I didn't, no.

Could I show you a document please? This is in Mr Allen's witness statement part of Exhibit PHA8. It is a very large exhibit and the exhibit is not paginated. In our copy it is the third bundle within that exhibit. We have a paper copy for the witness, we have one we can hand up to the Commission.

COMMISSIONER: I am just wondering whether it should be passed to the back row so everybody can see there just what it is.

MR O'DONNELL: It could be brought up on the screen. It is just trouble finding it within the exhibit.

COMMISSIONER: Yes, my associate is pretty good.

MR O'DONNELL: It is revision number 4 of the manual. It has a date 6 September 2002. MR Babister, this is a document which considers revising the manual in 2002 and there is discussion in the course of the revision I want to take you to. If you go right to the back of that document, please, page 51. Do you see 1.7 "Flood Control Operation Model"?-- Yes.

If you read - skip over the first paragraph and look at the second paragraph commencing, "The most recent flood studies have reviewed." That suggests that in 2002 in the manual revision they did reconsider the strategies for both Wivenhoe and Somerset, they tested them against the revised design flood hydrology and operational model and they decide to change the strategies. They changed Wivenhoe from five to four strategies and Somerset from five to one?-- My understanding is the Wivenhoe, the individual report, the difference between the four and five strategies were very very similar anyway.

That wasn't the question I asked you, was it-----?-- No.

-----addressing what happened in 2002. I am asking you do you

agree with my interpretation of this document; that in the 2002 manual review they did positively reconsider the strategies for both dams?-- This document indicates they have reconsidered it to some extent but doesn't report on the extent of how those changes would occur or anything else. There is no tables, there is no quantification. They have looked at it, I agree with you there.

They looked at it in light of the revised design flood hydrology?-- Yes.

Which we saw was undertaken in the early 2000s. We saw that yesterday?-- Yes.

And they reconsidered whether the current strategies for both dams are the optimal strategies and they decided to revise them?-- I am-----

We see that on page 52, don't we? They changed the Somerset strategies from five down to one and Wivenhoe from five to four?-- Which line is the Wivenhoe from five to four?

Yes, the third last paragraph on page 52?-- Well, yes.

"The previous flood studies concluded the procedures for Wivenhoe Dam be reduced to four by combining two procedures into one."?-- That is a relatively simple change in strategy. I am happy to concede there has been some modification.

My point is this is a document which says they did actively reconsider the strategies for both dams?-- It does say, and I agree, they reconsidered the strategy to a very limited extent I would suggest.

All right. You suggest that the strategy be reconsidered in part of the next manual review?-- I suggest very strongly we look at whether we have the right strategy. I actually think the strategy is quite good but I really would like to see it tested thoroughly and robustly, which doesn't appear to have happened to any extent since it was developed 25 years ago.

Well, at least this is a document which shows it was reconsidered in 2002?-- Yes, in a very small way.

Maybe so. All right, thank you. Where we finished up yesterday was discussing your recommendations about the hydrodynamic model particularly in 125 to 127 of your report?-- That was 125 you said?

125 through to 127 of your report. Can I see if we can reach agreement on a few things about this? The flood engineers in the January event did not have a hydrodynamic model at their disposal?-- That is right, the one within the forecasting system was not operational.

You are recommending they should have one?-- Yes.

It is common ground they would like one. The question is what

use is to be made of it during a flood event. Can we agree on some things first? During a flood event they are looking at information coming from a number of sources. They are looking at rain that has fallen, catchments producing inflows to the dam, that's a major consideration. They model that using a hydrological model?-- Yes.

A hydrodynamic model would not assist in any of that?-- It could be incorporated into it but you generally use one downstream of the dam.

Yes?-- Where the flood plains are wider, where storage is an important issue, where tributary interactions are an important issue.

The hydrodynamic model was more giving you river flows downstream of the dam?-- Yes, when you are really interested in heights and answers in all locations and how major tributaries interact and how places are backwatered, a hydrodynamic model has significant advantages over a routing model.

That may be so but in the flood engineers' point of view they want to know what is the current - or what would be the flow, for example, at Moggill?-- Yes.

Depending on releases. Their hydrologic model gives them that information?-- It gives them that information but with a questionable level of certainty. You could reduce that uncertainty by going to a hydrodynamic model downstream of the dam.

Hence you suggested that the last sentence of 126, "The rainfall run-off routing models", which is the hydrologic model, "should be retained but should be assessed against results from a calibrated hydrodynamic model."?-- A very sensible thing to do would be to compare their performance. At the moment we are speculating on their performance particularly during large events where you have large coincident tributary flows in those sort of circumstances.

You have seen no evidence that the hydrologic model measuring the downstream flows during the January flood event was at fault?-- I see no evidence either way, whether it was right or at fault.

Right?-- And the amount - and the SEQ report is very scant on detail on that. For some reason the combined flows of Moggill were removed from the SEQ report. That made it very hard to make that assessment.

Well, the model runs and the predicted outflows of Moggill

COURT REPORTER: Sorry, I didn't hear the end of that question.

MR O'DONNELL: The model runs and flows at Moggill and the

predicted peak flows hour by hour at Moggill are listed in there?-- Yes, but the combined hydrographs for every single one of those runs, combined total flow at Moggill, for some reason was removed from the SEQ report. It was certainly calculated by the forecasting system.

I don't know about that. Do you have the list of the Commission's recommendations for review, Exhibit 408? Under the longer term review of the manual section B22 raised the question, "Should the review of the manual incorporate a hydraulic model in the real time flood model to increase confidence in downstream flood estimates?"?-- We are looking at 22 here?

Yes, so is that-----?-- I am just - you seem to be - I have, "Incorporate hydraulic model into the real time flood model to increase confidence"-----.

I was reading the opening words of B, "Should this review of the manual" which applies to all the subparagraphs?-- Yes, okay, we are on the same page.

All right. So is that your suggestion that as part of the manual review that they consider whether to incorporate a hydrodynamic model?-- Yes, I would be very surprised if the review didn't agree to do that, I don't think it should be - it is a very strong recommendation.

All right. I think there is some hesitancy about the utility of the hydrodynamic model during an actual flood event because time is at a premium. Have you ever managed a flood event?-- I've been present when flood events were managed.

You never yourself?-- I haven't been in the position of these engineers, no.

No. Time can be a premium?-- Time is definitely a premium. These sorts of hydrodynamic models, what we call a 1D version which was what was in the previous forecasting system operate very quickly now with current computers. Twenty-five years ago they could take a day to run now they take less than a minute. If they are in an environment like the real time forecasting system where all the information is put in and loaded - and they are quite mature technology. Some of them have been in forecasting mode on the market place for 15 years. They are used all around the world, the first world and the third world. They operate quickly. I still agree that a routing - a standard routing model is a little faster, a little bit robust and you wouldn't want to throw away and you might use the routing model during the early parts of the flood but when it gets to complex decisions when you need to make hard calls you might go to the hydrodynamic model so I am not saying one should be excluded at the expense of the other. When it comes to working out the impacts further downstream to Brisbane you can't do it robustly with a routing model, it is just not the right tool.

All right. So you are raising it for review as part of the

manual reconsideration?-- Yes.

I will leave it at that, thank you. A few other things. Have you got the flood report handy? You also will need the SKE report?-- Which SKE?

I only know of one of them?-- I have about four. There is the current review or there is.

The peer review?-- The peer review by Nathan.

Exhibit 409. Start first at paragraph 75 of your report. If I could summarise it, you are saying in 75 there is a disconnect in the SEQ Flood Report between the rainfall which is suggested to be between one and 100 and one in 200 years in intensity and the volume which is assessed to be one in 2000 years?-- Yes.

You are saying that that volume one in 2000 years is not considered to be a reasonable comparison because it is comparing the actual flood water with design floods and that can be unreliable?-- That is right.

If we look in the Flood Report where you have taken this information from, would you going please to 145?-- Yes.

The reference to the one in 2000 for volume you get from the last dot point on page 145?-- Yes.

That paragraph, that dot point, is comparing the January event to a model that was used in the 2005 Wivenhoe Alliance work?-- That is right.

So it is comparing a real life flood event to a model?-- That is right.

Which is the point of your - your saying that is not a reliable comparison?-- Yes, I think if we go back a page, a couple of pages to page 140, I think we can very easily explain some of this.

Well, do you mind if I give you the lead and you answer my questions? Can I direct your attention to the opening paragraph at the top of 145 under the heading "Flood Design Comparisons"?-- Yes.

It does say, "Care should be exercised when comparing actual flows and volumes with design flows and volumes."?-- Sorry, which?

145, the opening paragraph?-- Sorry, yes.

In bold type?-- Yes.

"Care should be exercised when comparing actual flows and volumes with design flows and volumes." Your very point?-- That's my very point, yes. Design floods or design critical durations tend to be low on volume. That is just the nature

of them. They can be right or low, they can't be over on volume.

The author of this report is qualifying what follows-----?-- Yes.

-----by that statement. He goes on to say that in the third sentence in bold, "These circumstances are not necessarily directly comparable with actual flood events such as the 2011 event. Further these design cases do provide an indicative comparison."?-- I am struggling to find that but I don't disagree with it.

Very first paragraph on that page in bold?-- Okay, yes.

The third sentence of that?-- I agree with that.

That is essentially what you are saying?-- Yes.

If you turn over a few pages to 151 under the heading "Conclusion". The third last dot point suggests that the January event easily exceeds a one in 100 annual exceedance probability?-- That's certainly what it says. I don't think that is a firm conclusion we can make at this stage.

It is not saying it is a one in 2000?-- No, it is definitely not saying that.

The last dot point says, "Overall the January 2011 flood event is considered to represent a rare event as defined by the Australian rainfall and run-off."?-- It is.

"In terms of rainfall, flood peaks, inflow volume and peak heights." Rare event is designed as one in 100?-- Yes and I don't think - I think it is on the cusp of being rare. I don't think you can conclude at this stage it is rare. I am happy to explain how.

No, no. It is not the point of your criticism of paragraph 75. The criticism in paragraph 75 is that the Seqwater report says the rainfall is one in 100 but the volume is one in 2000, and that's an unreliable or - there is something wrong there. I am suggesting to you that the report really concludes it is more like the one in 100 event?-- It does and I believe the volume is about one in 100 as well.

I am suggesting your criticism of paragraph 75 isn't really justified when one considers the whole of the report?-- If you consider the whole report then that criticism of that statement is probably overemphasised.

Thank you. A few last things. In your report, if you look at paragraphs 99 to 103. You say in 99 that, "The peak inflow rates are only for a single hourly calculation point in each instance." I want to suggest to you that - you may not be able to comment on this - but I want to suggest that Seqwater does not use a single hourly calculation point in time. They

use something called a fourth order central difference method. Would you explain what that is?-- Okay, user central difference technique which really gives you the first derivative or the second derivative how much that slope changes with time. A fourth order - I am not exact, I would have to - that is a little bit confusing how it is expressed but they're techniques, we looked at the same thing, looking at higher order approaches and they don't just calculate the - the flow at that time, they look at the change of flow at the time and rate of the change and stuff to try and get you a better answer. Reverse routing is a good technique but it inherently has these problems I described. That's just part of the technique.

If Seqwater use what I just suggested, then it wouldn't be right to say they are only estimating a single hourly calculation point in each instance?-- I would have to see exactly how they applied it.

Would you mind looking at 140 of your report? In the last sentence you say, "It is questionable whether the flood engineers had sufficiently reliable information to justify an earlier transition to strategy W4 or to increase releases to greater than the target allowed under strategy W3." It is that last statement about W3 I wanted to raise with you. The manual would not allow engineers to increase releases to greater than what was allowed under strategy W4?-- That is without exercising their discretionary powers they are not allowed to.

Under 2.8?-- No, but some of the earlier information suggested that is what - I think I described that above, that that was what was anticipated in some of the very early documentation.

Do you mean in that last sentence to increase releases to greater than they did within the limit allowed under W4?-- You might have to rephrase that question. Well, either changing to strategy W4 early or increasing releases would achieve the same - you increase the discharges earlier than what you did by the approach they took.

Are you referring to increasing releases within the W3 limit?-- I am talking about increasing releases above the W3 limit.

Which can only be done -----?-- Discretionary power.

Of the Senior Flood Engineer with approval of the Chief Executive?-- Agreed.

In order to achieve the objects?-- Yes.

Of the manual?-- Yes.

152 of your report. In 152 the third sentence says, "Since it is the first large event since the construction of Wivenhoe Dam," and so on. That's not quite right, is it? It is the

first large event?-- It depends on what context. I mean large event in an event that filled the dam up to such a high level.

That may be so but there have been a number of flood events over the last 25 years?-- Yes, there has been floods but I think it is very important to recognise this is the largest flood that has occurred in the dam and so many of the things were being operated in a range they hadn't been operated before.

Right, so we should read that as since it is the largest event since the construction of the dam?-- Yes.

No further questions.

COMMISSIONER: Mr Ambrose?

MR AMBROSE: Just on the issue of a reconsideration over time of the strategies of Wivenhoe and Somerset manuals. As I understand it, you agree there has been some reconsideration over the years?-- Yes, very minor reconsideration.

And as I understand your evidence you say that they haven't resulted in any major changes to those strategies?-- That is right.

But here and now you are not suggesting that there needs to be major changes to those strategies?-- It is a pretty open question. I think there probably needs to be some minor changes to those strategies but I think, 25 years, there is no document on the table saying whether this is the right strategy or better strategies or we can do better and there is no metric for measuring the performance of these strategies on houses that are affected or anything else. We need to revisit the whole issue.

That's right. So you are not saying here and now that there need to be major changes to the strategies?-- I think this event's questioned the strategy and we need to look at it.

You see, you are not suggesting, are you, that only a major change to the strategies evidences a sufficiency of review over the years?-- Oh, no, no. You don't need a major change to justify - to-----

So it follows, doesn't it, that the reviews that have been done may well have been sufficient and appropriate?-- They could have been but there is certainly no documentation to really sound that out.

Thank you.

COMMISSIONER: Mr Dunning?

MR DUNNING: Thank you, Commissioner.

MR DUNNING: Mr Babister, my name is Dunning. I appear on behalf of the Brisbane City Council. There are a couple of topics that I wanted to discuss with you. First of all, can I ask you, please, to take up your report and go to page 13? And if we look at figure 3, when you describe that as typical dam flood mitigation strategy, is that what you would ordinarily expect to achieve by way of mitigation effect for a properly-operated dam in a flood event?-- Yeah. That's just a generic graph to show that the outflow is less than the inflow.

Yes?-- That it is delayed.

What about the relativities?-- I don't think we can conclude anything on that graph. It is really meant to be indicative. It really depends on the storage capacity of the dam, how much mitigation is achieved.

All right. So you are not suggesting that there is a typical percentage-----?-- No.

-----of relativity?-- Every dam is different. It has got different topography, and it has got different storage and different inflow characteristics.

Okay, thank you. Now, can I suggest this to you: a flood engineer when operating a flood mitigation dam in a flood event will be aiming to keep the - to remain within the - sorry, perhaps I will preface this. I want to ask you some questions about the strategies known as Wivenhoe strategies 1 to 4, so a reference to a strategy is just a reference to W1 through W4. A flood engineer in a flood event executing his or her task appropriately will be aiming to stay within the lowest strategy that circumstances will permit. Do you agree with that?-- Yes.

Thank you. And within that strategy, the relevant point of Inquiry will be not how high the flood engineer can get the flow rates to be but in fact how low?-- That's right, how much mitigation can be achieved.

Thank you. Now, when it comes to the execution of that overall strategy, if I have understood your report correctly - and I want you to tell me if I haven't - effectively, you would opine these three things: there should be a limited amount of discretion given to the flood engineers to exercise their judgment in a particular circumstance as they find themselves in?-- Yeah, I think the discretion should be given some examples. There is one example in the manual with regards to the fuse plugs. I think some of those sorts of discretions should be - the type of discretion could be codified. So when the discussion occurs with the CEO, or whatever else, it is not, "I want to do this", it is "I want to exercise the discretionary power in accordance with".

I understand. And I perhaps didn't make this sufficiently clear. I am not presently asking you about the language that's used within the strategy. What I am asking you about is the optimum execution of that strategy we have agreed of flood mitigation. Do I take it from the answer, though, that you have just given me that you wouldn't countenance the flood engineers having an open slather discretion; it would have to be discretion within well defined limits?-- Yes, and with checks and balances, too.

All right?-- I think they should be convincing somebody, a senior person, that what they are doing is reasonable.

They have to make a case for it?-- Yes.

And if we can deviate briefly, in terms of how you think the manual would better express that, it would be that it would give more illustrative examples of an appropriate exercise of discretion?-- Yes.

Okay, thank you. The second thing that if I have understood your report correctly it opines for an optimum execution of strategy, is that there should be a gradual progression through strategies as a flood event escalates, so that you don't rapidly change a strategy. You are looking towards the next strategy, if that's how the event's unfolding?-- Particularly with the transfer from W3 to W4, if you're coming to the view that you can't stay within W3, it is probably - under most circumstances - probably not always - beneficial to move to a higher discharge. Now, that could be affected by timing. So when a flood engineer becomes reasonably certain, using a range of inputs, that they won't be able to stay within W3, I think they might as well move.

Certainly?-- Obviously testing is required.

What you are really saying is there is not a bright line-----?-- That's right.

-----particularly between W3 and W4?-- That's right. And the way the strategy works at the moment, everything is pushing you to a really hard transition, so if tributary flows are coming up, you're releasing less, your airspace is disappearing, at the same time, very soon you are going to have to change strategies and let out a very large amount.

Just remember, Mr Babister, at the moment I am not asking you how it is expressed in the manual. I am just asking you about how one would optimally execute it, and it seems we're in complete agreement that the optimal execution also requires this gradual progression particularly at the higher end of the flood strategies?-- Yes.

Okay, thank you. And the third matter that I have detected from what you have set out in your report as to how the optimum execution of flood mitigation strategy might be achieved is by exercising a proper judgment by the flood engineer as to to what extent weather forecasts should be taken into account?-- Yes, backed up by some studies to look at the statistical reliability.

Certainly. Now, have I missed anything, or do you think those three things fairly summarise those aspects that you have opined are how a flood engineer, competently executing the task of flood mitigation, would go about a flood event?-- That's certainly how I think the manual should be changed, yes.

All right. Perhaps I will have you attend to my question. Have I accurately summarised-----?-- Yes, you have.

Thank you. Commissioner, may I inquire how easy is it for the transcript to be brought up of an earlier day? I have got copies here, if you prefer paper copies?

COMMISSIONER: I know I have got it saved and I imagine my associate can get into it without much difficulty.

MR DUNNING: For everybody's benefit, it is page 199. It starts on page 199 of the transcript but I have got multiple copies.

COMMISSIONER: Which day is that?

MR DUNNING: It is the 13th of - day four, I think, 13th of April. Perhaps I might pass at least Mr Babister a copy, and I have got copies for anyone else at the Bar table who needs a hardcopy. 199. Starting at 199. Mr Babister, can I ask you, please, to go to page 203 - actually, no, sorry, you don't need to worry about looking at that document just yet. I will ask you a few other questions first. If I can return then to the third of those matters that we discussed about the optimal execution of the flood mitigation strategy? Can I suggest to you - and the second of those matters, that's the gradual progression - can I suggest this to you: that one of the - or some of the reasons that you don't have this bright

line between strategies is that the flood engineer in a flood event should be keeping under constant review whether the current strategy is right or whether he or she should be looking to move up or down a strategy, agree?-- Yes.

And whether the settings within that strategy are correct, agree?-- Yes.

Thank you. And to make that assessment it would be informed by changes in the weather?-- Broad - yeah, information from the bureau on likely outcomes.

All right. And also what's been observed as the flood event's unfolded?-- Yes.

All right, thank you. Now, it would also take into account modelling of run-offs?-- Yes.

All right, thank you. Now, when it comes to that decision to move between strategies, it is ultimately a question of judgment. Do you agree with that?-- Yes.

All right. And it is judgment in which ordinarily there will be a number of reasonable alternative considerations, at least as to the ultimate settings that are chosen?-- Yes.

All right. Thank you. And those changes should be incremental in nature, ordinarily?-- Yes.

All right, thank you. And it would be fair to say that at least in respect of some of those settings amongst reasonable flood engineers views might differ as to precisely where you set them?-- Look, that's right. Their job is quite hard, it is balancing a whole lot of inputs, making some judgments. I don't think everything they have to input they have to decide upon could be codified, so there will be some variation between individuals.

It really follows from that that that sort of incremental nature, dynamic nature of what's unfolding means that they are looking to tweak whatever settings they have already got in place-----?-- Yes.

-----as the event unfolds, all right. Now, it follows, doesn't it, that in circumstances such as the present case where there are bespoke rainfall modelling, there is a good deal of quantitative data at the flood engineer's disposal?-- When that model's working well, yes.

Yes. But what you would say is required for the optimum execution of the strategy is not just reliance on the quantitative information but also some qualitative judgments?-- Yes.

And an illustration of that in your report is where you say, look, regard ought be had to forecast rainfall, but you don't go so far as to say it should be relied upon but rather a judgment should be exercised as to what reliance should be

placed on it or what bias to the decisions made should be given to it?-- Yeah, I don't think just a judgment. I am also suggesting that we analyse what's occurred so we can have some statistical or risk framework on how to incorporate it.

And one of your suggestions is possibly discounting it?-- Yes.

All right. Now, when it comes to discounting it, though, all you really are doing is making a qualitative judgment on that rainfall, aren't you?-- Yes.

And even though it has the aroma of a quantitative analysis because you pick 50 per cent or 90 per cent or 10 per cent, the range I have just posited means that ultimately it is a qualitative judgment that's being made?-- You can base that decision on statistics. You could analyse the rainfall if you had a bit more. The big problem is you never have enough information in flood hydrology. So you can say if I have a certain discount rate, we're 90 per cent certain that we're not going to get it wrong.

You know of no such modelling, though, at the moment which would produce that result?-- Not specifically, but certainly that's how a lot of forecast information is looked at, about what utility or what skill's in it.

All right. But returning then to the execution of the strategy, you would expect that the flood engineer would make use of those qualitative tools at his disposal in terms of these bespoke models as to lake level?-- Yes.

All right. And you would expect them to take account of the accuracy of the information that was then available to them?-- Yes.

And in particular their judgment as to its accuracy, agree?-- Yes.

Thank you. And one legitimate means of doing that would be to run those bespoke models with a no further rainfall scenario, agree?-- Yeah, that's - that's one valid case. That's the optimal case possible.

Yes. And an alternate is to run it with the predicted rainfall?-- Yes.

And then exercise a judgment in that regard? Sorry your answer to that last question was yes?-- Yes.

Thank you. So you agree with me that optimally, it is quantitative in a sense and it is qualitative in a sense that once you get those figures you exercise a judgment as to how they should inform your current strategy?-- Yes, because one of the most important things in using that information is looking at the consequences of different scenarios.

All right. Now, if in fact you have run a number of models of

your current situation, so that is a model with no further rainfall and some models that incorporate various levels of rainfall, including predicted rainfall, then that's the sort of reliance upon rainfall that you're generally opining in favour of in your report, aren't you?-- Yes but with some statistical understanding of the reliability so you can decide how to weight those different runs.

Yes. And that really goes to how you exercise that qualitative judgment, doesn't it?-- Yes.

Thank you. And one of the things that would materially inform the qualitative judgment that you would make would be the extent of the discord between the no further rainfall model scenario and the forecast rainfall model scenario?-- Yes.

Yes. So the greater divergence between those the more concerned you should be about forecast rainfall?-- That's right because the no forecast rain is telling you, you know, the optimal scenario where if rain stops now, and you also have some other information you can incorporate into that decision. You could be watching storms come across on the radar.

Yes. All right. Now, if at that point you determine to rely upon the no further rainfall scenario but you have regard to the forecast rainfall scenario that you have also run and you have ultimately made a judgment considering, amongst other issues, the disparity between those two runs, you have made the sort of qualitative reliance upon forecast rainfall that you have recommended in your report save that you would have a greater bias to a pre-existing statistical model for that?-- Yes.

Thank you?-- I would also - as the event unfolds I would be looking at how the forecast rainfalls gel with what's just occurred so far as well. So there is an extra input there. If the forecast rainfalls are completely atrocious, the ones that have already occurred, then, you know, you would weigh - you would use that as one of your judgment components as well.

All right. I didn't - and perhaps I missed it - but I didn't see anything in your report that suggested that a run of poor forecasts contended for continuing poor forecasts or similarly a run of accurate forecasts gave you an additional level of confidence about subsequent forecasts?-- Okay, I - it is probably not in my report but I think maybe I have hinted to it when I have talked about ensemble modelling. But if the forecasts are looking good, that would give you more confidence, if the previous forecasts.

All right?-- That doesn't actually really mean the next one is going to be good, though, it is just telling you the process they are using seems to be performing well.

But you haven't - you haven't referred to any empirical data that has verified that thesis?-- No.

Thank you. Now, amongst the other things that you would do with predicted rainfall is that you would give consideration to it as to whether you were looking to move towards another strategy. Agree?-- Yes.

Thank you. Now, can I ask you, please, to take up that document I passed to you earlier? And can you go, please, and read at page 203 - there are some page numbers on the bottom of the pages?-- Yes.

And you will see some line numbers on the right-hand side. Go to just above line 40. And what I can tell you is these are some questions of a flood engineer who gave evidence in these proceedings. Just read those two paragraphs. The first one starts, "And one of the reasons". Now, you would agree with me that the evidence of that flood engineer there accords entirely with yours as to what is the overall strategy?-- Yes.

Agree? Thank you. May I ask you then, please, to go to page 201 for me? And, again, just above line 40, you will see a paragraph that starts, "And, in effect". Can I ask you to read - because I am now going to ask you about the optimal execution of the strategy. Can I ask you to read from there to the bottom of the page? Can I ask you, please, to go over to page 205 for me? About halfway between lines 1 and line 10 you will see a sentence that starts, "Can I suggest"? Please feel free to mark it. Can you read from there for me, please, over to page 206 to just above line 50?-- Above line 50.

Just above line 50. Just read that to yourself. Take as long as you wish to read it. Now, you will have noticed the coincidence between the matters I was just putting to you about how you would optimally execute the strategy of a movement between strategies and the reliance upon forecasts. I am putting to you what's set out in that passage?-- Yes.

I take it then that you will agree with me that the answers given by the flood engineer there accord with your views entirely with the only qualification being that in terms of exercising the qualitative judgment regarding forecast rainfall, you would introduce a greater element of probability in there if it could be shown to have an advantage upon proper study?-- That's correct.

Thank you. If the Commissioners were to accept the evidence that I have just taken you to as how this flood engineer - who I can tell you is a senior flood engineer - executed the strategy during the 2011 event with which we're concerned, you would say that that was the optimum way to execute the overall strategy with that one qualification I have identified?-- Yes.

Thank you. Now, Mr Babister, finally, just a few other matters that I would like to discuss with you. You're aware - sorry, I should, in fairness to you, record you were asked to provide your report at a time before the - before any of the oral evidence had been given. So, needless to say, you

obviously didn't have the advantage of reading, for example, Mr Ayre's testimony?-- I-----

I think you read his reports, if I have understood your-----?-- Sorry?

If I have understood your report correctly, you read his written statements -----?-- Yes.

-----but you hadn't seen the oral evidence?-- I think that's the case. I would have to check the dates.

Thank you. Can I move to another topic? You are aware from the researches you have done, that in terms of releases from Wivenhoe Dam, it has inconvenient consequences in Brisbane starting at around 1,000 CUMECS?-- Yes.

That interrupts the ferry service, and we get debris, those sorts of things. You are aware of that?-- Yes.

And then you are aware that at somewhere around 1,500 CUMECS onwards, and it depends on tidal influences and other matters, but at somewhere around 1,500 CUMECS and upwards, you start to get low level areas of Brisbane being inundated, not flooding house but-----?-- That's certainly what I have read.

But cutting roads and the like. And then you understand that at around - at around a combined 3,500 CUMECS, you start getting damaging floods in the City of Brisbane?-- That's certainly what I have read in other sources. I guess it hasn't really been particularly well quantified, but yes.

Certainly. But if - if we assume that that is the case, I want to ask you a few other questions. And the first relates to this issue of precaution - what are known as precautionary releases against the forecast of coming heavy rainfall, that we should make some precautionary releases, and up our level of releases. That's not practical consideration at 1,000 CUMECS, is it, because at 1,000 CUMECS Wivenhoe still has a very considerable amount of flood mitigation capacity at its disposal?-- Yes, it does.

So short of the most extraordinary event being forecast, it would be hard to imagine there would be precautionary releases at 1,000 CUMECS?-- It is very hard on any dam to make precautionary releases that has farming and urban areas downstream. There is always somebody who is affected.

Yes. Does it follow axiomatically from the answer you have just given me, that precautionary releases are something that you would only countenance in extraordinary circumstances?-- Yes.

All right, thank you. Because precautionary releases is code for precautionary flooding of at least someone?-- You are taking a very large risk that you are going to have to do something. You are banking on a large event occurring, so there is a fair chance in that circumstance that you will

inconvenience people for no benefit.

Certainly. So if we get back then to my original - where we started on this discussion, it is unlikely that any savvy dam operator would be looking to, in the case of Wivenhoe, make precautionary releases at flow rates of 1,000 CUMECS?-- Well, one option that has occurred in different locations with releases from dams and stuff is that sometimes works have been put in place to allow you to do that. So it is not unknown to raise bridges, or put in extra roads, or - you know, a low level release, I know one case where a school bus had to cross a river twice a day, and that was the governing problem on a release. And ultimately it became easy to solve that problem to allow the greater flexibility.

Yes?-- You did do things.

Certainly, but in the scenario you just posited it is almost a lifting of the dam wall, isn't it, because what you are really saying is we have an additional amount of flood mitigation capacity because we can safely release without inconveniencing anybody?-- Yes.

But if we focus on Wivenhoe as it is presently configured; any suggestion of precautionary release is inevitably is a suggestion it should be at the top end of strategy W3?-- Yes.

At the top end of strategy W3, let's say between three to 4,000 CUMECS you are already looking down the barrel of flooding, damaging floods in Brisbane?-- That is right, there would certainly be flooding to urban areas.

Certainly. The suggestion that you should engage in precautionary releases in Wivenhoe on a practical level means that you should engage in precautionary releases that will inevitably have damaging flooding in urban areas of Brisbane against rainfall that may or may not eventuate?-- Yeah-----

Sorry, if I could get you to attend to that question?-- Okay. Really the answer really depends whereabouts you are in the W3 strategy and how it is going forward.

All right, certainly. Well let's say you are around 3 and a-half thousand CUMECS or you are looking at making precautionary releases at there or above?-- Well, precautionary releases I would think if you have a lot of evidence to suggest you are going to end up in W4 you could be making precautionary releases or increasing your release rate, however you want to phrase it, if you reasonably are confident or more than reasonably confident you are going to end up in W4 anyway. That's pretty much the zone where you really only have got flexibility to do it and you would bring forward possibly some urban damage. You would bring forward some issues with evacuation and those sorts of things. It is a trade-off but certainly some of the reports I have read, including the initial dam strategy and how it was developed suggests that you could reasonably lower flood levels for very big floods.

At that point to describe them as precautionary releases is a bit a misnomer?-- Yes.

There is nothing precautionary about it. You know that-----?-- You are already flooding.

You are already flooding and W4 is heading straight at you and you are inevitably going to get that?-- Yes.

And you would release against that risk so there is nothing precautionary about that; agreed?-- Yes.

Indeed that is how the 2011 event unfolded notwithstanding what was set out in the manual, without suggesting in any way

it was inconsistent with it, but the dam - the flood engineers, in fact, moved to W4 before it had quite touched 74 metres but when it was inevitable it was going to?-- It was pretty inevitable.

That was exactly the course you would recommend?-- Yes.

Now, does it - there seems to be one other matter perhaps unsaid in what we just talked about. There might be - if I can use the expression there might be a better one amongst the flood specialists - but effectively flat spots, that is, there might be a range of flow rate that has already, for example, inundated certain bridges but you have another couple of hundred CUMECS of flow rate or more before you actually practically damage anybody else?-- Once you are in that sort of range, from my understanding, you tend to get a whole range of houses at a whole set of levels and infrastructure so trying to target a particular range once you start hitting urban properties is pretty near impossible. It is not like there is some line if I go 100 CUMECS above this the number of houses will double. It is pretty much - it is a continuum.

Yes?-- The other thing that is occurring is that if you are releasing a constant discharge the way the water goes down the river because you don't have a hydrodynamic model, changes - because it is a more steady state regime so the flood level will actually change as well.

Yes?-- It is not just the flow rate. It has actually got to be tied into the levels.

You are quite right. I was really referring but didn't make it clear, at lower rates of flow you might see those?-- At very - at lower rates there are certainly some triggers. It is usually bridges and access.

Once you get into inundation of urban areas it tends to have a steady progression?-- Yes.

Thank you. Now, from the discussion you and I just had on the topic of precautionary releases I take it you will understand why the Brisbane City Council would be extremely concerned were there to be a move, at least without a comprehensive study that would justify it, to the making of precautionary releases from Wivenhoe in that three, 4,000 and upwards CUMECS range?-- I think if that is going to be - something like that is going to be adopted it needs to be rigorously demonstrated that much more often than not you will get a benefit not a down side.

You wouldn't countenance any move unless and until that rigorous analysis had occurred?-- No.

The reason for that is, in particular, the consequences would be most acutely felt in the urban areas of Brisbane because we are talking in that three to 4,000 and up CUMECS range, aren't we, practically?-- Yes.

Thank you. Now, another matter that has been at least opened for exploration in the Commission is whether there should be a, sort of, strategy 3A. So, where you might be able to release above 4,000 CUMECS, even an unlimited amount of releases you are perfectly entitled to under W4 but without the obligation to release at a rate that will necessarily bring the level of the lake down?-- So we are still in W3, we haven't transitioned to W4?

Well, there seems to be talk of a notion of W3A, so to speak?-- That is not very dissimilar to what I have been talking about.

That you should be able to heighten those releases without-----?-- Yes, most of my criticism is really about this hard boundary between three and four. If you know you are going to move to four then you probably are better off avoiding this hard boundary.

Sure, but as we agreed, whatever perception that any individual, yourself included, might glean from reading the manual, as the senior flood engineer, in fact, executed the strategy, he didn't - subject to his evidence being accepted - he didn't approach there being such a hard boundary or bright line?-- He didn't?

He didn't approach the execution of strategies 3 and 4 as if there was a hard boundary or a bright line?-- No, but things were unfolding. He had a couple of additional difficulties at the time with his models losing their tuning and a few things, but he could have moved earlier if he had better information but he was stuck in this hard boundary where he was releasing 2,700 or thereabouts and pretty much had to change strategy quite dramatically.

Well, in light of the changed rainfall?-- Yes.

All right, thank you. Yes, thanks Mr Babister.

COMMISSIONER: Mr Rangiah?

MR RANGIAH: Mr Babister, I am representing the Fernvale residents. I ask you to turn to paragraph 48 of your report and in the last sentence of that paragraph you say, "The alternatives of not using forecasts of rain in such a situation usually do nothing, assume the rainfall stops instantly or assumes the rainfall continues in its current rate." I want to look at those alternatives that you were referring to. If in this case the flood operations engineers ignored forecasts when making decisions about rates of release, then they assumed the best case scenario?-- They did, yes.

That is, there would be no more rain?-- That is right.

Even though if they were at Wivenhoe they might look out and

see it was continuing to rain?-- Yes, there is that test of looking at the radar or looking out the window if you are in the right location.

The Bureau of Meteorology bases its forecasts on the chance of rain?-- Yes.

In other words, it examines the probability or likelihood of rain?-- Yes, they - it is a little bit outside my area but they run a range of weather models that give them indications and predictions of rain.

So, if they ignored rainfall forecasts they ignored the prediction by the Bureau of the chance of rain?-- Yes.

The worse case scenario was that rainfall would be significantly more than predicted by the Bureau of Meteorology?-- Yes, that's the worst case.

That's what happened here in parts of this flood?-- During the early parts of the flood event, once it had really started the rainfall forecasts were about half of what actually occurred.

Later there was significantly-----?-- They swapped over and were much worse, yes.

Now, the manual requires flood operations engineers to take rainfall forecasts into account when making strategic decisions, doesn't it?-- It does but it is not clear on how you do that.

If they didn't take predicted rainfall into account in making strategical release decisions, then they assume the best case scenario and ignore a possible or a worse case scenario?-- If you didn't use rainfall at all, yes, you assume the best case scenario. To what extent they use this information is minor but I don't think you could say they didn't use it at all. They might have used it to change strategies. You would have to ask them.

I suggest to you there is evidence that they considered that the rainfall forecasts were insufficiently reliable?-- Yes.

To take into account when determining release rates?-- For release rates, yes.

I am suggesting that was not appropriate, was it, to simply not take them into account at all?-- It is a really hard question what they should be doing with the forecast rain. One of the big problems in hydrology, flood hydrology, is we have very few examples of large events in which to learn from. So we have to take a risk approach with many of these things. The question is should they have used this information in a more detailed way? That is a hard question to answer because they pretty much had no prior basis on which to judge that decision. We now have some basis on which to make future decisions.

I am suggesting to you that it was not appropriate to assume the best case scenario, that is, there would be no more rainfall?-- At the time I don't think it was an unreasonable thing to do.

Now, can you go to paragraph 125 of your report? You say there that the real time flood model does not include a functional behind model. An example of a hydrodynamic model used in Queensland is the MIKE 11 software?-- Yes.

Is there nothing similar in the suite of forecasting software used in the real time flood model?-- There was a model very similar to MIKE 11 in the forecasting suite but at the most recent upgrade, I think about two years ago from my reading of the reports, it wasn't converted across. I presume that occurred because they were looking at moving to a new platform and it probably didn't warrant the investment.

Could you expand on that in more detail? Are you confirming that the suite of software used in the real time flood model during the January 2011 flood event -----?-- It didn't contain-----

-----didn't contain a hydrodynamic software?-- That is right but two years prior from my reading.

Are you saying that it - two years ago it did contain a hydrodynamic model?-- Yes, you would have to check the date but something of that order.

That was dropped or removed for some reason?-- Yes, the platform on which that system worked, I understand, was moved from one Unix system to a Linux system or something so just a computer platform and as part of the upgrade process this tool wasn't transferred across.

So the suggestion that the real time flood model in the January 2011 or now contains hydrodynamic model software is not correct?-- No, from reading the testimonies it wasn't there or didn't work.

They've recommend that a calibrated hydrodynamic model be implemented into the flood forecasting system. Could you just briefly explain the advantages you see-----?-- Look, the big advantage, the hydrodynamic model has a large number of advantages, it has also has some disadvantages which we've already talked about and it has a bit more overhead. But it gives you flow and level information everywhere where you set it up so it can give you that information downstream of the dam all the way down to the ocean; height, velocity, flow, it can tell you when certain areas would be inundated. It doesn't have to have a gauge. It properly accounts for the interactions of the flows at tributaries and some of the back watering that occurs which the other models don't. It is very easy to turn that information into mapping that is reasonably reliable to give to emergency services and accounts for tides properly which you can't do with the other sort of model.

Does it allow the effect of releases from Wivenhoe to be better gauged?-- It would allow you to fine tune things a lot better because instead of targeting a flow you could target levels at key locations as well and so you could fine tune your discharges.

You say that there are hydrodynamic models available now which are very quick?-- Yes. The model you describe, MIKE 11, is one. They are what we call a one dimensional model. You wouldn't use them today on a flood study but for an operational tool they are very efficient, very robust, pretty quick.

Now, counsel for Seqwater asked you questions about paragraph 104 of your report. In particular, the comment you make or opinion you expressed that the flow releases from Wivenhoe were the major component of the flood peak. You were shown the results of some modelling done by Mr Malone of Seqwater?-- Yes.

He used a hydrological model, didn't he?-- Yes, and he produced results from one location down near the ocean.

It was a hydrological model called URBS or U-R-B-S-?-- Yes, URBS.

Are you aware that the Commission was told by Mr Malone on 15 April that hydrodynamic modelling was also being carried out?-- Yes, I am - I certainly don't recall reading that. I probably did but I am aware the work is now being carried out.

As far as you are aware, that hydrodynamic modelling has not been produced yet by Seqwater?-- That is right.

Would it be useful for you to have access to that model?-- Very useful.

At paragraph 118 of your report you refer to some limitations identified by Weeks and Heggarty and paragraph A referred to calibration of the downstream model. Could you explain what is meant by that?-- When Heggarty and Weeks did their work, their routing model they used, downstream of the dam, really wasn't adequate. It didn't reproduce behaviour particularly well. There is also - in terms of flow it is a little difficult downstream of the dam. There is not many locations to work out whether your model is performing well. Their tool, like the current tools, targets flow at Moggill and it is really hard to work out from observed data what flow at Moggill is.

You say at perhaps 9 the recommendations have not been sufficiently addressed as far as subsequent revisions of the manual. What do you say should have been done to address problems with calibration of the downstream model?-- I think the calibration has been largely addressed but there are some outstanding issues. We don't - we still don't properly understand what a flow at Moggill is in terms of height.

Anything else?-- On the calibration I think that's probably the major thing.

Would the use of a hydrodynamic model assist with the calibrations?-- Enormously.

Apart from the position of calibration of the downstream models, what are the other issues that you say should have been sufficiently addressed as part of the revisions of the manual?-- The other issues? Look, I think most of my recommendations are more pertinent to what's happened in the last five years. I think when the manual is reviewed we need to, maybe not every five years but every so often, maybe 10 years, we need to really look at whether we have the right strategy and whether we can operate differently with greater information we have got and whether there is new techniques that would make us change our strategy with better operational tools. There should be a really robust investigation of the strategies during some of the review phases.

Is that because an obvious purpose of having limited periods before reviews are required to be carried out is to ensure that the latest software, the latest technology and information-----?-- Yes.

-----is being used?-- Yes, one of the issues would be whether we are using appropriate software and technology. I am not saying we should always use the latest and greatest, that would be a difficult thing, with a forecasting system you want something robust, but that question should be answered.

You are saying at least the question should be asked as to whether the software that is available or being used presently is still appropriate?-- Yes.

Or whether there are better alternatives. You also said that there should be investigation as to whether the trigger points for each strategy are still appropriate?-- Yes, and the thing could be that one of the critical pieces of infrastructure that limits some of your flow changes or is modified so you can operate differently.

One of the changes in relation to Wivenhoe was the 2005 upgrade?-- Yes.

That might be something that affects the way the release strategies are structured or upgraded?-- The upgrade in 2005 was really at the very rare end. That would have been a good opportunity to look at some of these things but it doesn't really affect any of the, sort of, flooding we have looked at.

In your opinion is it good enough to take the attitude that because the real time flood model had withstood the test of time that only minor amendments needed to be investigated?-- That's probably a reasonable judgment over a certain period of time but it has been in use for quite some time and over that whole period I think we probably should have looked at things

like introducing a hydrodynamic model that can be used in a way. I do think most of the components of the real time model are actually quite good. They seem to perform well.

All right, now, it was suggested to you by Mr Dunning that it is a matter of judgment for flood engineers as to whether to move from one strategy to another. You said there was no bright line?-- That is right.

But isn't it the case that at least under some interpretations of the manual there is a bright line in the sense that you move from one strategy to the other when the dam level reaches a particular-----?-- When it reaches a particular level but you are in a situation where you have constantly updated information. It is not a static process.

So, I mean, there is one suggestion that the references to moving to a strategy W4 when the level is predicted to reach 74 is not correct, that it might actually reach 74?-- It is rather confusing when you try and interpret the manual in that respect. There is different interpretations you can take out of it.

So there might be a bright line or might not be?-- I think that's a reasonable conclusion. But, I think what the manual says, though, it is a bit confusing but I think the intent is probably reasonably right.

It was suggested to you that the optimal situation is for flood engineers to keep releases as low as possible and that must certainly be right?-- Yes.

That's not always possible?-- No. They need to keep it as low as possible depending on what is achievable.

Yes. At times it might be appropriate to release large quantities of water early to preserve flood storage capacity?-- That is right.

Particularly during a large rain event. You will have to say yes or no?-- Yes.

Now, can I take it you haven't conducted a detailed examination of whether releases were appropriate at particular times during the whole of this flood event?-- Appropriate in accordance with the manual or appropriate to achieve a better outcome?

Well, to achieve better outcomes?-- We've only looked at this in a relatively superficial way. We do not have the modelling tools to make this assessment at the moment but we are endeavouring to get access to the right tools.

COMMISSIONER: I think we will take the morning break now and come back at 20 to.

THE COMMISSION ADJOURNED AT 11.25 A.M.

THE COMMISSION RESUMED AT 11.41 A.M.

MARK KENNETH BABISTER, CONTINUING:

COMMISSIONER: Yes, Mr Murdoch?

MR MURDOCH: Mr Babister, my client are the Mid-Brisbane River Irrigators. Their particular concern is the stretch of the Brisbane River of some 67 kilometres between Wivenhoe Dam and the Mt Crosby Weir. Might I take you to paragraphs 136 and 185 of your statement, and to the references you make in those paragraphs to fuse plug failure?-- Yes.

You speak of fuse plug failure as a risk, and implicit in your comments in those two paragraphs seems to be the proposition that the operators of the dam ought to avoid blowing the fuse plugs, even in situations where the level in the dam is in excess of full supply level. Is that a fair generalisation of your views?-- Look, in strategy, say, W1 to W3 fuse plugs are really not a major concern. You are in the active mitigation area of the storage for the dam.

Yes?-- But once you go into strategy 4, then if you get high enough your fuse plugs will fail, or operation will instigate. Now, it is not something you should avoid at all costs, they are there for a proper purpose, but you don't want to unnecessarily have a fuse plug activate if you can avoid it. So if you have an event that's just about to trigger a fuse plug, you are probably better off doing something if you can to not trigger it because once a fuse plug's triggered, the water level will go down in the dam, you can't mitigate a second event. But it is not something you should avoid at all costs. It is just if you can avoid it, it is a reasonable thing to do. There are costs associated with it, but more importantly the operation of the dam is compromised until it is rebuilt, which will take months.

All right. And what are the potential costs associated with blowing a fuse plug?-- That's something that, you know, I haven't really looked at in detail but some testimony yesterday suggested it was in the order of $1 million. But if you get to that water level, that would be an insignificant cost in terms of damages everywhere else.

So far as the flood mitigation capacity of the dam is concerned, do you have a view as to whether the installation of the fuse plugs commissioned around 2005 had an impact on the flood mitigation capacity of Wivenhoe Dam?-- It had an impact at very extreme range. What it did, those fuse plugs, is they reduce the risk at really, really rare events of failure, substantially, of the dam, which would have horrendous consequences, by increasing discharge at quite rare events in the order of, say, 5,000 and higher. 1 in 5,000

years. So it didn't compromise the amount of mitigation the dam provided, it just - other than in that range of really rare and probable events it changed the paving. But what it did it traded off the risk of failure for slightly higher discharges in, say, a 5,000 or 10,000 year event.

So far as the recent event was concerned, do you have the information available to enable you to say whether the presence of the fuse plug had an influence, good or bad, on the flood events?-- It didn't change any of the outcomes. It certainly was in the operators' minds at the time, which it should have been, but it had - in no way materially changed how they operated the dam or what occurred.

During evidence this morning you used the expression "extraordinary event", and it was in the context, I think, where the level in Wivenhoe Dam was in excess of the full supply level and the W4 level was approaching. Is that an accurate recount of your definition?-- I would have to go back and look, or you would have to read it out?

Well, what I wanted to ask you was in a scenario where the level in the dam had been in excess of full supply level consistently for some weeks, and where there was a prediction of further heavy rain in the first week of January, would you have categorised that as an extraordinary set of circumstances that may have justified precautionary releases?-- Precautionary releases? No. There hasn't been enough work carried out to see whether that would be sort of a justifiable behaviour to do releases, and there is a lot of trade-offs if you do that, and those forecasts - or some of that information did suggest we were in for a particularly wet period, but it wasn't certainly enough information to suggest you should be releasing dam levels - releasing water out of the dam, sorry.

There has been quite a bit of attention in your report to the manual which governs the operation of the Wivenhoe and Somerset Dams. Do you agree with me that essentially the manual is a set of operating procedures or strategies?-- Yes.

Do you have a view as to whether, given the plethora of trade-offs that you have referred to, that there should be a higher level instrument in the form of a risk management plan for each of the dams?-- I would be very surprised if there wasn't risk management plans in place for every dam.

If there was or there wasn't?-- There wasn't. To my understanding every large dam in the country has risk management plans to deal with a whole range of issues, including flood.

And so far as the trade-offs are concerned, they raise issues of a quite high level policy, don't they?-- Yes.

And there are quite a variety of those high level policy issues, such as attention between water security and flood mitigation?-- Yes, very, very large decisions with huge costs attached to them.

And would you agree with me that they are the issues that should be squarely addressed in flood - sorry, in a risk management plan for a dam of the type of Wivenhoe?-- Most of the risk management plans for dams really look at risk to the dam, whether it is flooding, earthquake, terrorism, and some of the consequences that are derived from how you deal with those things. The risk management trade-off between water supply and mitigation, and those sorts of decisions, is usually addressed in a different framework.

So far as such a framework is concerned - and I am not caught up on labels - do you agree that there should be an instrument, a document of some sort that addresses that broader risk management framework and sets a list of priorities?-- I would be surprised if there wasn't.

You would be surprised if there wasn't?-- Yes, well, south east Queensland has invested an enormous amount of money into water supply over the last couple of years with the grid. Huge costs. Major decisions had to be made on where to source extra water from and every new source of water becomes much more expensive normally than the previous source. And those decisions, very big dollars, are usually not taken lightly.

Did you sight such a document when preparing your report?-- No, I didn't.

So far as the flood operations engineers are concerned during a flood event, you have illustrated very well that even within the current manual there are a number of discretionary decisions which fall within their proper ambit?-- Yes.

Those can be decisions to take a particular action or not to take a particular action?-- Yes.

What would you say to the suggestion that when such decisions need to be made by the flood operations engineers during such an event that they should execute a risk assessment?-- You are talking about a formal risk assessment on each decision?

Yes, and I am not talking about one that takes hours?-- That's clearly what they would be doing in their heads anyway or they would be doing when there is two on board - two on duty. I presume each one of these major decisions is a discussion and there is an outcome and all of the consequences and all of the issues will be addressed. That's how most engineering decisions are made in this practice area. But the question about formalising it, I would leave that to the operations engineers. They have got a lot of stuff going on and with a flood, the times in which you have to make decisions can escalate very, very quickly, and I would hate to see them burdened with another process if it is going to distract them from their core thing and their core thing is to interpret large amounts of information, some of it which is questionable and some of it which is wrong or gauges have failed or something and come up with a correct interpretation of that information and put it through their modelling tools

and then make decisions. They have got a lot to do and I would hate to see extra bureaucracy, if you like, added to their tasks.

Accepting all of those things, you would agree with me, wouldn't you, that in most areas, whether it be a mine or a factory or a construction project, where a significant change is to be made or not made in terms of operation, that one would normally expect a risk assessment, albeit in simple form?-- Yes, but in each one of those circumstances you have the luxury of time that you have described. In circumstances when they are operating, sometimes they do not have time. Sometimes they do. So I accept what you are saying. I think that's probably what they do. I would be surprised if it is not and I would be happy to see it formalised as long as they didn't believe it was too burdensome, too much of a burden.

So by and large, you're in favour of risk assessments provided they don't impede urgent decisions?-- Yes.

You are in favour of an overarching risk management plan for the Wivenhoe Dam?-- Yes.

And you accept that the manual is essentially a set of standard operating procedures?-- Yes.

It is not entirely clear from your evidence that you favour the enlarging of the discretion of the flood operations engineers or truncation of their discretion?-- I favour some of the typical uses of their discretionary power to be outlined in the manual, so that if a discussion has to occur between them and the chief executive, they are not saying - they don't have to detail every other reason, they need to say, well, in accordance with the manual, discretionary power could be exercised when you want to bring the flows forward because you have reasonable certainty that you are going to end up in a higher operation, and you think it will have mitigation benefits on the balance of probability. So they would be asking the CEO if they can do that in accordance with the manual, not having to about through the whole justification. And that would, I believe, give them more comfort to exercise that discretionary power if some of those types of uses were outlined.

Do you accept that if the discretion conferred upon the flood operations engineers is to be enlarged, that increases the imperative for them to be operating within a framework that assists them to know what the community priorities are when it comes to matters such as sacrifices to be made by particular communities that may be flooded?-- Sorry, can you repeat the first part of the question? The framework for making these decisions?

If you go to increase the level of discretion of the flood operations engineers, doesn't that support the case for a clear and concise framework such as a risk management plan which enables them to know-----?-- Yes.

-----what community expectations are in relation to whether you, for example, sacrifice a farming community in the interests of saving a metropolitan area?-- Those trade-offs should certainly be identified in the plan.

In the preparation of your report, you've relied on certain modelling that's been available to you. That's the case?-- Yes.

And it is the case that the modelling that you referred to is modelling which is sourced from Seqwater?-- You would - nearly all the work I have looked at is from Seqwater but you would have to refer me to which particular part.

I am really just-----?-- In general, nearly everything I have got is from Seqwater but I have had access to some unpublished material from Seqwater.

And time and other limitations have not made it possible for you to conduct your own modelling?-- That's right. We had a pretty short time-frame on this study and a lot of information to go over. We certainly would like to have done some modelling of our own to cross-check certain assumptions and also to better answer some of the questions we were asked to address.

Thank you.

COMMISSIONER: Mr Flanagan?

MR FLANAGAN: Mr Babister, we know that at 8 a.m. on the 11th of January 2011 the dam operators went to the W4 stage in relation to the operation of the Wivenhoe Dam, is that correct?-- That's how I - yes.

And to your knowledge that was the first time that in the operation of this particular dam a W4 stage had been declared?-- Yes.

And to your knowledge, had such a stage been reached in the operation of any other dam in Australia?-- Oh, this - it is a bit hard to compare this strategy to other dams. We have certainly had some very large floods in other dams in Australia. Unfortunately, very large floods do occur on dams.

In terms of flood mitigation, what are, in your opinion, the disadvantages of a W4 stage being declared in relation to the operation of Wivenhoe Dam?-- Well, once it is declared, you very quickly move into a - your operation moves into a certain space where you are not really doing a huge amount of mitigation; you are really trying to protect the security of the dam and you just increase outflows until the dam starts going down, and so the level of mitigation is significantly reduced.

And would you agree with me that according to the manual

itself, dam safety becomes the ultimate priority?-- Yes.

But the dam operator's ability to co-ordinate or to coincide dam releases with peaks, such as the Lockyer Creek peak, is really taken away?-- Certainly until the dam starts going down, their flexibility to do anything is very, very limited.

I think Mr Ayre in his evidence referred to it as being coincidental, if anything?-- Yes.

All right. Would you also agree with me that another disadvantage is that the volume of releases is no longer determined by the operators as a matter of ordinary function but is determined as a matter of dam safety?-- Yes.

And it is determined by reference to input into the dam itself?-- Really water level.

Yes. When I say input, I mean water coming into the dam?-- Yes, that's right.

Which affects the level?-- Yes.

So once you reach this stage, it is the case, isn't it, that by and large the flood mitigation role of the Wivenhoe Dam effectively ceases?-- No, it doesn't cease. It is significantly reduced.

Can you explain that to me, please?-- Water is still being temporarily stored in the dam, so the outflow would still be lower than the inflow. So that a level of mitigation is being achieved. So-----

Sorry, you are talking about flood mitigation?-- Yes.

Could you explain how that works?-- Okay. Well, with any dam, whether it is operated in whatever way, when inflow comes in, the water level rises and it usually - unless you have done something very strange it discharges at a slower rate. So it stores water temporarily and lets it out a slower rate. It has once been described to me as being very similar to being caught in a traffic jam. You know, you all come in and you all get stuck and then you will exit at a much slower rate.

Isn't the rate of release entirely determined by the rate of input into the dam itself?-- If the gates were fully removed, so completely open, yes, but they are still opening gates during that phase, progressively moving the gates up until the dam started going down.

We know for a fact that the CEO of Seqwater on two occasions of the afternoon of the 11th of January 2011 sought modelling from the bureau in relation to releases of 9,000 and then subsequently 10,000 CUMECS. You know that as a fact, don't you?-- I certainly know one of those two, yes.

And you know as a fact that the bureau reported back to

Mr Burrows, or, indeed, the engineers operating the dam, that if a release was to be made or releases were to be made of 10,000 CUMECS, that it would have the effect of the 1893 flood in Brisbane, correct?-- I - I have read a lot of statements, so I will take your word for that.

All right. Take that as correct, will you? So that's happening on the actual day?-- Yes.

Would you agree with me that that sort of contemplation of releases from the dam means that effectively that once you have reached the W4 stage, the flood mitigation ability of the dam at that level, at least, ceases?-- No, it doesn't cease, it is just severely limited.

Severely limited. I think I understand what you are saying. It still has a mitigating effect in that the dam is still there?-- Yes, the dam will still let outflow out slower than it is coming in. The peak outflow will be less than the peak inflow.

Would you agree with me, however, that in terms of ensuring that the Wivenhoe Dam fulfills its flood mitigation role is ultimately better for operators not to be confronted with reaching the W4 stage?-- Oh, yes, definitely.

Now, in terms of not reaching the W4 stage there are a number of options that could be taken; is that correct?-- Yes.

You have looked at one of those options in your report which I will bring you to in paragraph 153, which is an earlier release to the 75 per cent FSL, correct?-- This is about earlier drawdowns?

Yes?-- Not release, yes.

Apart from earlier drawdowns, apart from earlier drawdowns, in your opinion what other steps could be taken to ensure that in the operation of the Wivenhoe Dam or the next wet season, for example, a W4 stage is not reached?-- The only - there would be several ways to reduce the chance of getting it but they are just trade-offs. You could let more water out earlier and you could have more nuisance. You can have higher discharges earlier, that would give you more air space and less chance of hitting W4. As talked about here you could produce - you could have more storage available. More air space means you can do more mitigation. There is a whole plethora of options but they are really just trade-offs. They are trade-offs versus downstream communities who are farming trying to get on with their everyday business versus flooding of people's houses, frequency of flooding, access being cut.

From your examination of the material what, in your opinion, were the primary reasons that the operators of the Wivenhoe Dam reached the W4 stage?-- The primary reasons?

Yes?-- Because of the inflow.

When you talk about the inflow you are talking about the reason event-----?-- The rainfall.

-----directly over the Wivenhoe Dam?-- Yes.

As well as the water flow from the catchment area flowing into the Wivenhoe Dam?-- Yes.

So that's a rain event, is it not?-- Yes.

A foreseeable event?-- We can foresee floods we just can't foresee when they will occur. We know floods will continue to occur we just don't know when.

It is a fact, is it not, that what caused the W4 stage to be

reached in this particular flood event was a rain event over the Wivenhoe Dam?-- Over the catchment.

Over the catchment?-- Yes.

Now, do you know what the primary reason was that the releases or theorised releases on the day of 9,000 to 10,000 CUMECS were not required?-- They were watching the dam go up very quickly. They were looking at, you know, what sort of scenario they might end up in and my understanding is the next staged opening would have been in the order of nine or 10,000. It was the scenario they thought they could end up in and it was what they needed to plan for. We were lucky they didn't get there.

My question is what stopped them getting there? What event happened that stopped them getting there?-- The rainfall wasn't enough.

When you say the rainfall wasn't enough are you simply saying it stopped raining over the Wivenhoe catchment area?-- No, it is a combination of those two things. It is the intensity in that period when they were - I would have to have a look at the pluviograph to work out when the rain did stop to answer your question accurately but it could have been the rain stopped or it could have been the intensity during that period was not enough.

I said I would take you to paragraph 153 of your report. May I do so now? Just before I come to this paragraph, would you accept this proposition; that once you reach the W4 stage the operator's ability to make releases is actually determined by factors quite outside their discretion?-- Yes.

To that extent they really have no control over the volume of releases from the dam at the W4 stage?-- They have - they have very very limited control. They still have to open the gates and do some things but they have minor control over timing.

In paragraph 153 you qualify the statement immediately by the use of the words "under the current operational strategy". Just so we can be clear, when you use those words what are you specifically referring to?-- Well, W1, W2 and W3 where they cut in. If you want - if the dam is to be drawn down, if a decision was made that drawing the dam and changing FSL is desired because we want more mitigation then you have to change the strategy so that more of that air space is available and the, sort of, size event you want. If you wanted to mitigate floods like this event or not go into W4 as much, you need to have a strategy where more of that air space is available near the peak.

Yes. Now, under the strategy that you are talking about, the current operational strategy that will have permitted the reduction or a one-off reduction in the volume of water in the Wivenhoe Dam down to 75 per cent; is that correct?-- Yes.

Thereafter for a flood event it would be permitted for the FSL to once again reach 100 per cent before the operational manual or the operational strategy kicked in for releases to be made within the W1, W2, W3 strategy. Is that what you are saying?-- Can I get you to re-express that?

I will express it again. Under the current operational strategy and your use of those words there you are talking about a one-off reduction in the dam level by 75 per cent FSL?-- Yes.

It does not contemplate continuing releases to keep the dam level at that state?-- That is right, it doesn't, yes.

Even using the current operational strategy, did you do any calculations or modelling to determine whether with the one-off reduction of 75 per cent a W4 stage would not have been required to have been reached?-- I cannot answer that question. I haven't done enough work.

What would you need to come up with an answer to that?-- I need access to the modelling.

Intuitively what do you feel?-- I think there would be a reduction in the peak outflow but I don't think it would be very significant. The strategies would largely use that air space up where it is not really advantageous but there would be a reduction.

Intuitively do you think the W4 stage would have been reached with a one-off 75 per cent reduction?-- I think so.

COMMISSIONER: When you say 75 per cent reduction, you mean reduction to 75 per cent not of 75 per cent.

MR FLANAGAN: To 75 per cent, thank you?-- I think, but I speculating, you still would have ended up in W4.

Now, again, you probably haven't done the modelling and I am not trying to trick you at all but intuitively if one was to reduce the dam to 75 per cent and had a release strategy, that is a new operational strategy, whereby inflows into the dam were continually released so that the level remained at 75 per cent FSL, you would agree with me that, intuitively at least, the W4 stage would not have been reached?-- It probably would be touch and go but there is a fair chance you wouldn't hit it. I am speculating, again.

Now, no part of your report seems to suggest to this Commission that a strategy to ensure that the communities of Ipswich and Brisbane, for example, are not faced with a dam being operated at the W4 stage could be achieved by a change to the operational strategy so that one brings the level down to, for example, 75 per cent or 80 per cent and operates the dam so that level is - stays at that level for an oncoming wet season?-- If the decision was made to change-----

Sorry, my question is more specific. You didn't deal with

that in your report?-- No.

Can you tell me why?-- Because there was - it required a level of speculation that we weren't comfortable to make without modelling.

So it is just awaiting modelling?-- We haven't had access yet but that's a possibility that we will do some independent work. It is up to the Commission.

If it was awaiting modelling it is not even suggested in your report, is it?-- That is right.

It seems to me that having reached the W4 stage which severely impacts upon the ability of the Wivenhoe Dam to operate as a flood mitigation dam, in those circumstances, isn't it something that one should look at?-- I don't - I think the question you are asking is a bit confusing because any change in what you are suggesting will just mean it will take a slightly bigger flow. It is pretty certain the next flood won't look like the one we just had, it could be bigger, it could be smaller, it could be longer, it could have a front peak not a back peak but about the only thing we can have a fair stab at is it won't look anything like the last flood. If we knew the next flood was going to look a lot like this one, you probably have a good suggestion but we have to plan for a whole continuum of floods.

Isn't part of the function of the Wivenhoe Dam, apart from water supply, that it has a flood mitigation function?-- Yes.

That flood mitigation function operated in this flood event to a certain extent, yes?-- Yes.

But having reached the W4 stage its flood mitigation role was severely limited?-- That is right.

So I think my question is this: is there any part of the proportionary principle that should play a role in the review of the operating manual?-- I think precautionary principle plays a big role in the current manual actually. It looks at range of probable size events and how they are mitigated. Any new review would do the same thing.

But the manual itself does not look at or contemplate a reduction of the FSL to a certain level and maintaining it at that level?-- No, it doesn't. That is a dual water supply flood mitigation question. It is a trade-off. If we need more mitigation - we haven't quantified what the flood risk in terms of properties and different sized events downstream really is.

Yes?-- We don't really know what level of mitigation we should be trying to achieve or we need for the downstream communities. The first question is that and then what are the economic benefits of more or less or more mitigation and how to achieve it. That would be one way of achieving it and it would have to be done on an economic and social assessment of

whether the benefits and the costs weigh up.

May I then take you to paragraph 106 which I understand some time was spent on yesterday. I further understand, Mr Babister, you actually amended this paragraph so as to include the Lockyer Creek peak; is that correct?-- That is correct, yes. It wasn't clear in the text whether that was included or not.

In your text you - or in your report - you also have a figure 8; is that correct?-- Yes.

Now, as you have amended your paragraph 106 may I suggest that it is now more consistent, if you like, with your paragraph 165 where you state that, "By this stage it was inevitable that releases from Wivenhoe Dam would coincide with peak discharges from other catchments." Do you see that?-- 165, was it?

Yes?-- Yes.

You agree with me that the Lockyer Creek catchment is one of the other catchments that you refer to in paragraph 165?-- Yes.

Thank you. Now, in relation to your opinion that you express in paragraph 106 I think you accepted yesterday from Mr O'Donnell that you hadn't done the modelling in relation to that conclusion; is that correct?-- That is correct.

But it is still an opinion you expression in your report, isn't it?-- Yes.

Whilst you mightn't have done any modelling what material did you rely on for the basis of arriving at that expressed opinion in paragraph 106?-- We looked at the relative contributions from those three tributaries. We looked at the flow hydrographs. We looked at some modelling results we had access to from Seqwater and the total flow at Moggill and other places.

Now, you accept that the peak release from the Wivenhoe Dam, I think to be accurate was 7,464 CUMECS at 7.30 on 11 January 2011?-- I don't think we can measure flows that accurately.

All right, approximately 7,500, you accept that?-- Yes.

That is one of the matters you took into account in arriving at your opinion in paragraph 106?-- Yes.

You also were aware that the Lockyer Creek peaked between around 7 p.m. and 8 p.m. on 11 January 2011?-- We certainly looked at that stuff. I can't recall that specific information. You would have to tell me what location you are talking about as well.

But it was available to you, wasn't it, that the Lockyer Creek had a peak flow of approximately 2,500 to 3,000 CUMECS?--

That is what the information was.

Generally, the Lockyer Creek peak flow was less than half of the release from the Wivenhoe Dam?-- Yes.

Now, to your knowledge, given the times I have given you, that is 7.30 for the peak release from the Wivenhoe Dam and between 7 and 8 p.m. on the same day for the peak flow from the Lockyer Creek, those two peaks are, in your opinion, combined; is that correct?-- Yes.

Those combined peaks then flow down the Brisbane River and ultimately came into contact with the Bremer River?-- That is right.

From your own figure 8 would you agree that the Bremer River peak, and the figure 8 for Ipswich we actually do look at the - is it Walloon?-- Ipswich is essentially halfway between those two so you need to make that in between judgment.

Yes. If we look at your figure 8 would you accept that the peak flow in the Bremer River actually occurred approximately 20 hours before-----?-- The -

----- Sorry, I will just finish the question - before the peak flows from the Wivenhoe Dam and the Lockyer Creek?-- I would have to mark all this up if you want me to answer this question-----

Yes, please?-- -----in detail.

Can you answer that question from your figure 8?-- To give you an exact answer I am going to have to mark all of these things you said up so we might have to go through this a bit slower if that is what you want to do. I also caution you these are stage hydrographs. You have made an assumption, a reasonable assumption, but an assumption that peak flow occurs with peak height. That is not necessarily the case.

Quite?-- When backwatering occurs there could be zero or the water could even be flowing backwards up these tributaries now. That is not necessarily the peak flow and the peak height coincide.

Based on all the material you had before you and your own analysis as an expert?-- Yes.

Without modelling, do you still adhere to the opinion you expressed in paragraph 106?-- Yes.

Yes, thank you. Thank you.

COMMISSIONER: MacSporran.

MR MacSPORRAN: I have no nothing, thank you.

COMMISSIONER: Ms McLeod?

MS McLEOD: I have no questions.

COMMISSIONER: That is everyone, isn't it? Mr Callaghan?

MR CALLAGHAN: No, I will address matters with Mr Babister elsewhere if we have to. May he be excused?

COMMISSIONER: Thank you, Mr Babister, you are excused.

MR CALLAGHAN: I call Peter Borrows.

PETER CLARK BORROWS, SWORN AND EXAMINED:

MR CALLAGHAN: Could you tell the Commission your full name and occupation please?-- Peter Clark Borrows. I am CEO of Seqwater.

Mr Borrows, you prepared two statements for the purposes of the Commission. The first I think is Exhibit 393. We might just give you a look at that. And also a second statement. That's the second statement you prepared?-- That is correct.

I tender that.

COMMISSIONER: The second statement of Mr Borrows will be Exhibit 415.

ADMITTED AND MARKED "EXHIBIT 415"

MR CALLAGHAN: Have you the statement in front of you?-- I have my copy, yes.

If we start at paragraph 22 where you referred to the Exhibit PB3 which is a letter that you saw, as you say in photograph 23, on 2 November and this refers to a project aimed to temporarily reduce the level of certain dams in advance of the wet season, is that correct?-- Yes, it basically was a request to consider what we might do.

Yes. Now look, the lapse of time and the associated paperwork and things which we have canvassed already and which speak for themselves in large respect, but can I take you to paragraph 34? At the conclusion of the process you say that you decided not to progress the issues for the reasons which you identify in paragraph 34A to D inclusive; is that correct?-- That is correct.

Can I ask; did you think at this time that it was, in fact, down to you to decide whether or not this project went ahead?-- Not down to me exclusively as I explained, I think, in point 4.

Yes, and in D?-- In D I mean, sorry, yes.

Where you note, in fact correctly I suggest, that only the Chief Executive of DERM could give effect to this project; is that correct?-- That is correct.

I just wonder why you say you decided not to progress the issues or did you think the matter was going to stop with you there or was there something further to be done?-- If I were to progress the issues I would have had to have done something with respect to discussing it with the Director-General of

DERM.

Did you see the Director-General as having any responsibility to decide whether the matter go ahead?-- He would have had to have been the ultimate decision maker.

Right. And I take it amongst all this activity you had no idea that the Minister had apparently decided on the 13th of December not to go down this path?-- No, the first - no, correct.

All right. Well, the whole concept of lowering the level of Wivenhoe was, of course, revisited earlier this year and there was a series of meetings which you referred to in and around paragraphs 48 and following of your statement; is that right?-- Yes, that is correct.

You've exhibited notes made by Mr Pruss of various meetings which you attended?-- I have.

And observed they form an accurate record of the meetings as far as you recall?-- I qualified one of those.

You did. Subject to that qualification, they are a fair reflection of what happened?-- Yes.

If we turn to exhibit PB16 on page 139, we see there a note which records that "The Minister requested Seqwater take the lead on comms, not his office or the grid manager." That's about five bullet points up from the bottom?-- Yes, I see that.

Did you see that as part of Seqwater's function?-- I saw that as being a change to what the communications protocols were.

And what were the communications protocols?-- The communications previously had been through the grid, through the grid manager, as the face of the grid.

Was this a formal protocol, something which was recorded somewhere, or just a convention?-- It was a convention. There had been a fair bit of work done probably earlier in 2010 that actually involved discussions with resources in various grid entities and basically how it was going to be run. So it is a process for how it is being managed. It is not something that's in writing, that I am aware of.

No, but it wasn't - it didn't reflect the existing sort of arrangement so far as you understood it?-- That's correct. With a qualification that occasionally if there is a particularly detailed technical question, we would be asked a question, or one of the other grid entities maybe, but that would be an exception.

Well, we will come to that distinction, because you pointed out, and have reiterated in your statement, that this process which was being discussed, which for clarity was this process of drawing down Wivenhoe to a level which turned out to be 75 per cent in February of this year, you pointed out that this was not something that could be effected by the manual. I think in your words the manual is a taker of FSL, not a decider of FSL, is that right?-- That's correct.

It was something you had already observed had to be effected through the ROP?-- Correct.

And at PB21, there is a further meeting on this topic. From that, perhaps on the second page of that - consider the whole thing - but can I suggest to you that there were two aspects to what was being requested; there was the need to provide the results of modelling which you were quite happy to do-----?-- Yes, I was, yes.

-----for the purpose of this exercise?-- Correct.

But not a positive recommendation as to that which should be done which you did not see as a Seqwater decision. That's correct?-- That's correct.

That's reflected in the second paragraph on page 200?-- Sorry, the second paragraph on page 200 is "the PB stated"? Is that the one you are talking about?

Yes. Well, there and elsewhere - I am sorry, do read that paragraph?-- That's relating to the decision, not the recommendation.

That's right?-- That's correct.

That's right?-- Yeah.

And the impression we get from all of these notes is that there was quite a sharp difference of opinion as between yourself and certainly Mr Bradley as to whose role was what?-- Well, we clearly had different views.

Yes?-- I am not so sure I would describe it as a sharp difference of opinion.

A clear difference of opinion?-- Clear difference of opinion, yeah.

All right. Can I ask you what you perceived the role of the Water Commissioner to be in all of this?-- The Water Commissioner's role is to do with water security and it is to do with long-term water security. There isn't a clear distinction between what long-term and short-term water security is but - and you would have seen from her modelling that that focus was on, you know, sort of if it was a permanent change as opposed to a short term.

The Commission-----?-- So the QWC probably informs that.

The QWC at least does have a role in advising the Minister, though, doesn't it?-- Correct.

Do you see any of Seqwater's statutory functions as including advice to the Minister?-- We - I am not sure whether you would call it a statutory function but the function that we're basically a statutory authority owned by the government means that from time to time we give advice to the Minister on a whole range of issues.

And whilst one can understand that - well, you didn't have any issue, for example, with providing advice in terms of technical advice-----?-- That's correct.

-----and the results of the modelling?-- That's correct.

You baulked at the provision of a positive recommendation as to a particular level at which the dam might be set?-- Yeah, in the context of this was a recommendation to change full supply level.

Right. Eventually, though, in PB23, we see that you did make a recommendation - the last long paragraph on page 203 includes the words, "Seqwater recommends that Wivenhoe Dam storage level be temporarily reduced"? That's correct?-- That's correct.

It follows the advice in the second paragraph which was that

"a reduction to 75 per cent of the full supply level will provide appreciable flood mitigation benefits." No difficulty with that advice in the second paragraph? That would never have caused you concern, giving advice-----?-- No, that's correct.

-----to that effect? Is it advice of the kind in the second last paragraph that you were troubled about?-- What changed - say that we were initially, yes.

Yes?-- And then something-----

You were about to tell me it changed?-- -----changed, yeah. Do you want me to?

Please?-- Effectively in the couple of days prior to this, two, probably three things changed. The first was that the grid manager provided that letter with respect to the water security, and as I have stated in my evidence, water security is not a matter for Seqwater. The second thing was that in discussions with the department between those two letters - I think there was another letter a couple of days prior to that, about the 8th of February, the D-G basically agreed that the method of change would be via the ROP, via an amendment to the ROP, and then related to that is a third point, which is more a process point, and that is that the government would do whatever it could to provide an indemnity for Seqwater to do that. So, sort of in the two days between this letter and the previous one, those three things had happened.

Which letter from the grid manager are you talking about? Is that the one that-----?-- There was an attachment to that letter.

Yep?-- It is - I think it is actually the previous exhibit, I think.

Page 202?-- Yes. So that letter came the day prior to sending the recommendation letter.

Functionally, the conclusion - the recommendation that you made in the second last paragraph on 203 was the conclusion of adding together what was in the letter from 202, together with your conclusions as reflected in the second paragraph on 203?-- Plus - plus the fact that we have identified in that last paragraph with respect to the community's tolerance. I think it is in that letter. I will just read it. "The extreme nature of the 2011 event." So that's the other factor. And that's related to the community's tolerance.

Yeah, I understand. These are all, though, I would suggest to you, issues for government rather than for Seqwater? In other words, I suggest to you that your concerns were well placed, that whilst there is no difficulty with Seqwater giving advice of the kind contained in the second paragraph, and no difficulty with the government getting advice of the kind contained in the letter on 202, the ultimate conclusion which necessarily had to reflect community concern was more a matter

for the Minister than it was for Seqwater?-- We took it into account, though. But at the end of the day that is the policy part - that is a policy part of the decision. I reiterate, I guess the other things that changed was the water security was covered off and the process in terms of a change to the ROP, which is really the government instrument, was agreed to as well.

We will all accept that it was a remarkable period of time and that there were community expectations. But accepting that was the case in February of this year, and looking forward, can we accept that the modelling upon which the recommendation was made and the conclusions drawn from it remain valid?-- In these - the answer to the question is there is more work to be done still. That component of the work we can rely on. In the earlier letters that we had sent to the department we identified three phases in the modelling which was required. The first was this modelling of the outflows under various scenarios and I think we mentioned 90 permutations that tested at that time.

Mentioned what, I am sorry?-- We mentioned that there were 90 permutations of scenarios that we modelled to get to a view on the outflow, the effect of reducing levels on outflows. So that's the outflows of the dam. The second aspect that we said needed to be done was the actual modelling of the river to determine the effect of those flows down the river, and we had suggested in our letter that that should be done in conjunction with BCC and the BOM, and there is more correspondence about that later on. The third aspect was we then needed to take those levels from that modelling and determine the inundation as a result of it. So those last two aspects of the modelling that we have identified, we had said that would be completed by 31 January - 31 March. That still hasn't been completed, and we wrote to the department about that. We're expecting that we will have the second phase done towards the end of this month now. So I guess the short answer to your question is the first aspect of that can be relied on but there is more work to be done.

Well, part, at least, of the correspondence and modelling is reflected in exhibit PB19. Do you agree with that?-- I do agree with that. That's the summary.

Yeah?-- So that's the first part I have just described of those three parts.

Just to get a sense of what is involved, just by way of a brief illustration, I suppose, if you go to page 147, one of the options being canvassed was option 5 which contemplated a reduction in the lake level to 75 per cent of full supply level and "an amendment to the manual to commence releases once the storage level exceeded EL64", is that right?-- That's correct. That was that model.

And-----?-- That was that scenario, sorry.

And if we - this is just one illustration?-- Sure, yeah.

If we turn to page 148, there is a table there. If we go up three from the bottom to "January 2011 historic", and go across the page to option 5, the short point to be made, I suppose, is that had that option been exercised for the January event, the maximum outflows was just over 4,500, is that right?-- Option 4 is 5,000 - option 5 or 4?

5?-- Yeah, it is. You need to read in the assumption at the front end as well.

Yes. No, it is just-----?-- And the assumptions are important because you would need to do more work if you moved away from that assumption, particularly that assumption about the loss of communications aspect.

The assumptions being reflected on page 146?-- Yes, correct.

And I am not attempting to-----?-- Okay.

-----extrapolate any particular relevance to that scenario, it is just that's an example of the modelling?-- It is an example of the modelling.

And the effect that it had. But the concern at the moment, I suppose, is we won't know until the end of the month - end of this month whether there is any advance on that, is that right, on those sorts of figures?-- Correct, yes. We will have some work complete - it is planned to be completed, anyway - on the second element of that, by then, which is the river level modelling.

How certain are you on the end of the month?-- Only as certain as the people who are doing the work have told me. They said that's when it is due - that's when it is planned to be finished.

All right. You can understand the concern of the Commission?-- I can.

Which has to deliver an interim report?-- Yes. We are driving to that, though.

All right?-- That still leaves - still leaves a third element that we need to work through as well.

All right. Can we anticipate some sort of supplementary submission advising the Commission as to the status of it?-- We can provide that if the Commission-----

At the end of the month?-- If the Commission wishes.

COMMISSIONER: When is the third element going to be done?-- I needed to nail down the second element prior to doing the third element. We don't think there is a lot of work in doing the third element because it is basically looking at work BCC has already done.

So?-- So I haven't been able to give you an answer to the date but I wouldn't expect it would be more than another couple of weeks after that.

Thank you.

MR CALLAGHAN: Assuming the same issues arise at the end of this year, if the same - say the Bureau of Meteorology was to issue a similar warning in October, similar to the one that was issued in 2010, how would the process play out? Would it be the same situation of you giving advice to the Minister as to what should happen?-- Two things: one is in terms of that letter that we sent and what happened the next year, that letter was not dependent upon advice from the bureau and the likelihood.

No, I understand that?-- I guess what I am saying is that irrespective of the bureau's figures, the consequences of that - of a similar event are such that we made that decision. So that's why that was done last time. It wasn't a likelihood and consequence contribution to a risk, it was only the consequence element. In terms of the second element, both in our submission to the Commission generally, in my submission here and subsequently in that optimisation study, we have identified a process that we believe is a better process to follow.

And that's what I wanted to ask you about?-- And that would be - and that's the process that we have effectively proposed as part of that optimisation study. I have suggested in my statement and that's my belief.

Can you just summarise that for us?-- The process is whereby we need to consider three - there is three work programs to be looking at. One is to do with water security, one is to do with the impacts on flood mitigation, the third is to do with the effect of that on development levels, in terms of sort of how that's going to affect the three councils, particularly downstream of Brisbane if we're talking about Brisbane still. And the governance arrangement would be that those technical streams are led by a particular entity within the water grid or water business, I guess, and chaired that by - in terms of a steering committee by the QWC, and that's really, coming back to your earlier question, about the role of the QWC in this sort of advice.

And you would see them as the appropriate funnel, if you like-----?-- Correct.

-----for the advice to the Minister?-- Yes, yes.

Who should ultimately make the decision?-- Yes.

Thank you.

COMMISSIONER: How fast is all that going to happen? If you get your advice in October that it is going to be a very wet season?-- I guess I am trying to couple the advice in the wet

season and what we need to be doing, but in terms of that process, we were expecting that we needed to get that in place before the next wet season.

Okay. So what does that all leave you with; a range of strategies according to events or where do you see it ending up?-- I still - I still see it as ending up as a - there is two parts of to it. There is a short term and a long-term part to it.

Mmm?-- The short term part of it to me is still going down the path that we are - one of the only things, I believe, that can be done is that question about whether you do a lowering of full supply level, but you need to do more work on the consequences of that to actually be confident about that.

See, what's worrying me is how far would you have got by the end of October, if it is shaping up for a really wet season you won't need a temporary lowering of the FSL level unless you are going to have a wet season coming - a really wet season, presumably. So-----?-- I am not so sure that that's the right question. I - it really is what sort of risk tolerance has the community got to a flood above 1 in 100, or whatever the capacity of the dam is, and the experts - you know, that sort of going over. That's ranging a bit but-----

You are talking long-term there, aren't you?-- Well, I think that still comes back into the short term.

Explain that to me? How is that?-- The - if the tolerance to - well, the tolerance to an event like January 11, we know that's just about zero, but if the consideration by the - ultimately the government but it would be influenced by, I think, the effects of changing levels on, you know, councils in terms of their flood standards. You know, that's - if that's going the direction of a long-term, we still need to do that for the short term as well. Does that make sense?

Well, you would do it sooner rather than later, presumably, if you could, but I am more interested in what happens in the interim, pending all that being resolved on the assumption that you are really not going to have it all worked out by next summer, are you, or are you?-- Not for the long-term you won't. But you still need to - I think what we're going to be faced with in the short term decision are what are the other alternatives that we've got and part of it is to do, I think as Counsel Assisting has pointed out, is to - a government policy call on level of tolerance.

All right.

MR CALLAGHAN: There are different issues here and what I was concerned about is - forget the reason why - forget the October briefing, or whatever, and just assume that for whatever reason the Minister says, "I want to know about drawing the dam down, and not for you at the moment to worry about why, I just want some advice on whether the dam should come down or not", this process by which the different

interests are represented, the different viewpoints put, be it on behalf of dam safety or on behalf of water security, and how that funnels up to the Minister. Now, there is, I understand, a draft proposal as to working out some way in which that should be sorted out. That's what you were saying before?-- That's what I'm saying.

Yeah?-- And that's the - our draft proposal is what our best view is on that.

But how long can that take? How long does that take? Surely-----?-- Sorry.

It is just a matter of working out who is going to do what, isn't it?-- It is, yeah, to do that, and we actually set that work program to a stage can be done for the next wet season. That's identified in that optimisation study as well.

That's right. There should be no difficulty with getting that done. So at least the process is in place?-- And the preliminary work for that next wet season.

And that's what you can update us on as well as to the progress of that?-- Well, what we had covered off in our - well, in the letter that you received with respect to that is that once we've got some - I will come back a step. That process has identified some work that needs to be done in manual revision and all that sort of stuff as well, and what was suggested in that would be that we get some advice from the Commission as to anything else that the Commission would want to see included in that scope of work. We have obviously sent that letter to the department and the department has actually organised a meeting for tomorrow morning to discuss it with myself and the QWC.

That's all I am suggesting, is that there are going to be things that happen between now and when we deliver our interim report which will need to be updated?-- Definitely. I guess the point I was making was whether we give you that update or somebody else does. It doesn't really matter.

All right. You mentioned the concept of the indemnities that you received prior to the drawdown in February. When and how was that discussed with the government?-- It was - the discussion was initiated - that letter where I made the recommendations, which was the 11th of February - I will just have to have a look at - the process was, anyway, prior to that 11th of February meeting, we had a discussion with the - with the government to say that we would be needing that to be able to - we would be needing to have a change in the ROP and that indemnity to enable that to happen practically. The discussion happened between those - the letter, I think, of the 11th and a couple of days prior to that, we had some - we had advised the government that we would be seeking that - in terms of the government I am talking about the D-G of DERM - and he took that on board and came back to us prior to us sending that letter of the 11th to say that he would, you know, use his best endeavours to put that in place. So he

basically started the process off, obviously, with some conversations somewhere in government about that indemnity.

I only asked because we do have that document which is PB24. I think the next relevant document is the indemnity itself, which is PB27. We had no learning as to how it actually came about?-- Oh, there was a - are you talking about the process on how we agreed the indemnity?

Yes?-- Basically, when the principle was agreed that we could get it, the legal representatives from Seqwater met with the legal representatives from the State.

All right. Well, an indemnity is always important because there are the risks that are always associated with the release of water at any volume. That's correct, isn't it? There is always risk associated with the release of any volume of water?-- Yes.

But Seqwater-----?-- Indemnity is not the only solution, though.

No - well, you have got another important protection in section 374 of the Water Supply Act, haven't you?-- We do.

Which leads us to the question of the manual because it is observing the procedures provided in the manual which provides the cover provided by section 3.4, isn't it?-- Yes, I would have to have a look at that. That's generally correct, yeah.

Yeah. And the preparation of the manual was, in effect, delegated to Mr Tibaldi, the most recent edition of the manual, is that correct?-- He certainly did that, yes.

He is, no doubt, a highly skilled engineer, but were you aware as to whether he had any experience in operational writing?-- I have seen some of the work that he has done but, I guess, the focus for the business was the actual operation of the event as opposed to the operational writing. But, yeah, be that as it may.

And, of course, as we have observed, the manual is a document which has potentially enormous legal significance? You are aware of that?-- With respect to the indemnity?

Yeah?-- Correct.

But the question has to be asked as to whether any lawyer was involved in the preparation or scrutiny of the manual in its current form?-- No, there wasn't.

You approved a briefing note to the Minister which is now Exhibit 394, I think. Can we scroll down to the very bottom, I think? That's it. For a start, we note that this is a document which was prepared for the Minister for the purposes of parliamentary sittings but apparently approved by you, is that correct?-- Yes.

Is that a regular procedure, that you would approve a document of this nature?-- Yes.

I see. Can you just scroll up a little? It might be on the second page of the document. Just there it says, "The manuals and their operating procedures have been reviewed by some of Australia's best water experts and following." What process of review by some of Australia's best water experts is described there?-- I am generally aware of that answer to that question. It is not a detailed answer I can give you because it is the technical people that have done that, but it relates primarily to the flood study - I think I got it right - just not the time of it - but the study that was done between 1990 and 1994 or 5 of the - I think it was the Brisbane River Flood Study - I am just not sure of the exact title - and the second major element of that was the work that was done in conjunction with the upgrade of the Wivenhoe spillway by the Wivenhoe alliance.

Which was when?-- Which was - sorry?

When was that?-- The work was - the work was contracted I think about 2005, something like that.

So you are talking, when you are briefing the Minister on the status of the manual and saying it has been reviewed by some of Australia's best water experts, you are talking about something done in 1995 and something done in 2005; is that right?-- That is correct.

Surely some sort of objective external peer review of a document such as the manual would be best practice at every revision of the manual, would it not?-- I think it depends on what has changed. The information that we had from the - the flood study I referred to in whatever it was, 1990 to 1995 and there was one soon after that, the results of both of those were similar and you would expect those results to be similar because the actual inputs to it were similar. In other words, we use similar design storms in the model and I am basically just relying on the advice I have got from the experts on that. The second aspect was to do with the - we didn't have any other major events in the intervening period either.

Put it this way: were you content that the most recent revision of the manual was conducted in accordance with best practice strategies?-- In hindsight, there might be a step in the process where you put expert reviews in it. At the time I was happy with it obviously because it went through.

Well, were you happy it was in accordance with best practice strategies?-- I was - I really struggle to answer that. I haven't done myself a review of what best practice strategies are.

It is part of your function as CEO to lead development of best practice strategies, is it not?-- It is.

There are obvious risks involved in not doing things in accordance with best practice strategies, aren't there?-- There are. I guess we rely on the work that was done in 2005 which was an extensive review of the manual.

It is also part of your function as CEO to identify key risks, is it not?-- It is.

The risk of exposure to a liability can be managed by ensuring that the operational procedures in the manual are observed?-- Yes.

The operational arrangements require that the dam be operated by a sufficient number of suitably qualified personnel?-- It does.

The manual requires that a flood operations engineer hold a certificate of registration as a registered professional engineer of Queensland, does it not?-- It does.

As part of the preparation for the wet season just passed did Seqwater implement any process to ensure that all of the flood operations engineers were up to date in that regard?-- No.

You were aware, though, of the identify of the flood operations engineers who were staffing the centre?-- Yes.

You would accept, I take it, that on the evidence all of them are dedicated professionals?-- Yes.

You also accept, I'm sure, that the evidence suggests that during the flood events they all worked very hard under very difficult conditions?-- Yes.

And accept the proposition that no-one has levelled any particular criticism of any individual engineer. The manual itself might have been criticised?-- Not that I am aware of.

I am suggesting to you that is right?-- Mmm.

Are you also aware that due to what would seem to be completely understandable personal circumstances the renewal of notice for an engineer, one of the engineers, may have been overlooked last year?-- I am aware of that now.

If something like that happened such an omission could at least raise the danger of it being suggested that the procedure in the manual had not been observed, couldn't it? I am not suggesting a conclusion one way or the other it is just that sort of suggestion might be made?-- I haven't considered that. I need to think about that.

COMMISSIONER: Mr Callaghan, is that a convenient time?

MR CALLAGHAN: Yes, Madam Commissioner.

COMMISSIONER: We will adjourn until 2.30.

THE COMMISSION ADJOURNED AT 1.05 P.M. TILL 2.30 P.M.

THE COMMISSION RESUMED AT 2.30 P.M.

PETER CLARK BORROWS, CONTINUING.

MR CALLAGHAN: Mr Borrows, just before the adjournment I was asking you a question about the dangers involved in failing to ensure the flood operations engineers credentials were up to date. I think you said you would have to think about it. Have you had a think about it?-- I haven't formed a conclusion yet.

I suggest that such an elementary oversight calls into issue the whole question of the extent to which Seqwater was prepared for the flood events - in which Seqwater prepares for flood events generally. Can you tell us what specifically is done each year by way of preparation of each wet season?-- I can't answer that in detail but I do see the preparation proposal. It is not done by me.

You see what?-- I basically see what is done but it is not something I do. I couldn't give you a detailed answer for that.

There are or have been in place agreements as between Seqwater and SunWater as to things to be done in preparation for each wet season, have there not?-- Yes, there have been.

You have signed those agreements, have you not?-- I am not sure if - I signed the arrangements between us and SunWater. I don't know if you are referring to any other documents. You would have to show me what you are talking about.

No, the arrangements between you and SunWater, what have they been?-- It has been an arrangement, a service level agreement. I am not sure exactly what is the form of the agreement. Have you got it that you could show me?

Yes, I could show you some documents. It is a service level agreement. What exactly is a service level agreement?-- I will just wait and have a look at the document if that is all right.

No, as a general proposition what is a service level agreement. A service level agreement is really an agreement which tries to set out what sort of services and roles, you know, each party will perform for another.

So it is an agreement, in other words?-- Look, I don't know if the technical term is an agreement. I don't know if that's a legal term I am not sure.

No, it is not a legal term?-- But it is an agreement, yes.

Just by way of background, I suppose, and correct me if I am oversimplifying things but Seqwater when it came into existence had, obviously, no corporate history, certain things that had been done by SunWater still had to be done and Seqwater reached these agreements with SunWater they would do certain things which had historically been done; is that right?-- That is correct, yes. The difference was there were some employees from SunWater previously who actually transferred across into Seqwater as part of that institutional change.

Some, but not all?-- Some, but not all.

So there was still some things which SunWater was equipped or well equipped to do on your behalf?-- SunWater still

basically had that agreement but I am saying some of the people that were involved previously from SunWater as supplies in that agreement transferred across to Seqwater.

You have been shown a document?-- I have got it. I haven't looked at it yet.

Could you identify whether that is one of these service level agreements of which we speak?-- Yes, it is.

That one that you have got I think was signed on the 13th of October 2009 by Mr Pruss, is that right?-- That is correct.

But you've signed similar documents subsequently?-- I am just checking the period of this document. Yes.

I should correct what I just said. When I said you have signed similar documents, what you have actually signed are deeds of variation and extensions?-- To this document.

Of that document?-- Yes.

That is right. What does that document, in broad terms - I mean obviously the terms will speak for itself but can you just summarise for us the effect of what has been agreed between SunWater and Seqwater in that document?-- It is essentially providing the services of the flood centre in terms of people support, the actual centre itself and, you know, the operations of those events. Maintenance of records, all that sort of stuff.

There is a service schedule attached to the document, is that right?-- Yes, there is.

On page 4 of that service schedule there is a heading "Flood Operations Manuals"; is that right?-- Yes.

As it reads it says, "The Flood Operations Manuals set out detailed procedures and working instructions that are to be followed by SunWater during a flood event. In July each year SunWater shall review the flood operations manuals and advise Seqwater in writing of either any approvals recommended for the manuals or confirmation that the manuals remain satisfactory." Are you aware as to whether or not SunWater did, in fact, communicate such things to Seqwater?-- I haven't seen that document.

If they did it in writing you haven't seen the document in which they did it?-- I certainly don't recall seeing it.

As you say, you've signed a series of variations and extensions to that document. I suggest to you that there was an extension which was agreed to run as between 31 July 2010 and 31 October 2010, does that sound right?-- That was - might have been the first extension or that was an extension, yes.

Perhaps the second one. That's not the important thing. There was an extension signed to 31 October 2010 and I am querying whether the next extension was signed on 24 December 2010, that is to say, some time after the 31st of October. Are you aware of that?-- I was aware there was a gap. I'm not sure of the dates.

There is a gap between 31 October 2010 and - sorry, you say you are not sure of the dates but does that sound about right, there was a gap towards the last part of last year?-- I knew there was a gap basically, yes, there was a gap. I am not sure of the time as I said.

When it was varied and extended then it was agreed retrospectively the variation was to run from the 31st of October even though-----?-- To pick up the gap.

Yes, even though that was signed on 24 December; is that right?-- I believe that is correct.

All right, well, was - does the agreement extend to who actually performs the flood operations services?-- In terms of people?

Well, organisation?-- I can't answer that question. I would need to-----

Perhaps I can come at it this way: was this the first time that Seqwater was responsible for running the Flood Operations Centre. When I say this, I mean the wet season just past?-- Seqwater didn't run the Flood Operations Centre.

All right, well was that part of the agreement?-- Was what - sorry, I am missing the point.

Was the responsibility for running - how was the responsibility for running the Flood Operations Centre set?-- Seqwater under the Act has the responsibility for managing the flood. The arrangements are we do - we have been doing that up until now until 30 June '11 via an arrangement with SunWater. Does that answer your question?

It might. Is this the arrangement we are talking about or is it something else?-- This is the arrangement we are talking about.

This is the arrangement. Which comes back to my query about this gap in the arrangement which I suggest to you existed between 31 October 2010 and 24 December 2010. Who was responsible at that stage?-- In practice?

Yes?-- It was still being run the same way. Legally I haven't asked the question.

It is fair to say, I suppose, these events of January just past threw up a number of issues for everyone that hadn't - that you hadn't been confronted with before?-- January 11 has been unprecedented, so.

I have nothing further. I tender the copy of the service letter.

COMMISSIONER: That will be Exhibit 416.

ADMITTED AND MARKED "EXHIBIT 416"

COMMISSIONER: Now, Mr Ambrose? Do you have any questions?

MR AMBROSE: Not at the moment although these are new matters just asked by counsel assisting and I am getting instructions on that.

COMMISSIONER: Mr Dunning.

MR DUNNING: No questions.

COMMISSIONER: Mr Murdock?

MR MURDOCH: Mr Borrows, I represent the Mid Brisbane River Irrigators Association?-- Yes.

There are some emails which are exhibited to your statement and there is a bundle of them, PB11. Do you have those there?-- I do. I will just get them. I have them.

Yes, I am interested in page 61 of the exhibits, it's the second page of PB11. There is a reference there to the email being addressed to Robert Drury and as I understand it, Robert Drury is the - or was at the time the manager of Wivenhoe Dam; is that correct?-- He is the Manager of Dam Operations which includes Wivenhoe Dam. He looks after all the dams.

The other addressee was blanked out but I take it that at some time this email came to your attention?-- Are you talking about the one on page 61 to be clear?

Yes?-- Mine isn't addressed to Bob Drury on page 61. The page 61 in my statement is from the duty engineer to me and a copy to - sorry and to Rob Drury, my apologies. Just to the two of us. There is nobody else and nobody else blanked out.

On mine the first part is blanked out. It must be you blanked out?-- It is to me.

That saves a few questions. When you received that email on Wednesday 12 January I take it you saw it about 4.22 because you were on duty that day and following matters closely?-- I am not sure when I saw it but I would have seen it fairly

closely. As you say, I was watching for something.

Do you see the second paragraph of it and particularly the final sentence. It reads, "As a result of the volume in the flood peak was very sharp and has been attenuated with volume loss into the flood plain storage adjacent to the river." When you received that email did you understand what that was referring to, that expression "flood plain storage adjacent to the river."?-- I have just a very general understanding of what it is to do. I am not the technical representative in this space.

I understand that but you would endeavour, I assume, to understand the general concepts?-- I basically understand that the flood is attenuated as it moved down the river because of storages in the river. If that's the question, yes.

All right, well, is it storages in the river or storages adjacent to the river?-- Both.

Look, to get to the point; is the reference there as you understand it to the farm lands and certain urban areas in the Lowood and Fernvale districts?-- It is in the whole of the Brisbane River system. Because this refers to an attenuation in the flood peak and it was in reference to the flood peak in either Ipswich or Brisbane. It would have been over more - a longer length than that but the river, basically the whole river system.

Prior to the January 2011 flood was there any form of official recognition that there was this thing, this concept of flood plain storage adjacent to the river?-- It is a function of the river, always has been.

Is it officially recognised in any of the organisation's publications?-- Not that I am aware of but it is actually recognised in the modelling.

Whose modelling is that?-- The Brisbane modelling would pick that up.

I see. Has there been any liaison with the farmers and the towns people in that flood plain storage adjacent to the river to advise them that they are in a flood plain storage?-- I think it just - the answer to the question is not to my knowledge. To me it is basically a natural, you know, basically an issue of geography.

But they have never been confronted, have they, previously with this concept of being flood plain storage for the operation of the Wivenhoe Dam?-- I think the fact that it is a flood plain is basically why it is the land use that it is.

Were any special measures undertaken to communicate with people in that flood plain storage to give the people warning they would be affected when level 4 was reached? Level 4 under the manual?-- During the event?

Mmm?-- There was communications with the Brisbane Irrigators via one of our offices.

So who was that?-- Graham Kegan.

What form did that communication take?-- At least email, I am not sure whether there was another form.

That assumed that power was available, I take it?-- It was basically an agreed way. I understand they had meetings and this was how it was going to be done.

If you look back to page 60 in PB11, this was also addressed to yourself, this is from the duty engineer and it was sent on 11 January at 10 a.m. Do you see in the second sentence that it reads, "However, it may be that fuse plug initiation might provide a lower outflow than increase the gate outflow to protect it." Did you understand generally what that was about when you received the email?-- Well, very generally.

Did you understand that what they were talking about protecting was the fuse plug?-- The way I read it is they were - "our strategy revolves around trying to prevent the fuse plug initiation." The first sentence there.

All right?-- That statement.

Okay. Why was the strategy designed to protect the fuse plug from blowing?-- Well, it was qualified by the second sentence to start with. That at the end of the day it may be a better result if the fuse plug wasn't protected. The considerations for the fuse plug, however, largely revolve around if a fuse plug is triggered then you effectively aren't in a position where you can protect from another flood soon after. That's the number one consideration or that is a consideration. In other words, basically you've lost the fuse plug until it is reconstructed.

I see. What is involved in reconstructing it?-- It is effectively like a mini dam or mini weir.

Can you give us some idea as to the capital cost of reconstructing a fuse plug?-- No, I don't know. I don't know what the cost would have been. I have never inquired of that.

So, the-----?-- The point, sorry, excuse me. The point though in terms of you effectively have water releases going down to full supply level. You can't stop that then after the event.

But losing the fuse plug wouldn't drop water levels to the full supply level?-- After the event, any rainfall that comes back into the dam after the event.

Yes?-- The water would automatically go down the full supply level uncontrolled through that spillway until it is reconstructed.

Are you able to assist with any information as to whether your agency has a policy generally as to risk management through its various operations?-- We don't have a document in terms of a risk management document. We have a suite of documents of manage that risk.

So there is no overall risk management policy within your department?-- With respect to - we have an overall risk strategy for the business but with respect to the dams and that is what I understand your question was, the risk management is through a suite of documents. I can describe them if you want me to.

Yes, please?-- We basically have two streams to them. One is a dam safety - a dam safety - I am not sure if it is a manual, I am not sure of the title. Under that dam safety policy which is basically a document that reflects guidelines that are produced by DERM in terms of how you manage major dams and in turn those guidelines are informed by the ANCOL guidelines. Under that we basically have got a suite of inspection programs. One is - I guess the pre-eminent one is a 20 year independent review of the dam safety. Out of that independent review of the dam safety comes a number issues that are identified. With all those issues we then basically do a risk assessment on those issues and as a result of that risk assessment prioritise what work we will do in terms of responding to that independent review which is done every 20 years. The Wivenhoe and Somerset risk assessments by independent experts are due again in 2015. Beneath the 20 year inspection program is a five year inspection program, a comprehensive inspection program of all our dams. Below the five year program is an annual inspection program. Below the annual inspection program is a daily inspection program of a series of aspects of each dam. So that is looking at the asset side of the dam. We also have an operations and maintenance manual for each of our facilities and that's really focusing on what we need to be doing on a regular and on a longer term basis on each of our dams to make sure they operate correctly. Below that we have a standard operating procedure which is the next level down as to how people actually do things on the dam. Then below that we have the emergency action plans for each dam, how we respond in the event of emergency. That's from the asset itself. The other things that we then have is effectively the effects of what we do on downstream of the assets and that's-----

Excuse me, I don't mean to be rude but what document is this next one; where do we find this?-- Again, it is a series.

A series?-- The first one is a flood manual.

A flood manual?-- What we have been talking about here for the last couple of months. The Flood Operations Manual for Wivenhoe.

Yes?-- And you know, as you would be aware, that is reviewed every five years mandatory.

Yes?-- Plus a review after every major event. We have then the flood studies that I referred to when I was talking to counsel assisting in terms of the 1990, '95 study and there was one done subsequently to that. Out of all those is basically how we manage the risks of the business with respect to the dam. Just with respect to the dams.

So, in terms of physical and mechanical components of the dams you outlined the various tiers in the risk management structures for them so we can put that to one side but so far as operational issues are concerned it does seem that you don't have a Risk Management Plan, you have standard operating procedures?-- Well, they are basically built around managing risk in terms of how you do it. That is basically how they are developed. The one above that is the Operations and Maintenance Manual in the hierarchy. Both of those take into account, you know, what sort of risk we are trying to address.

Is it not the case that there are many inherent tensions in the way in which the Wivenhoe Dam is operated? For example, there is the tension between it being a water security function and a flood mitigation tool? Isn't it the case that there are also discretionary elements that relate to when water is released and the volume at which it is released?-- Are you now talking about the operations of the Flood Manual?

No, I am just talking about the fact that there are tensions between the various aspects of the operation of the dam, flood mitigation on the one hand versus water security. There is a tension there, isn't there?-- Well, the tension with respect to maybe what sort of level do you want to deal with it but not in terms of how you operate it.

Then there are tensions in relation to managing flood events or prospective flood events and those tensions are do you hold water in the dam or you release early? Do you release suddenly or do you release over a longer period? There are all those questions, aren't there?-- I am not qualified to deal with that technical aspects of that question. It is really what you are getting at there I guess is the release strategies under the operations manual. That has been aired quite a bit over this Commission's hearings but that's really not for me to answer. That's really more for the technical people to respond to.

What I am interested in is where you have different consequences for different possible actions that are taken in relation to the operation of Wivenhoe Dam?-- Well, that's effectively - if you are talking about in a flood event, that is effectively reflected in the priorities for what we are trying to address in the manual.

With respect, the manual is couched in terms of operating procedures and it appears to operate in the absence of any overarching risk management strategy, doesn't it?-- I don't agree with that.

You don't?-- It is basically built around those four strategies that are in the operating manual. So that the - sorry, the hierarchy, you know, the protect the dam safety, number 1; manage urban areas, number 2; look after the rural communities, look after the - in the environmental aspect. So that's the design - that's the actual policy - that's behind the strategies. That's what we're trying to achieve in that hierarchy, which is a risk-based approach.

And in relation to other key matters that bear upon risk in the operation of a dam, take, for example, the notice or lack of notice that you pay to predictions of above normal rainfall?-- It is not my space.

No, but - I am interested in where do the people who manage these operating procedures go to to say, "Well, look, this is our risk management policy. This is where I will find the answers to the higher level questions. Do we take into account rainfall forecasts? Do we risk a flood to urban areas by not releasing water earlier?"?-- In my view that's laid out in the manual.

So we look to the manual for all of these things?-- For those things you have described.

I see. Okay. You see no need at all for any risk management plan for the operation of Wivenhoe and other dams?-- We do have, as I have tried to outline.

Now, in relation to the flood engineers as a group you were communicating with during the event, they're stationed in a facility in the Brisbane CBD, is that the case?-- That's correct.

And has there been, during your time in your position, any consideration given to the appropriateness of having those persons based in the Brisbane CBD as distinct from out - at or near the dam?-- No.

And-----?-- In fact, we have just reviewed where they will be going to post June.

Yes?-- And we have determined that - a site in the CBD for that. Another site in the CBD.

Were you involved in that determination, or were you-----?-- In terms of involved in terms of making the decision?

Mmm?-- I didn't actually make the decision. I was aware of how it was happening.

And was there a case put for an alternative put forward that

they should be relocated to an area near to the dam?-- Not specifically to me.

Well, not specifically to you but do you know whether that was considered, or was it-----?-- No, I don't know.

-----assumed it will just be a relocation in the CBD?-- I am not aware. I am not sure.

Nothing further, thank you.

COMMISSIONER: Thank you. Mr Flanagan?

MR FLANAGAN: I have no questions.

COMMISSIONER: Mr MacSporran?

MR MacSPORRAN: I have nothing, thank you.

MS McLEOD: No questions, thank you.

COMMISSIONER: Coming back, anything, Mr Ambrose?

MR AMBROSE: Not at the moment.

COMMISSIONER: Mr O'Donnell?

MR O'DONNELL: If there is nothing from the Commission or the Assistants?

MR CUMMINS: The only question I have, Mr Burrows, is where would I find the information as to the risk that - risk to the dam when the water level was allowed to rise to 74? Where would I find that information?-- It is basically behind the development of the manual itself. I don't know what document that would be in but the development of the manual is where that would come from.

Okay. Mr Allen the other day told us he doesn't have that information?-- Mmm.

So that's in your system somewhere?-- The 74 trigger - are you talking about where does 74 - is the question where does 74 come from?

Well, just to give a slight bit of background, which I didn't intend to do but I am curious as to why 74 was selected. I presume it was selected on a risk basis. In other words, that we allow it to fill to that to diminish the risk to Brisbane of flooding while we accept an increased risk of the dam overtopping and losing the dam, which is a catastrophe beyond all our imaginations?-- Mmm.

What element of risk of overtopping have we accepted?-- 1 in 100,000 at the moment.

Mr Allen informed us the other day that you couldn't get a 1 in 100,000 through from a 74 starting level?-- Well, again, I

can't answer it, I am sorry. That's the advice - the advice I had is that we basically had - the dam currently could pass a 1 in 100,000 event.

Okay, thank you.

COMMISSIONER: Mr O'Donnell?

MR O'DONNELL: Can I ask you a couple of brief questions about the North Pine Dam. There has been a proposal raised in the Commission hearing whether the North Pine Dam should be - its current use should be changed so it becomes a flood mitigation dam. In other words, you lower the full supply level so it has got flood mitigation capacity within the dam. Does Seqwater have a view on that?-- At the moment we don't have enough information but I can say what we're considering. There is two aspects to, I guess, the issue downstream of North Pine Dam. One is the road downstream in terms of cutting the road, which is cut very frequently, and the other is the question about whether we actually look at the impact on properties downstream. I wrote to the local council in February. Actually, I responded to a letter from the local council in February where they asked if we would consider lowering - lowering the dam. I first of all laid out the response in terms of what our responsibilities were and what they weren't. But with respect to the actual decision, I asked them what sort of standard of protection they were looking for downstream of the dam, because the letter was prompted on the back of the 2011 flood which the flood reports sort of rated at somewhere between a 1 in 200 and 1 in 500 event, and the question I asked of the council was what level of protection are you seeking because that actually will lead to a determination about what sort of level you might consider lowering to. But, again, the processes we have got to go through are similar to Wivenhoe. We need to do the flood modelling downstream. We have done - if I go back to how I answered the Counsel Assisting on Wivenhoe, we have done the part A of that, which is the outflow parameters. We haven't done any of the modelling downstream but we have been talking to Pine Rivers and expect to have that finished in about a month's time. But where that starts to lead to, North Pine Dam is a - its full supply level holds about 215, 214,000 megalitres. The 2011 event was just over - when I say - did I say 214,000?

Yes?-- The event was about 200,000. So we would be talking about a significant flood component to actually manage a flood of the size of 2011. And I guess, just to put it into a cost perspective, North Pine Dam has got a yield of 60,000 megalitres, or thereabouts, and, you know, that will change the result of this event. But if we were to lose a fair component of that, then obviously we have got to replace that by somewhere else. So there is a significant cost in that decision as well. So they are the kind of things that we have been thinking about, but we haven't got enough information to

make the call on that yet. With respect to the other question about the flood immunity of the road downstream, there is three separate catchments that go into that road, the dam is just one of those, albeit the biggest one, about 85 per cent. The road will go out on just the uncontrolled catchments, so that's fairly problematic as well. The long-term answer for that is certainly to raise the road.

Another issue has been raised about North Pine which is a suggestion that when there is a flood event some land owners in the area can be cut off and the only vehicular means out is over the North Pine Dam itself but currently Seqwater doesn't allow members of the public to pass vehicles over the top of the dam?-- That's correct. And the reason for that is that through the - through a flood event it is obviously an operating work site and we have the operators actually are on that - on that - you know, what would be a roadway all the time through the event or a large portion of the time through the event. We have got a lot of back-up levels in terms of how we open the gates at our gated spillways and in the case of North Pine, the last level of safety, if you like, requires us to put shafts through the top of the dam. So you actually couldn't physically pass. But I guess something we would be open to and open to dealing with would be, you know, an emergency access for ambulances or firees, or whatever. But as a general alternative access, if a flood route is cut off, it is too dangerous.

All right. Thank you. That's all I have.

COMMISSIONER: Thank you. Mr Callaghan?

MR CALLAGHAN: No there is nothing arising. May Mr Borrows be excused?

COMMISSIONER: Thanks, Mr Borrows, you are excused.

WITNESS EXCUSED

MR CALLAGHAN: I call Barry Dennien.

BARRY KEVIN DENNIEN, SWORN AND EXAMINED:

MR CALLAGHAN: Could you tell the Commission your full name and occupation, please?-- Barry Kevin Dennien, CEO of the South East Queensland Water Grid Manager.

Mr Dennien, you have prepared a statement for the purposes of the Commission signed on the 5th of April of 2011, is that correct?-- Correct.

And attached to that statement are some thousands of pages of annexures, is that correct?-- Correct.

I tender that.

COMMISSIONER: Exhibit 417.

ADMITTED AND MARKED "EXHIBIT 417"

MR CALLAGHAN: Can you just in brief compass give us an outline as to the role of the South East Queensland Water Grid Manager with emphasis upon where it stands in relation to the Minister and DERM generally?-- The South East Queensland Water Grid Manager is a State owned government body. We - main function is to, if you like, strategically operate South East Queensland Water Grid for - to ensure water supply security for south east Queensland, that's drinking water supply, recycled water and raw water, primary function. We have some functions that support that, and that is the - we hold contracts for purchase of services to treat the water that we have - that we own, we own that drinking water supply. We have service contracts to have that both stored, treated and delivered, and we have delivery contracts for wholesale customers, they being the council owned water businesses, some power stations and a series of small farmers. Another supporting function to that is because of our role of overseeing the operation of the water grid, we have an emergency management function, we have a communications function. The second part of the question, if I have heard it correctly, was about our role specifically in relationship with the Minister and DERM. The Minister is our shareholding Minister. We have two shareholding Ministers, the Treasurer and Stephen Robertson at this stage, Minister for Water. The role we have with both those Ministers is to supply performance operating and strategic plans on a yearly basis, we have a role of ensuring any issues that occur through the year that impact or are critical issues for us in performing our duties under legislation we would normally brief the Minister. There has been a regular monthly meeting with the Minister where I sit in unison with the other chairs - sorry, the other CEO of the other water utilities where we meet the Minister jointly. I suppose the other function where we do

have a role with the Minister's office is the communications acting as a single point of call for communications across the water grid. There are times we're involved with joint media releases with the Minister or press statements with the Minister and at times we're involved with the Minister's office around that.

I want to come back to the communications function in a moment but can we start with the events which you begin to describe in paragraph 46 through to at least 52 and following of your statement? You can assume that by now we're all fairly familiar with what was involved here. It is correct to say that it was your staff that drafted the relevant correspondence of the 25th, including the media release drafted for the Minister's purposes that day, is that right?-- That's correct.

And that included the correspondence that was, in effect, going to be sent back to you, is that right?-- Yes. That drafting did involve, my understanding, some officers within DERM as well.

If we move forward then to the 13th of December, and paragraph 63 of your statement, you refer to a briefing of the Minister on that date, and I think if we go to the annexures to page 2,165, we see some - it is probably 2,162 is the start of the minutes of the meeting of the 13th of December, is that right?-- I am just checking that on the screen. It is not on the screen as such.

Take your time?-- Thank you. That was 216-----

2,162 is the starting point?-- 2,162. Correct, they are the minutes.

Okay. And it is noted at 2,165, towards the bottom of the page, that the Minister was welcomed into the meeting and we can read for ourselves what's recorded there over on to 2,166 as to that which was discussed. Is the third bullet point on 2,166 a reflection of conversations arising from the correspondence which had been initiated on the 25th of October?-- At a very summary level, of course.

All right. Is there any record of actually what was said to the Minister at that time?-- The only record is my recollection that I put in my submission.

In paragraph 63?-- I will just check. Yes, paragraph 63(c).

Roman (i) to (vi) concluding with the observation that a small reduction in the dams would have reduced the inconvenience of bridge closures, and so on. That's where that paragraph concludes?-- Paragraph (c)(i) through (vi).

That's right?-- Yes.

So there is no other record of any other conversations with the Minister on that day?-- No.

Okay. Well, then we move forward to the 24th of December. And, again, we can read for ourselves what you've recorded in your statement, and we have, you can assume, other statements and exhibits from people who were involved in communications on that day, such as the Water Commissioner. Suffice to say there was an intense burst of activity in relation to this project on that date. You would agree with that?-- It was the conclusion of a final written formal notification to the Minister, but it would be fair to say there was activity right through the whole period from when it first started with our letter on the 25th of October, including activity on the 13th verbally briefing the Minister, and from the 13th through to the 24th there was activity most days with regards this matter.

Where do we see that?-- The-----

Where do we learn about the activity of the 13th to the 24th?-- I make note - I will just check - I make note that - in the submission by the Water Grid Manager on the 4th of April 2011 - so this is the submission by the - the South east Queensland Water Grid Manager. I will just find it. In that submission we also detailed out this period of time.

All right. Do you have a page reference?-- Yes, I am just getting that. Bear with me. Yes, in paragraph 74, which is the same spot as the paragraph mentioned in my own submission straight after the board meeting with the Minister on the 13th, we talk about there - and I will quote: "In that period between the 13th of December 2010 and 24th December 2010 the Water Grid Manager was involved in a lengthy set of email correspondence concerning the lowering of the dam water levels at the Hinze Dam so that we could work on the dam wall. The Water Grid Manager was also involved in this distribution of an email of a TSR" - TSR is the document that's known as a Technical Situation Report, that's referred to in the communication protocol that was put in place in October/November 2010 at the request of the Premier with regards the operations manual of the Wivenhoe, North Pine Dam. So the Premier requested that a communication protocol be established around that. That protocol calls up a TSR which, sorry, is a technical situation report. I will continue-----

Just specifically relating to this project, which included the suggestion that the level of Wivenhoe be lowered to 95 per cent, what was done between the 11th and the 24th?-- On the 13th and 24th there were a series of emails between our business, Seqwater - just putting in context here, during that period there were continual releases of water from the Wivenhoe Dam-----

I don't want context at the moment; I just want to know where we find the documents that tell us what was happening between the 13th and the 24th?-- I refer to those documents here within this.

In the submission?-- In the - I refer to it in that paragraph

there. I have not those documents but I can quite easily obtain those documents.

Were they not the subject of a requirement from the Commission? Are they included in the submission?-- The submission by myself?

Are they included in anything that's been provided by the Water Grid Manager?-- My understanding it may be required - it may be supplied in the - by one of the members of the Water Grid Manager, one of the staff members, yes.

All right, thank you?-- Yes.

That would be Mr Spiller?-- Yes.

Thank you. In any case, to come back to my original proposition, irrespective of that which had occurred between the 13th and the 24th, there was a fairly fast turnaround of correspondence on the 24th. You would agree with that?-- As I said, the correspondence has a path starting from the 13th.

No, just agree with me, please, that there was a fairly rapid turnaround of correspondence on the 24th itself?

COMMISSIONER: Well, you don't have to, but respond to the question?-- I don't want to be pedantic about it but there was activity on that correspondence on the 24th, yes, I agree with that.

MR CALLAGHAN: Let's just agree on that?-- Yes, I agree with that.

Let's just agree on that and move on?-- Okay.

There was activity on the 24th. The nature and frequency of the activity will speak for itself. Who was doing what at that stage to actually determine whether or not the level of Wivenhoe would in fact be lowered? Whose responsibility was that?-- The question - if I can just be clear with the question.

Yeah?-- Whose responsibility was it to?

See that it actually happened?-- To see that it happened?

Yes?-- The lowering-----

Yes?-- I think the responsibility of lowering the dam level would be the operator, Seqwater.

All right. So what was your contribution during that process of correspondence on the 24th?-- Our process was to allow permission to use some of the water that was below full supply level or full supply level and below which was our water - water supply giving permission for some of that to be discharged, which in fact has the effect of lowering the full supply level. So giving operational flexibility to Seqwater

to be able to lower that level.

All right. And why was it happening in particular at that time?-- Well, I mentioned a little earlier that through that period - and I have got the exact dates here - for that week from around the 13th through to the 17th there was quite - there was a rain period inflow period and there were releases happening most days through that period. In fact, that period really highlighted how the - and we're talking - I will have to put context around this - it is important - the releases were in the W1 range - and I won't explain W1 for the operations manual - W1 is a low release which really is about-----

We know what W1 is?-- Okay. I just wanted to be clear. So for the W1 range through that period that's what the releases were in. It was interrupting bridges, closing bridges, roads, et cetera, and having the small reduction, which is the five per cent reduction, it was shown that that may provide some assistance in minimising that community impact.

Right. So the fact that a decision had apparently been made not to proceed with this plan was not something of which you were aware, I take it, on the 24th?-- I just didn't quite understand that question.

You weren't - as at the 24th of December, you were not aware that a decision had been made by the Minister not to go down this path?-- No, I wasn't aware that the Minister had - just to clarify, not to go down the path of dropping the level below the full supply level?

To 95 per cent?-- To 95 per cent, that I wasn't - no, I was not aware that the Minister wasn't going down that path, no.

Can I take you to 12C of your statement?-- Mmm. Yes.

Where you speak to the protocol which requires you to track information dealing with flood water releases. Can you explain to us what you or your organisation adds to that process of communicating flood information or information about flood water releases to other parties. You say you coordinate it and you have to centrally track it. What does that mean in practice and why is it a good thing?-- Okay. I - just referring at this point to the protocol. The protocol that the Premier requested I referred to earlier, requested sit in unison, in concert, if you like, with the Flood Operations Manual, the SEQ Flood Operations Manual for Wivenhoe and Somerset. The protocol, in fact, has three - it is very clear on the protocol it talks about three processes for communication. The first process is monitoring and assessment. That, in brief, in summary, that monitoring assessment is the technical assessment. We have no role in that first stage of communication. That is a role for the flood group within Seqwater, the flood team with BOM and with the Flood Management Centre like Brisbane City Council. It is a technical communications and it is called monitoring and assessment. We have no role there. I want to be clear about that.

You have been clear. Now, tell us about the next bit?-- The second is briefing and activation. Briefing and activation, as the protocol was intended is really about making sure that during an event there is the appropriate briefing up through the emergency hierarchy within the State Emergency process. It clearly says that local government will brief its own Local Disaster Coordination Committees who will, in turn, brief the District Disaster Coordination Committees who, in turn, brief the State Disaster Coordination Committee. We do have a role in the second dot point. This role in the second dot point we have is to brief the Director-General of DERM, our process, and indeed that works its way through to the Premier who chairs the State Disaster Management Coordination Committee. We have a role in briefing up through the emergency process through DERM in the document. The third dot point is public communications. We have a role in public communications as well. Our role was to - only around and I will be clear here, there are several other agencies that have a role in public communications but we have one of the roles that is clearly written. Our role in the public communications was around just releases from Wivenhoe and Somerset Dams. So Wivenhoe Dam, the releases making sure the public is fully aware of what the release rates were and that is the role we carried out.

How do you do that?-- We typically do that by a public release, a media release we call it. We were doing that on a very frequent basis during the event. The frequency is really determined by the size of the event.

How do you add to that process, that is to say could not such information be equally distributed by, say, the Flood Information Centre of the Brisbane City Council or the Bureau

of Meteorology?-- The Bureau of Meteorology and the council's Flood Operations Centre in this particular case most likely would have the information around the releases because, remember, go back to that first role, the first role of monitoring and assessment, the technical teams are talking to each other. The technical situation report they produce actually has that information embedded in it. So, yes, they would have the information. However, in our information media releases that we were getting, we were actually putting into the releases situations on the release water from the dams but we were also putting in other information relevant to the water in South-East Queensland, remembering during the event we had large impacts to our water supply, the Mt Crosby Water Treatment Plant was damaged, large areas of the Lockyer Valley water supply were damaged. We were able to put messages in there about water supply, about whether you know you had to boil your water or not. There were more messages than that, that were grid orientated than just the releases from the dam. Mind you, at times the release water from the dam was taking precedence within the media communications.

I take you to paragraph 69A and B?-- This is my statement.

Of your statement?-- 69, yes.

Move forward to January of this year. You identified the fact that in the process involved in determining whether or not the dam level could be drawn down to, as it turned out 75 per cent, there were competing interests, if you like, or at least there was a need to balance the concepts of flood mitigation with water security; you agree with that?-- Correct.

You agree that Seqwater was in the position to carry out the modelling as regards flood mitigation?-- Correct.

There was the Water Grid Manager and the Queensland Water Commissioner who could speak to that in respect of water security?-- Correct.

For our purposes now, and in particular with a view to our interim report, is there anything that is meaningfully going to be able to be said about water security as at the middle of this year which is going to assist in recommendations as to that which might occur during the next wet season?-- I would like to make one comment-----

No, just answer my question, no comments?-- Okay, yes. If the water - if the recommendation from the Commission around the next wet season is to be made I would make a comment that possibly a two stage or two time step process should be looked at. What I mean by that is that to do a - from a water security point of view it makes a difference. If it is only a one year dropping of a level, if it results in a dropping of a full supply level, if it is a one-off drop that makes a difference to a permanent drop forever.

Assume for the purposes of this exercise that we are talking about a recommendation or we are only talking about the next

wet season?-- Okay, that's important. From a one-off point of view the security assessment for becoming five years, which is really the assessment that we do, the more the short to medium term five years, security is still very very strong and very solid for South-East Queensland. We have full dams and we have all the other infrastructure in the grid available. We have done some model runs already looking at various numbers of levels within several dams and all of those show positive results as far as security goes so from a purely security point of view a dropping of full supply level at Wivenhoe, Somerset or North Pine Dam, given that it is at a level we modelled down to 25 per cent, the security outcome of that is still very positive. It is within the, what we would call our compliance range within our system operating plan that we comply with.

In essence then would it be fair to say the position is not markedly different from that which existed in February?-- Correct.

Thank you.

COMMISSIONER: Mr O'Donnell?

MR O'DONNELL: You said before that the Water Grid Manager owns the drinking water?-- Correct.

It has service contracts with service providers to have the water stored and then delivered?-- Stored, treated and delivered; correct.

One of the service providers is Seqwater?-- Correct.

In paragraph 11 of your statement you refer to the agreement with Seqwater. You say, "Seqwater supplies water services to the grid manager including storage, treatment, and transport of water."?-- Correct.

That includes the water in Wivenhoe, doesn't it?-- Below full supply level, yes, correct.

Effectively, Seqwater manages the water in Wivenhoe which belongs to the grid manager?-- Below full supply level correct.

Therefore the grid manager has an interest in releases of water below the full supply level?-- Correct.

If Seqwater lets out water below full supply level it is letting out water grid manager's water?-- Can I say there is a small exception to that? There is some irrigator water there. But in the majority of that water, yes. The majority of that water in Wivenhoe Dam is for drinking water purposes and it is our allocation. That's not the same for other dams in the region to be clear. There are other dams where a lot of the water is irrigator water and it is managed without

consideration to the Water Grid Manager.

For the Commission's interest, if you look at one of your exhibits, annexure B to your statement which is the contract between the water grid manager and Seqwater?-- Can I just - I am just getting that called up now, if that's okay.

Sure?-- It is on the screen now. Okay.

Dated 10 December 2010. You see Mr Robertson has signed. Seqwater is defined as the service provider. Turn over please to page 6 under clause 8.1, "The grid manager appoints Seqwater as his agent for the purpose of managing releasing delivering taking" and so on dealing with the Seqwater entitlement. Then there are a number of obligations imposed on Seqwater such as 8.1B, the obligation to comply with the water entitlement, legislative requirements and so on. Then in the following pages a number of obligations imposed on Seqwater as to how it manages the grid waters - the grid manager's water. Including 9.3C, obligations about it storing and then releasing of the grid manager's water?-- "Store, release, take, deliver and make available potable water and real water in accordance with good operating practice."

Yes?-- Yes.

Hence if there is a question of releasing water in Wivenhoe below the full supply level the water grid manager has a direct interest because it is its water?-- Sorry, I missed that last.

It is the water grid manager's water?-- It is our water.

You say in 31 that the reason that the grid manager is consulted with respect to any changes in the dam levels is because it is responsible for ensuring the operation of the water grid to achieve, effectively, water security?-- Yes.

I suggest that also involves the grid manager because it is the grid manager's water being released?-- Yes and no. I will be clear about this. The instruction every month we give - the service instruction we give contractually every month to Seqwater is for a quantity of treated water. Now, in this particular case Wivenhoe stands quite a long way from the treatment plant. Quite often the release of water from the Wivenhoe Dam that is required to treat treated water at the output of the plant can vary. The reason for that is there is quite a tract of open river channel called the Mid-Brisbane. There are irrigators taking some water. There is evaporation. There are times when releases need to be a little higher to ensure a water quality is maintained, real water quality is maintained on the Mid-Brisbane River. There are management options in the Mid-Brisbane River that occur. The water grid manager isn't across all of those issues on the transfers of water so the water that is actually released versus the water that actually hits the treatment plant to gets treated to our instruction, we are not across all that. We are interested, yes, but that operational issue is covered in the contract and

that is what good operating practice expected in the contract from Seqwater.

I wasn't really asking that about what happens downstream of the dam?-- Yes.

I am simply putting to you that you have a direct interest in releases from the dam below full supply level because it is your water?-- Yes.

Would you turn please to page 4, paragraph 15 and 16 of your witness statement? In 15 you say, "The capacity of the dams is adequate for water security at least until 2017 when combined with the assets of the water grid as a whole." In 16 you say that if you are looking at the dams alone, the capacity of the dams would not be adequate as was evidenced by the Millennium drought experienced in the beginning of 2001?-- Mmm.

The drought ran from 2001 until into about 2010?-- Yeah, 2007/8 we started to see signs coming out of that, recovery water supplies.

The first time Wivenhoe got back to a full supply level after many years being below was what, 2010?-- Yes, but that is one measure of the drought breaking. There are other ways to, I suppose, sit back and analyse whether a drought has broken or not.

That might be so. I am simply asking you-----?-- If we are talking specifically about the dam becoming full again, yes.

And the drought could reoccur?-- Yes.

One of your jobs and the Queensland Water Commission is to make sure if the drought reoccurs South-East Queensland will have adequate water for consumption?-- Partly and Queensland Water Commission has a role to play there as well.

That is what I was suggesting in my question?-- Yes.

You say in paragraph 21, you identify the other assets of the water grid which supply South-East Queensland's consumption requirements. You say there are 12 connected dams, 10 water treatment plants, three advance water treatment plants, reservoirs, desalination plants and so on. Is it right, though, that Wivenhoe supplies roughly 50 per cent or so of South-East Queensland's consumption needs?-- I will be clear about this, on a long term basis of yield, so in assessing yield that is how much could the total amount of water we can produce i.e. the total yield, yes it is around that 50 per cent, but on what we use at the moment currently it is a lot less than that. Because our current use, production, is a lot less than what the yield is. So if the question is currently Wivenhoe actually produces a lot lot less than 50 per cent on our current production but on a current - on a yield basis on what it can fully produce, yes, it is around that 50 per cent.

All right?-- Is it also right that the water from Wivenhoe is the least expensive of the sources of water for South-East Queensland's consumption needs?-- No, I wouldn't make that comment.

No?-- I wouldn't agree with that, no. The expense involved in producing water if you look at the total costs taking capital, operating costs and fixed costs into account, there are some other suppliers in other parts of the region both north and south coast that would be at least on a par if not slightly cheaper. In fact, Wivenhoe, to add to that-----

Yes?-- -----Wivenhoe also at times, and when assessing costs one must assess its reliability and availability in that equation, there are times the Wivenhoe Mid-Brisbane gets water in through the Lockyer Valley. As we know Lockyer Creek comes in below the wall at Wivenhoe Dam. Quite often the water coming from Lockyer Creek can be very turbid, can be very - I won't use the word polluted - but it is in a state that takes a lot more treatment to get it to a certain standard. In fact, at times the treatment plant at Mt Crosby, both the east and west banks, struggle to take that water from the Mid-Brisbane, from the dam and get it to that drinking water standard. At times - of recent times we had to blend water from that plant with desalination water, with water from other parts of the grid to get it to a standard-----

I think you have answered my question?-- What I am saying is the water itself from that is not necessarily the least cost.

Right, thank you. Is it right, though, that if the level within Wivenhoe was dropped, let's say it was dropped substantially below the full supply level, that could have cost implications in that the Water Grid Manager might then need to be acquiring more water from its other sources?-- In the short to medium term, no.

All right. Long term cost implications?-- Long term is a - I mentioned earlier before - it is a far more complex economic equation to work out in the longer term if a permanent reduction in the Wivenhoe was to occur what the cost implications of that would be. That is a far more complex economic equation. In the short term, up to five years, no, no difference in the operating cost.

The experts in terms of working out what reduction in the Wivenhoe full supply level could occur without jeopardising South-East Queensland's consumption sources, and also working out the cost implications will be the Water Grid Manager and Queensland Water Commission?-- Yes, again our focus is when the zero to five year frame and Water Commission have a medium longer term frame of reference, yes.

Thank you.

COMMISSIONER: Mr Ambrose.

MR AMBROSE: No questions.

COMMISSIONER: Mr Dunning.

MR DUNNING: No questions, thanks Commissioner.

COMMISSIONER: Mr Murdoch?

MR MURDOCH: Mr Dennien, you are aware that during the course of the year 2010 there were proposals being considered for the lifting of the full supply level in Wivenhoe Dam?-- Correct. Sorry, just to clarify that, I was aware of a proposal before 2010 to lift the level.

Do you know the genesis of that proposal?-- In my role with the Queensland Water Commission - and I would have to check the exact date, around 2007 I believe - I received a report from Seqwater at the time, a report basically putting an option forward of looking at the full supply level in Wivenhoe Dam and the benefits that may attribute to additional yield as I talked about before. I was aware of a report at that stage. I am not aware of any other reports but I can recall that one clearly.

All right, and in the letter which you wrote on the 24th of December last year, that was the letter to Peter Borrows, the Chief Executive Officer of Seqwater, you made this suggestion or recommendation and I will read it, "In addition we recommend that the investigations with the Queensland Water Commission to examine the opportunity of raising the full supply level of Wivenhoe Dam for increased water supply be expanded to include options to lower the full supply level for managing flood events."?-- Correct.

Can you bring us up to date in relation to those investigations?-- The reason for that comment in the letter, again in context, is the Queensland Water Commission recently released a water supply strategy for South-East Queensland. In that strategy document in the back of that document there is a series of actions. Many many actions on things to be investigated, projects to be completed etcetera. One of those investigations is just that piece of work to look at the raising of the dam as a Queensland Water Commission/Seqwater joint initiative. As they are the responsible agency, the Queensland Water Commission, for that study I haven't been keeping abreast of the status, no.

Is it the case that the proposal that has been around since 2011 that is full supply level for Wivenhoe Dam be raised, is that still on the table?-- Still on the table. It is still an action to back the strategy, to my understanding at this point.

Nothing further.

MR FLANAGAN: No questions.

COMMISSIONER: Mr MacSporran.

MR MacSPORRAN: Nothing, thank you.

MS O'BRIEN: No questions.

COMMISSIONER: Thanks, Mr Dennien, you are excused?-- Thank you.

WITNESS EXCUSED

MR CALLAGHAN: I call Karen Waldman.

KAREN NOREEN WALDMAN, ON AFFIRMATION, EXAMINED:

MR CALLAGHAN: Would you tell the Commission your full name and occupation, please?-- Karen Noreen Waldman. Chief Executive Officer of the Queensland Water Commission.

Ms Waldman, you prepared a statement for the purposes of the Commission signed as recently as 10 May; is that correct?-- That is correct.

You have been shown a copy of that statement and the documents to which you refer in it, is that right?-- Yes.

I tender that.

COMMISSIONER: Exhibit 418.

ADMITTED AND MARKED "EXHIBIT 418"

MR CALLAGHAN: In paragraph 2.3 you set out your responsibilities and the responsibilities of the QWC which you have taken effectively straight from the Statute; is that right?-- That is correct.

You refer in paragraph 9.3 to a project which was initiated to ensure clarity and understanding of how the bulk and distributor retail award of businesses WGM and the QWC undertake their roles; is that right?-- That is right.

That project has resulted in the preparation of a document; is that right?-- A draft document, yes.

That's a document of some considerable length, is that right?-- Yes.

What is the actual status of it at the moment?-- The document is what we are calling document in preparation. It is at the stage of being consulted on by the working group to the point they are comfortable. The document is now to be sent to the Chief Executive Officers of the various water grid entities and the stakeholders that have been involved in developing it for their views.

What's the timetable for that?-- The letters to go out in terms of that are to go out either this week or next week and then they will have a couple of weeks in which to come back with their comments.

I take you to the subparagraphs there. You refer to the Brisbane River System Project, what is that?-- The Brisbane River System Project is investigations into whether there's an opportunity to increase the yield as the volume of water

available by looking at various options within the broader Brisbane system.

All right. And not just in relation to that, but generally in 11.7, you say that, in the final sentence of that paragraph, "A holistic stocktake is being undertaken by the QWC in order to rearticulate its investigation priorities so they are fit for purpose given the current operating environment."?-- Uh-huh.

Does that mean that you're in the process of - well, no, you tell us what that means?-- Okay. That means that we have a number of investigations that have been identified as part of the Seqwater strategy released in July last year, and those investigations have led to certain work that we believe, given the change in context with improved water security, should be reviewed as part of what we call the annual review of the water strategy in order to see if they are the same level of priority, whether those actions and investigations, I guess, are the correct ones to take a focus at the current time.

So you are working out what you should be doing?-- Yes.

And the order you should be doing it?-- That's right.

Just going back to the Brisbane River System Project, and to page 19, 11.6(c), you say - and I think this is reflected also in (f), that things are being deferred pending the processes of this Inquiry. Can I ask what aspects of the - of your work do you expect to be informed by the recommendations of this Commission?-- Okay. If I could just clarify that? It is not just this Inquiry, if that is impacting on the investigations, and it is not that they are necessarily deferred; it is that we're taking a pause to review the priorities, and it is - the aspects of this Inquiry, however that might impact on it, are whether the Inquiry itself comes out with a specific recommendation in relation to an action in relation to the Brisbane River system.

All right. Do you have specific concerns as to areas which the Inquiry might touch upon that would be relevant?-- Not concerns, more whether there was any general direction.

Right.

COMMISSIONER: Do you think there should be any general direction? Have you got something in mind that you think the Inquiry should look at?-- It is more about whether there would be something that the Inquiry considers that should inform our considerations. So it is taking into consideration the aspects of the water strategy, it is taking into consideration aspects of priorities, and any additional information that the Commission of Inquiry may put on the table.

Thank you.

MR CALLAGHAN: Can I take you to another aspect of your statement - and this relates to the proposal in late October

2010 for a temporary reduction of the full supply level at Wivenhoe, North Pine and Leslie Harrison. You cover this in paragraphs 4.1 to 4.8 of your statement, is that correct?-- Yes.

And would you agree that by reference to paragraphs 4.6 and 4.7 that what you record there demonstrates considerable energy being channelled into this project on Christmas eve last year?-- I would say it is a focus and action as a result of the request.

But there was - there was a pretty quick turnaround of correspondence on that date. That's all I am suggesting?-- Yes.

Thank you. Mr Dennien wanted a response quite urgently and you met the time-frame?-- Correct.

And, as I say, all of this was being done on Christmas eve but I take it at no stage you were ever advised that the Minister had reached a view, perhaps as far back as the 13th of December, that this particular project had been put aside?-- No, I was not advised.

No. The next proposal to draw down Wivenhoe led to its being lowered to 75 per cent in February, as we're aware, and you speak to that in paragraphs 5.2 and certainly in paragraph 5.3. Can I just get you to clarify one aspect, which I think I understand, but you say in 5.3 that the costs were not relevant in QWC's consideration of potential temporary reductions but in 5.4 that you drew the attention of appropriate entities to cost implications, is that right?-- Yes, it was in a couple of - I give a couple of examples of where it was drawn attention to.

Yes. In other words it is not really - the cost isn't your concern but your job is to draw the attention of others to the implications of costs for something like this, is that right?-- Well, at that stage we were looking at the water security aspects, firstly.

Sorry, I will just interrupt. I am really not concerned about the validity of the decision, more about the respective roles and how you perceive your role in that sort of situation?-- In this situation it was appropriate that the correct entity looked at the costs.

Yes. And on that topic of correct entities and what each entity is meant to do, can I take you to 12.8 of your statement? And this is in the context of the same project that we have been talking about. You record there your recollection of discussions at a meeting in which this project was being discussed, and note that Seqwater, presumably through Mr Borrows, added - do you see in the middle of that paragraph - added that "they saw reductions in the full supply level as a policy question, while not their role they could comment on the implications of policy." Do you see that?-- I see that, yes.

And you recall that there was a difference of opinion as to the role of Seqwater in this particular discussion?-- I wouldn't say it was a difference of opinion. I think it was a statement of what Seqwater - what was their role.

Sorry?-- Stated is probably more correct. Seqwater stated as their role.

Their role?-- Uh-huh.

Yes. But Mr Bradley had a different view, didn't he?-- I am - I don't recall from that meeting whether it was clear that Mr Bradley had a different view. I don't think I say that in this clause.

No, you don't. I am just asking you-----?-- I couldn't-----

-----to recall?-- -----say that.

All right. Well, let's just leave that particular meeting aside and ask as a general proposition. First of all, you have already accepted, I think, that your paragraph 2.3 reflects section 345 of the Water Act, is that right?-- It reflects the Water Act, yes.

All right. Take my word for it. And you have got a specific statutory obligation or role in advising the Minister?-- Correct.

Are you aware of any equivalent statutory provision that might be applicable to Seqwater?-- No, I am not.

And I suppose what I am getting at is in a conversation like this - let's leave the one that happened in February aside - but in this sort of context, is this something about which the Minister should be getting advice from you, from QWC?-- Is?

This sort of temporary drawdown which must have to balance concepts of flood mitigation against water security, is that something-----?-- We would provide advice about the water security implications.

Just the water security implications?-- Correct.

Okay. And you would provide that directly to the Minister?-- Yes, we - we would provide that to the Minister. That's not to say that we wouldn't provide it to others at an appropriate time.

That's part of your function as well?-- We would need to consult with others and we would do that as part of the process, perhaps prior to or perhaps we would advise the Minister separately.

I can - you accept there is a difference between consulting and advising, though, and I can accept that you would have a need to consult with others?-- Yes.

But as to advising, would you advise Seqwater about something in the context of the debate such as this?-- Our primary role is to advise the Minister.

Yeah, okay. I did say leave that particular debate behind but you touch on that in 12.10 as well. There was a further meeting on the 4th of February. Do you recall any further discussion there as to whether this was a - this sort of advice that the Minister was seeking was a Seqwater function or not?-- I - I don't remember whether that was - whether that was considered. Seqwater put on the table some suggestions about - that they were considering further modelling, and that based on our advice there is perhaps a scenario that it could be reduced.

Which is what you have recorded?-- Uh-huh.

Thank you. I have got nothing further.

COMMISSIONER: Mr Pomerenke?

MR POMERENKE: Thank you. Could you go to page 380 of the annexures to your statement, please, and what you should see there is a document entitled Impacts on Seqwater Water Strategy of Various Operating scenarios for Wivenhoe Dam, dated 14 February 2001?-- Yes.

A draft document?-- 2011.

Yes, thank you. Would you go to page 383 of that document, please? 383 in the bottom right-hand corner?-- Yes.

If I could direct your attention, please, to the dot points towards the centre of the page?-- Yes.

This is in the executive summary?-- Uh-huh.

Looking, firstly, at the first and second dot points, you are dealing there with a temporary reduction in the level of the dam by 25 per cent?-- Yes.

And in the second dot point you are pointing out that in that circumstance, even a temporary reduction creates an increased risk of full desalination production being triggered. Is that right?-- With certain circumstances in place which are stated there, that if inflows are as low as the worst recorded, which is those years of the drought, it may be triggered.

Yes. And if that were to occur, if full desalination production were to be triggered, would you expect that to have a cost implication on the price of water for consumers?-- It would have an operating cost implication. Whether that would flow through to the price to consumers, I couldn't comment at

this stage.

Could you give us your impression whether it is likely to go up, down, or remain the same?-- Well, there are certain operating costs that are built into the current bulk price path, and depending on those costs and when the review occurs and whether they are significant or not in the scheme of sensitivities, they may be able to be absorbed.

But, equally, they may not and prices may go up?-- They would not go up purely as a result of one factor. There are a number of factors that are taken into consideration in setting prices.

And one factor that would tend to push up costs would be full desalination as opposed to a lesser extent or perhaps no desalination?-- Again, I don't think I am the right person to answer whether those operating costs flow through to the extent that they would impact.

If we could move then to the third dot point, perhaps addressing a slightly different topic, which is volume released being increased beyond 25 per cent on a temporary basis, is that right?-- That's more a general comment.

So it-----?-- No, it is not specifically saying beyond 25 per cent, it is just saying as volume release increases.

All right. And you are there talking about an increased likelihood of triggering not only desalination but also the use of purified recycled water?-- It is flagging that depending on a number of other assumptions as volume increases, that's possible, but there are many considerations which need to be taken into account in whether those triggers lead to those actions.

But, as you say there, the likelihood of needing to avail yourself of those sources increases-----?-- The likelihood.

All right. If you look down beneath the dot points, there is the second last paragraph on the page which says, "This report does not recommend a particular scenario for adoption as other factors such as social, economic and environmental may also need to be considered." Could you identify for us what some of the social factors may be?-- I think the point with this report is that it is draft and at this stage the report's in the process of being finalised with many additional scenarios still being run.

But as you sit here now can you identify what some of the social factors might be?-- Well, for example, if you were to put - trigger purified recycled water going into the dam, community would need to accept that. So that's a social impact.

Turning then to the economic factors, could you identify what some of those may be?-- Cost.

Cost to the consumer are you talking about?-- Cost of operations.

As perhaps reflected ultimately in the cost to the consumer?-- Well, one of the factors we flag in the report - and, again, the report is not concluded, so many of these statements could change, they could alter, they could be refined - but we do have a framework within the document that would be in one of the other exhibits, and that identifies a range of sensitivities, if you like, going from yield, level of service objectives, demand, cost, and they are all enunciated as areas that need to be considered.

All right. And we could work through those?-- Yes.

And identify in due course economic costs?-- Exactly.

What about the environmental factors? Are you able, as you sit here now, to identify some of those?-- Not at the moment.

Thank you.

COMMISSIONER: Mr Ambrose?

MR AMBROSE: I have no questions.

COMMISSIONER: Mr Dunning?

MR DUNNING: No questions, thank you, Commissioner.

COMMISSIONER: Mr Murdoch?

MR MURDOCH: No questions.

MR FLANAGAN: No questions, Commissioner.

MR MacSPORRAN: No questions.

MS McLEOD: No questions.

COMMISSIONER: Thanks very much, Ms Waldman, you are excused.

WITNESS EXCUSED

MR CALLAGHAN: I call Mary Boydell.

MARY STUART BOYDELL, SWORN AND EXAMINED:

MR CALLAGHAN: Can you tell the Commission your full name and occupation, please?-- Marry Stuart Boydell and I am the Commissioner of the Queensland Water Commission, amongst a number of other positions I hold, principally as a non-executive director as well.

Thank you. Ms Boydell, you have prepared a statement for the Commission signed on the 4th of April 2011, is that correct?-- That's correct.

I will show you a copy of that. That's your statement combined with a number of exhibits that are attached to it?-- Yes.

I tender that.

COMMISSIONER: Exhibit 419.

ADMITTED AND MARKED "EXHIBIT 419"

MR CALLAGHAN: You have been able to listen to Ms Waldman give evidence-----?-- Yes.

-----just now? I take it there is nothing she said with which you would take exception?-- No.

I just have one question or one topic I want to address with you, and that is in this concept if there is to be a temporary reduction in the level of, say, Wivenhoe Dam, there would be a need, prior to any decision to do that, for information from Seqwater who could speak about flood mitigation matters. You would agree with that?-- I imagine the Seqwater would have useful information on those matters.

All right?-- And certainly-----

But you would also have to have information from the Water Grid Manager about water security issues?-- The Water Grid Manager has an obligation under the System Operating Plan to operate the grid within the risk criteria within five years, yes, so that is true.

All right?-- If there was a breach of that, he would need to be advising the Water Commission, yes.

And a decision as to the drawdown of the dam would involve balancing those concepts; water security and flood mitigation. That's all I am suggesting?-- That would be a reasonable proposition, yes.

Yeah. And realistically, the only person who can perform that balancing act in those circumstances must be the Minister, mustn't it?-- I think - look, my understanding is - I mean, the Minister asked for certain advice-----

I am not going back over what's happened?-- No, no, no.

I am looking forward?-- But I think that there are a number of dimensions that would need to be considered.

That's right?-- And those dimensions involve impacts to the dam, and dam safety, impacts of flood. I imagine they involve impacts as regards to other stakeholders downstream, and they - the Queensland Water Commission would have a view and would be acutely interested in the impacts from the security perspective because that would flow through to our planning.

You would certainly be in a position to advise the Minister about such issues? That's one of your responsibilities?-- Yes, correct, correct.

And you are making my point, that there are a number - I might have oversimplified it by saying it is flood mitigation and water security but there are a number of factors to be taken into account?-- Yes.

In any-----?-- If I was asked, I would imagine there are, yes.

Yes. And a balance has to be struck between all of those competing interests?-- I would imagine that's the case, yes.

That's right. And my suggestion is that such a decision can't then be abdicated to one of those parties who is representing such an interest; the decision has to be made by the Minister?-- I can't speak to that because I am not 100 per cent sure as to where the statutory responsibility for that decision would lie.

Well, if the Minister is the only one - or the Chief Executive, at least, is the only one who can actually effect the decision through the resource operations plan, that would suggest responsibilities there, would it not?-- I would agree that the ability to release the water through the water resource planning process is a key part of that.

Is this whole topic, the topic of who can advise, something on which you could advise?-- The Queensland Water Commission is not charged with that role.

No, no. Thank you. I have nothing further.

COMMISSIONER: Mr Pomerenke?

MR POMERENKE: Could you turn to attachment 13 to your statement, please? It contains a bundle of documents, and about halfway through you should find a document headed Queensland Water Commission Impacts on Seqwater Strategy of Various Operating Scenarios for Wivenhoe Dam, dated 14 February 2011?-- Yes. What page are you referring to?

It doesn't have page numbers but it is about halfway through the exhibit - oh, you have the study itself?-- Yes, I do.

Could you turn to page 10 of that document, please?-- Yes.

And on that page the long-term impacts of two different scenarios are being addressed?-- Yes.

The first scenario is a 10 per cent reduction in the level of Wivenhoe Dam and the second is a 25 per cent reduction in the level of Wivenhoe Dam?-- Yes.

I wanted to focus for the moment on the 25 per cent reduction, and that's addressed at the bottom of 5.2. I was hoping you could explain for us, please, the statement that there is a significant reduction in the LOS yield of 30,000 megalitres per annum. Could you give us an idea of the significance of that reduction, please?-- Okay. This is a scenario that is run on a number of operating assumptions but the key differentiating assumption is that it allows for a permanent reduction of 25 per cent in Wivenhoe. So that's the long - that's running the system infinitely with Wivenhoe's full level volume or level being 75 per cent where it is. So it is a very - it is a permanent and conservative assumption. What that would do to the overall system yield would be to reduce it by something in the order of 30,000 megalitres per annum. As a comparator, 30,000 megalitres per annum, the full supply capacity of the Tugun desalination plant, for example, is in the order of 45,000 megalitres per annum. The current demand from the grid is in the order, depending on, you know, minor variations, but it is currently running in the order of something around about 270 to 280,000 megalitres of demand. The reason that becomes important in what it would actually do in impact terms, is as demand approaches supply going into the future, it would bring forward the next tranche of infrastructure. So it is likely to - 30,000 megalitres is not an insignificant amount of yield to have to cover. So it would be likely to bring forward a fairly - a significant piece of infrastructure which would come with significant capital costs, which then, of course, flows through to prices.

And in the meantime, would water need to be drawn from other sources before the new infrastructure it brought on line?-- What I have just spoken to is what we describe as the demand supply balance. There is the other balance that we always have to keep an eye on, which is what we describe as the sufficiency balance, which is the situation where if we were to enter in the short term a severe drought, you could be in a situation where the fall in Wivenhoe and the other key storages would be so dramatic that you would be bringing

forward or turning on the operation desalination at 100 per cent and potentially triggering the injection of purified recycled water into Wivenhoe. All of those things come with operating cost impacts.

And would you expect them ultimately to be reflected in the price to the consumer?-- Again - and I heard Ms Waldman's answer to this, and mine is not materially different - these things are a matter of time and extent. Certainly short term impacts may potentially be absorbed within the sensitivities within the current pricing models, but - and certainly the bulk water pricing for south east Queensland is over a 20 year period. So there is - I guess there is a temporal degree aspect to this as well.

And depending upon how close to the edge of the sensitivities it is or whether it travels beyond them, it may well have an impact on the price to the consumer and possibly a significant impact on the price to the consumer?-- There is two points I would make: (1) the Water Grid Manager has responsibility and carriage of the short term operating aspects of the grid, and so is more familiar with the short term operating cost impacts, so I wouldn't comment on those. I am really speaking in general terms that a variation in operating costs in the short term is less likely to have a consequence in terms of costs and, of course, you also have government policy decisions as to what flows into prices. As a general principle, significant capital expenditure tends to flow through to a more significant cost impact with a more - with the potential for a flow-on depending on a number of variables, such as your pricing policy, principles and your government policy into consumer prices. So I am sorry it is a bit vague - not vague but it is a bit - it does depend on a number of things.

So just to summarise, we can say that the bringing forward of significant infrastructure is quite likely or at least likely to have an impact on the price to the consumer, would you agree with that?-- I would agree as a general principle that significant capital expenditure has a - flows through to prices - to water pricing or indeed any utility services pricing, in principle with a more significant impact than a short term operating cost price. Okay? But, as I said, there are many things that would need to be considered before that came to pass as a change to consumer pricing.

Thank you.

COMMISSIONER: Mr Ambrose?

MR AMBROSE: I have no questions.

COMMISSIONER: Mr Dunning?

MR DUNNING: No questions, thank you.

MS BRIEN: No questions.

MR FLANAGAN: No questions.

MR MacSPORRAN: Nothing, thank you.

COMMISSIONER: Good, looks as though we are stopping on time. Thank you, we will adjourn.

THE COMMISSION ADJOURNED AT 4.32 P.M. TILL 10.00 A.M. THE FOLLOWING DAY