Transcript of Proceedings

Issued subject to correction upon revision.

THE HONOURABLE JUSTICE C HOLMES, Commissioner

MR JAMES O'SULLIVAN AC, Deputy Commissioner
MR PHILLIP CUMMINS, Deputy Commissioner

MR P CALLAGHAN SC, Counsel Assisting
MS E WILSON, Counsel Assisting

IN THE MATTER OF THE COMMISSIONS OF INQUIRY ACT 1950

COMMISSIONS OF INQUIRY ORDER (No. 1) 2011

QUEENSLAND FLOODS COMMISSION OF INQUIRY

BRISBANE

..DATE 14/04/2011

..DAY 5

THE COMMISSION RESUMED AT 10.00 A.M.

JAMES THOMAS DAVIDSON, CONTINUING:

COMMISSIONER: Mr Callaghan, just before we get underway with the witness - it is very dark in here.

MR CALLAGHAN: Yes. Dark and I am not sure that the air conditioning's 100 per cent. I might will get some inquiries made.

COMMISSIONER: We might see if we can get something done about it.

At any rate, the non-publication order I made the other day, there has been an application for its amendment by solicitors acting for Australian News Channel Pty Ltd, which is the operator and producer of Sky News channels, and APAC, APAC, a public affairs channel, of which I am sure you are aware.

The proposal is that I amend the order that I made on Monday by which I prohibited publication of the evidence and exhibits in the inquiry by way of rebroadcast of the internet feed.

What is proposed by Australian News Channel Pty Ltd is complete and uninterrupted coverage of the inquiry by way of a simulcast of the website stream.

That, as I understand it, will involve the playing of the entirety of everything that happens in the daily proceedings. That seems to me to overcome my concern about selective reproduction of evidence. It effects the same objective as the website feed of enabling complete unadulterated, unedited public access to the proceedings of the inquiry.

Being satisfied of that, I propose to make the order which is sought in the written application by way of letter dated the 13th of April 2011; that is, I order that the evidence and exhibits in the inquiry not be published by way of rebroadcast of the internet feed except in circumstances where the rebroadcast is by live, uninterrupted coverage of the entirety of the day's sitting. That, of course, is an amendment of the order that I had made on Monday.

I will make the letter of 13 April 2011 from Johnson Winter & Slattery Lawyers Exhibit 40.

ADMITTED AND MARKED "EXHIBIT 40"

COMMISSIONER: There is one other small matter in connection with this. I notice that there is an error in the transcription of my reasons given on Monday. At page 151, line 15, it presently reads "particularly in the light of the Court hours granted to the Commission", it should be "in the light of the broad hours granted to the Commission.

I just ask that that be corrected.

Thanks, Mr Callaghan.

MR CALLAGHAN: Thank you, Madam Commissioner.

Mr Davidson, I think you were up to section 7 of the presentation that you were making?-- Thank you.

Would you be able to continue with that, please?-- Good morning everyone. We have three sections left. I will pick up where I left off yesterday. The three sections this morning, the first one is an outline of the weather events of December and January, followed by a summary of the flood events for the same two months, and then finally a discussion of our forecasts and warnings for both weather and flood during that period.

So the first slide is a rehit of the topics we discussed yesterday, the main climate drivers for the exceptional rainfall and flooding season that we saw, the heavy rainfall in the prior months leading to wet catchments, the monsoonal wet season, the La Nina and the Madden Julian Oscillation. And for points 1, 3 and 4 we saw records set on several fronts. I am not sure whether this will actually loop, Commissioner. Okay. Looks like the movie loops aren't working. That's fine. What I was going to show was daily satellite images right through December and January and into early February to pick up Cyclone Yasi, but what you would have seen was a succession of upper troughs, along with surface troughs, and the combination of those two large-scale weather systems produced much of the rain. But on top of that we did have Cyclone Tasha on Christmas Day and the rain that followed from that event. So if we have a look at what we see as the four major weather events, weather flood events during the period, the first was the first few weeks of December. Once again, a sequence of upper troughs and surface troughs. If the wet season had have finished at that point in time, just before Christmas, it would have been a very wet season but it wouldn't have been exceptional. What made the difference were the weather events of between Christmas and New Year, and then the first half of January. And, as I said earlier, the Christmas/New Year event was led off by Cyclone Tasha and the weather event - the major weather event in early January was an upper low, which we will talk about in a minute. If we can go to the next slide, thanks. Okay, this is a snapshot of river conditions during and after the sequence of rainfall events, and without a pointer I will just draw your attention to the top line of maps, the final two, which are a snapshot on the 20th of December and the 30th of December. So this is leading into that - the big event

between Christmas and New Year, and the red triangles show where major flooding was occurring at the time. So prior to Christmas there was a small number of river catchments in major flood, not so by New Year's Eve. You will see a lot of red triangles there on the final map on the top line, so that particular rain event did trigger extensive flooding across much of central and southern Queensland. And the other two maps I would - or the other three maps I would like to draw your attention to, the first two on the bottom line is just before and just after the big event in January, and, of course, a heavy clustering of red triangles around the south-east corner following the Brisbane floods. And I guess the final map on the board - on the display shows how things did improve by the end of the month. Of course, early in February they deteriorated again with Cyclone Yasi crossing the coast. Thank you. Okay, this is probably another movie loop that's not going to work. That doesn't matter in a sense. What this was going to show was the development of that upper low over south east Queensland which moved out to sea very early on that weekend just before the Brisbane flood, and then moved back across the coast on Sunday and brought the very heavy rain with it. The next slide, though, will show just what a - what a sizeable feature this particular upper low was. In my 40 years or more experience forecasting in Queensland, I guess I have yet to see an upper low of this magnitude at that time of the year. So this is quite a big feature. One of the main things associated with this upper low was the tropical air which was being dragged into the low from the monsoon trough which lay to the immediate north. These are water vapour images, which more or less represent cloud, and you can see that just to the east of the upper low there is a trajectory of cloud and water vapour extending down on to the southern Queensland coast and then, I guess, curling back across the south-east inland. So this is a big event by any means. Even in the middle of winter this would be a big event. But, of course, being in summer it enabled it to drag the monsoon - the warm, very wet monsoon air across southern Queensland. And it wasn't just the upper low at the time. We did have a favourable low-level surface pattern which assisted in the development of the rain-bearing system. There were very moist winds in the low levels flowing across the coast, and, as you can see from the first map to the left, the monsoon trough was lying to the immediate north. If you can just move through the next three slides, these are slides more to do with the Toowoomba-Lockyer Valley days than the Brisbane flood. So if we can just move to the next section, which, as I said earlier, is a summary of the flood events during the same two periods. And this is just, in a nutshell, the regional areas and catchments that were flood affected during those two months. And you can see just about under "regional area" that most of the coastal areas of Queensland and the inland parts as well saw serious flooding in that time. In fact, as it states at the bottom of that slide, at over 100 river height stations used for flood warning in Queensland, the peak flood height experienced in the 2010/11 floods was the highest on record. In many cases, the recent floods were the highest in living memory and in several cases the highest in 50 to 100 years of record. So many, many records were set

during the season. If I can just catch up with my slides. Here we have several ways of portraying river heights. These three particular cases, the Brisbane River floods, the one at the top of the slide, is what we call a stage hydrograph. That particular plot runs from the Monday, just before the speak of the Brisbane floods, through to the Saturday, and, as we now know, the highest height was registered early on that Thursday morning of 4.45 metres. Different colours are used for the minor, moderate and major flooding, with major flooding depicted in red. So that's a stage hydrograph. Along the bottom two plots, the first one is historical annual flood peaks for the Brisbane River and the recent event is plotted there. And you might be able to see that as far as records are concerned, which go back to the mid-19th Century, it is the seventh highest flood in the Brisbane River, but, of course, the Wivenhoe Dam - the installation of the Wivenhoe Dam will have an impact, of course, on the frequency of floods and the respective heights. So you can't draw any immediate conclusion to the fact that that was the seventh highest and what it might mean for the future. And the final slide was just what we call a flood classification, which we have for all our main gauges on rivers, and various colours represent where minor, moderate and major flooding occurs, with various landmarks along there which show previous floods, and in some cases the heights of railway lines, et cetera. Okay. Just to give you - to give the Commission an impression of, once again, the scale of this event, this is a map of flood-affected towns with a local government area background, and the red dots, if you can distinguish between the red and the blue dots. The red dots are where serious inundation occurred, that is city centres and the like were seriously impacted, and the blue dots is where major flooding occurred but perhaps not as serious an impact. And just for the record, the same towns are marked in red and blue but in this case the background are river catchment maps. The next two slides could be used, I suppose, in the hearings in the regional centres. It does list, as far as we're aware - it may not be fully comprehensive - the towns affected and the dates they were affected. The first slide is December and the second slide is January, so that's a - as I said, not perhaps a comprehensive listing of the flood-affected towns but as close as we can estimate at the moment. Okay. The final section, Commissioner, deals with our forecasts and warnings for weather and flood during that two-month period. Our routine forecasts are issued and updated on a 24/7 basis. There is a State forecast, 15 forecast districts which are shown there. We provide detailed information for 38 cities and towns and 12 marine forecast areas. And, as I said yesterday, we see our service as a package; not only do we produce text and graphical forecasts and warnings, but we attach considerable importance to relaying that message to the public through our many radio courses and our web-based services, and to emergency managers and local government through the many briefings that we conduct, the number of bureau warnings issued during December and January. Once again, record levels particularly when it comes to flood. We saw almost 900 flood warnings issued in that time, with 350 per year being the long-term average. The two colours, the

purplish colour is December, and the magenta colour is January. So slightly more warnings in December than January but, all the same, both months were extremely busy. If we can jump over this once again for more suitable for next week. Jump this one, too, please. Okay. Flood forecasting and warning, if you can just bear with me for one second. Okay, the provision of flood forecasting and warning services in Australia is a cooperative arrangement between all three levels of government which describe the responsibilities of agencies for the establishment and operation of flood warning and forecasting systems. And, very importantly, a distinction is made between flash flood warnings described as situations where the rain-to-flood time is less than six hours and other non-flash flood or riverine warnings. So our flood forecast and warning services are provided, as I did mention yesterday, through the Queensland Flood Warning Centre, which is an extension of the Regional Forecasting Centre. The Flood Warning Centre is staffed by hydrologists, meteorologists and technical officers who work very closely with the meteorologists and the RFC. And I guess, as the bureau's regional director, I can confidently say that the level of services we provided over the last four very wet seasons could not have been realised without great communication between our meteorologists and our hydrologists. A very effective partnership. The final dot point there deals with our hydrologic forecasting system. We have heard quite a bit about that in the two or three days in the inquiry so far. Partnership with State and other agencies, the data used in hydrologic forecasting models, combined with recent and forecast rainfalls enable the prediction of future flood levels to be made. The primary roles for the bureau, Commissioner, in the total flood warning system are three: to prepare and issue flood warnings on a river basin scale; to make predictions of future flood levels at locations within designated basins; and to provide these warnings and predictions in the form of flood warning messages direct to a range of stakeholder agencies involved in disaster management and response, as well as to the general public through the media and the bureau website." The second slide in this sequence specifies what the bureau has no role in. The bureau is not responsible for the issuance of flash flood warnings for specific locations or individual creeks; it is not responsible for the interpretation of the impact of the expected flooding and predicted flood levels on people and infrastructure in the floodplain; and, thirdly, not responsible for the further dissemination of this more targeted information down to individual affected parties because this sits within the overall disaster management arrangements of the State. This particular slide relates to flash flood warning. It is the only slide that is of relevance to Toowoomba and Lockyer that I will include in this presentation because I think it is very important. If you could just bear with me for a moment, Commissioner? While the bureau is responsible for forecasting floods, predicting river height levels and forecasting heavy rain that is conducive to flash flooding, the bureau is not responsible for forecasting flash flooding in specific locations or individual creeks. However, reports received of flash flooding - and we do get

them in - will be included in warnings. The bureau - and this is why we don't do flash flood warnings - the bureau does not have the systems, capacity or detailed local knowledge to provide a flash flood service for the many thousands of headwater valleys across Australia. I think we can all understand that flash flood warning services for individual locations require full end-to-end systems. And the bureau does have a role in assisting local governments establish those flash flood warning systems. Where there is a known flash flood threat, local agencies can operate alert systems consisting of a dense network of automatic radio reporting, rainfall and water level stations, and a local computer to display, analyse and, very importantly, alarm on the data. And the bureau's role is to assist local agencies to develop such a system, and it is my understanding that there are a number of local governments in Queensland to varying levels of sophistication have established flash flood warning systems. This is a slide which relates to river height bulletins. I said in the presentation yesterday that when rainfall and river height information comes in, forecasters and hydrologists are alerted to heavy rainfall reports. They are also alerted to high water levels through threshold-based river height bulletins, and we consider this a part of our flood warning system. River height bulletins are a list of flood warning stations and our latest river height and, where available, additional information relating to bridges, roads, lakes or spillway levels. During rain flood periods - and we saw this for most of the season - river height bulletins are automatically issued every three hours with a water level at any one of the stations on the list has exceeded a preset threshold height. So this is supplementary, an important supplement to our flood warnings. Just a couple more slides, Commissioner. Forecasting for dams. The bureau models 47 river basins in Queensland using over 150 operational rainfall run-off flood models that includes the modelling of about 28 large dams. Each dam is different in that it needs to be individually modelled by having different data networks, operating procedures, physical characteristics, and downstream effects. And the flood warning operations are different for dams with gated spillways compared to fixed spillways. For gated spillways, the bureau needs estimate of future dam releases from the dam operator to be able to predict for downstream locations. And for fixed spillways, the bureau models the inflows and the characteristics of the dam to predict outflows and downstream locations. Thank you, Commissioner. That's the end of the presentation.

COMMISSIONER: Mr Callaghan?

MR CALLAGHAN: Mr Davidson, you have referred in your materials to the briefings given by the bureau to bodies such as State Cabinet?-- That's correct.

In your experience, is that something that's ever happened before?-- Not in my time as regional director.

All right?-- And I should add that those briefings were by invitation.

Right. The learning or the science was sufficiently exceptional to warrant that step being taken, though?-- That's right.

All forecasts, I suppose, might be expressed with a degree of confidence. Can I suggest that the - well, no, you tell me: was the forecast as regards the La Nina expressed in terms which were about as explicit as a forecast ever gets?-- If I could just answer this question by saying it was a combination of factors which led us to, I guess, alert Queensland to the fact we could be in for a very active wet season. The combination of the La Nina, which was already at that stage in October quite a strong La Nina. The indicators that we use were approaching record levels, the southern Oscillation Index, the almost - well, at that stage record sea surface temperatures surrounding northern Australia. We saw in October - there was a slide yesterday - how strong the Madden Julian Oscillation was at the time. On top of that we had our statistical three-month rainfall outlooks which reinforced that message that we were in for a very busy season.

I suppose what I'm getting at - and I think we have seen the slide in which you said that certain things could be predicted with some confidence. Could you have gone any further? In the language of meteorologists, is that about as confident or about as explicit as you could get?-- If you are talking about the preseason briefings, counsel?

Yes, the ones in October?-- The ones in October. In my time as regional director that is the most explicit we've been in a briefing.

Look, you might have answered this question to Madam Commissioner yesterday about as well as you could, but the status of that same La Nina event now, are you able to say anything as to the manner in which it might affect or continue to affect the weather insofar as the next wet season goes?-- Counsel, the - a La Nina traditionally develops in Autumn and decays in Autumn. So it is in the process of decaying at the moment. History shows that it isn't until about July that we can get a good fix or good handle on what might happen for the following season. So I guess the three-month outlook we should be looking for is the August, September, October outlook will be the first real indication of what we might expect for the next season.

It can happen that you can get two in a row, can it?-- That's correct. In fact, the '07/'08 and '08/'09 were two La Ninas in a row, follow that by an El Nino, and then last year's La Nina. So the last four seasons there has been three La Ninas.

So we should check in in about July to-----?-- That's correct, late July we will be issuing that media release.

All right?-- Not a media release; the three-month rainfall outlook. I correct that.

Just on that three-month outlook - you took us to yesterday to the three-month forecasts - and I think we probably don't need to go back to the slide; it is, in essence, expressed in terms of 75 per cent likelihood of above average median rainfall, is that right?-- That's correct.

As you explained to us yesterday, that means for every three, there will be a fourth-----?-- That's correct.

-----where it is not above average?-- It is based on history, on - in similar sets of circumstances in the past, on three of the four occasions you would have got above median rainfall. On one out of four it would have been below median.

My question is this: whilst we can understand that, what's the sample? Three out of four is the fraction, if you like, but what's the sample from which that fraction derives? What's the total number of events which establish that pattern?-- That's a good question, counsel. I would need to check on that. I am not thoroughly familiar with how far that particular database goes back.

Okay. We might get you to check on that, just out of interest, but do you have any sort of a sense of it?-- I prefer to defer that comment.

Okay, I understand. Turning then to issues that are perhaps more specific to the Wivenhoe - or the operation of the Wivenhoe Dam, we know that the manual that governs the operation of that dam in flood events contemplates or refers to the prospect of two flood events happening in relatively quick succession. As a matter of logic is that going to be more likely in a La Nina year than it is in a normal wet season, or do the probabilities not suggest that?-- I think I can safely say in very broad terms the probability in a strong La Nina would be greater than in other situations but the statistics surrounding such an observation would not be that sound.

Okay. In the report which has been tendered to the Commission on behalf of the Bureau - do you have a copy of that there?-- I do.

I was looking at paragraphs around about 50, 51, 52, and you talk about models and I'm particularly interested in run-off models. Is that the sort of line of questioning which I should perhaps more appropriately direct to Mr Baddiley?-- That's correct, counsel.

Okay. Thank you. Whilst in that part of the document, though, if I could take you to 57, and you talk about the protocol for the communication of flooding information for the Brisbane River Catchment?-- That's right, yep.

Can you just tell us a bit more about that, please?-- Once again, it could well be a question we might have to refer to my chief hydrologist, Peter Baddiley, but during the development of that draft protocol, Peter certainly kept me continually briefed on developments as he and others attended meetings of the agencies involved in the drafting of that protocol.

Yes?-- But I guess being a little bit divorced from the main negotiations I'm perhaps not the right person to respond.

That's okay. I will pick that up with Mr Baddiley, thank you. If I could just take you back to paragraph 42? I think you volunteered some information relevant to this topic already. You say that the Flood Warning Service relies on the cooperative sharing of data. I suppose my question is this: whilst - I think you've volunteered that there's been good cooperation in this regard?-- I can definitely confirm that fact.

As good as it might be, I suppose we're interested in this Inquiry in anything where there's a scope for improvement. Have you turned your mind to that topic?-- I can, yes. I consider the level of cooperation and collaboration between the water agencies in South East Queensland as being excellent. I think that's come out a few times already in this Inquiry and I can certainly confirm that, from my position.

But, as I ask, is there anything you can volunteer which might be suggested as improvements that could be made, or is that something you'd prefer to think about?-- I would, but, I mean, it came out - it's come out already that the main improvement would be a denser network, and then that's no secret-----

No?-- -----that more river height gauges, more rainfall reporting stations would be beneficial to the whole Flood Warning Service in South East Queensland.

All right. And it wouldn't matter who provided them, as long as there were more of them?-- That's exactly right. I mean, we have had so much success in the past we share - with

partnerships and the like that we're quite willing to work with other agencies.

All right. That's all I have.

COMMISSIONER: Thank you. I don't know if you have worked out an order. Otherwise I might ask you, Mr O'Donnell, to go next.

MR DUNNING: Well, your Honour, assuming that I would have come after Mr Rangiah, I have no questions, thank you.

COMMISSIONER: Okay. Mr Flanagan?

MR FLANAGAN: Mr Davidson, may I concentrate on the Bureau's issued warnings in respect to the expected flood peak levels of the Bremer River at Ipswich?-- Yes, sir.

Could you accept as correct that from the log of issued warnings by the Bureau from 4.17 p.m. on Monday, the 10th of January 2011 to 4.07 a.m. on Tuesday, the 11th of January 2011, the Bureau issued consistent reports stating that the Bremer River at Ipswich was expected to river 12.7 metres on Tuesday afternoon and that higher levels were possible. Just accept that as correct?-- Yes, that's correct.

All right. From your position as the regional director of the Bureau, you appreciate that a 12.7 metre flood event for the Bremer River is nothing out of the ordinary?-- Exactly.

In your scale of how you would describe flood levels, I understand that you describe them as minor flooding, major flooding, and I suppose some people have described them a Biblical flooding, but for the purposes of a 12.7 metre peak, the flooding in Bremer River would be considered to be minor?-- Yes.

Thank you. Subsequently, at 8 a.m. on the 11th of January, the Bureau's website, not an official warning, but the website, showed that the peak level was estimated to be or predicted to be 14.7 metres?-- Mmm-hmm.

Again, you'd agree with me that that would be, again - sorry, minor flooding for the purpose of Bremer River at Ipswich?-- Yes, sir.

The next official warning that was issued by the Bureau was at 9.29 a.m. on the 11th of January, which warned of a 16 metre peak flooding to occur during Wednesday, and it's stated that the next warning would be about 3.30 p.m. that afternoon. Do you see that?-- Yes, sir.

All right. So, there was going to be, if you like, a gap of some six hours between the warnings issued by the Bureau?-- Mmm-hmm.

I make no criticism of that, but that's a fact, isn't it?-- Yes, sir.

MS McLEOD: I just rise to note there is a line that my learned friend did not put to Mr Davidson about the expected rises that were - there was an expectation higher levels were expected. The whole passage should probably be put.

MR FLANAGAN: I am not in the habit of witness protection, I am trying to get a point, and I'm not being critical of Mr Davidson in trying to get to my point.

COMMISSIONER: I think, Ms McLeod, you can take it up when your turn to question comes.

MR FLANAGAN: Just accept as a fact that at 2 p.m. on Tuesday, the 11th of January the local district management coordinator for Ipswich, Mr Trace, rang the Bureau and was informed by the Bureau that the flood peak would be at 16 metres for Bremer River; yes?-- I can't confirm that off the top of my head, sir, but I will take - I will take it that that's the case.

Yes. And in that sense, Commission, I am referring to paragraph 174 of Mr Trace's statement. At 3 p.m. on Tuesday, the 11th of January 2011, the Bureau website showed a flood peak prediction of 18 to 19 metres for the Bremer River to be occurring on the Wednesday. Now, that's a serious flood peak for the Bremer River is it not?-- It is.

Again, if you just accept for present purposes that at 3.13 p.m., Mr Trace again rings the Bureau and at 3.13 p.m. he's informed that the predicted flood peak for Wednesday in the Bremer River has now increased to 22 metres, which is, if you like, on the scale of things quite catastrophic; would you agree with that?-- Yes, sir. Well, they're your words, "quite catastrophic".

I am asking you, do you agree that at 22 metre-----?-- It is a large flood.

Yes. Inundating-----?-- Yes.

-----thousands of properties?-- Yes.

At 3.34 p.m. the Bureau issued a warning which again reiterated the information that Mr Trace had received at 3.13 p.m., namely that the Bremer flood peak was estimated to be 22 metres, and that was the official warning which occurred and that peak was to occur on Wednesday, the 12th of January; do you agree? Sorry, did I say 3.24 or 3.34? It is 3.24, I'm sorry. Then the next warning that was issued by the Bureau was 8.06 p.m. where the peak was estimated to be 21.5 metres. Now, we know as a fact that the Bremer River peaked at 19.4 metres?-- Okay.

Yes? So, sir, in the course of seven and a half hours, the

prediction from the Bureau, in effect, increased from 12.7 metres through to 22 metres. Now, in the course of that change, were you in communication with the operators of - I won't say "the operators", were you in communication with the engineers or flood engineers who were operating the FOC?-- Okay. My response to that, counsel, is that this is a very technical question which I will need to refer to my chief hydrologist, but if I could say there does seem to be a general misunderstanding between what we-----

Mr Davidson, I'm sorry, I have got to stop you. My question wasn't that. My question was quite simple. Were you in communication with the four dam engineers from the FOC in the course of the 11th of January 2011?

COMMISSIONER: Mr Flanagan, do you mean Mr Davidson personally?

MR FLANAGAN: Yes.

COMMISSIONER: Or the Bureau?

MR FLANAGAN: No, Mr Davidson personally?-- Okay. I didn't appreciate the fact that that was a personal-----

I see?-- The simple response is no, I wasn't. I wouldn't expect that to be my normal area of responsibility.

All right. Did you yourself participate in a conference by telephone with the four engineers at approximately 3.40 p.m., I think it's around 3.40 p.m., on the 11th of January, whereby the Bureau was requested to model releases from the Wivenhoe Dam at 9,000 and 10,000 CUMECS?-- I did not participate in that teleconference. I was aware that that request had been made by being thoroughly briefed by my chief hydrologist, but, no, I did not and I wouldn't normally participate in those sort of briefings.

Right. Did the staff from the Bureau that participated in that telephone conference brief you in relation to the substance of the conference?-- I was aware of the generalities of what was being discussed, I wasn't aware of the specifics.

All right. In that case, are you able to assist the Commission by informing us as to how the various releases from the Wivenhoe Dam in the W4 stage of the operation of that dam was modelled by the Bureau for the purposes of predicting flood peaks at the Bremer River at Ipswich?-- Thank you, sir. This is certainly a question now that I will need to refer to my chief hydrologist. As the regional director, Commissioner, I would not normally get involved directly in those discussions or calculations. I would be briefed by the chief hydrologist following those discussions.

All right. So, we might cut this short then. Mr Davidson, were you personally involved or do you have personal knowledge of the modelling that was done by the Bureau to take into

account in that modelling the releases from the Wivenhoe Dam at the W4 stage?-- I was certainly aware that that modelling was taking place, but, as I said earlier, I didn't - I wasn't privy to the actual specifics of the modelling, the input and the output of the models. My main interest was what - you know, the warning service that we were providing at the time. I leave my - I leave the modelling very much to the experts, which are the hydrologists, and the team I have in Brisbane is a very good one.

In terms of a flood event, apart from rainfall which the Bureau of course predicts and makes warnings-----?-- Ye.

-----there was another specific event happening on this day, wasn't there, namely significant releases from the Wivenhoe Dam?-- Yes, sir, yes.

You were aware through conversations with other staff at the Bureau that there were significant releases from the dam that had to be part and parcel of the Bureau's modelling?-- Yes, sir, I was aware of that.

From those conversations, did you yourself gain an impression as to how significant those releases were in terms of their impact on the modelling in determining the peak flood level of the Bremer River, for example?-- I was certainly aware of the significance of the releases that were being discussed at the time. If I could just add too that I do participate in the various teleconferences that take place during large events, and I did on this occasion, the teleconferences with local governments and disaster managers, so I keep myself fully briefed on developments as they're occurring.

Did the Bureau and your staff in terms of modelling come under greater pressure on the 11th of January 2011 because of the increasing and significant releases from the Wivenhoe Dam pursuant to W4 stage?-- I don't think "pressure" is the right word. They're very much - they adopt very much a professional approach and on that particular day it was very considered, very calculated, doing the various sums as to what the impact might be with various releases from the dams. So, I have extreme confidence in what they were doing and still do.

Can you take it from me there is no part of my brief from the Ipswich City Council which seeks to criticise anyone?-- Okay, thanks.

What we're trying to do is identify whether an earlier warning could have been given and my question is this: given that there were at least 10 directives or, in fact, 13 directives issued by the FOC on the day which continually increased the releases from the Wivenhoe Dam almost on an hourly basis, that would have been or those additional releases would have been immediately modelled into the Bureau's warnings, wouldn't they?-- That's correct, and our hydrologists were continually sharing information with the various - the relevant local governments and the Disaster Management Group.

I have already gone through the chronology at least for the Ipswich City Council with you but can I take it that you agree for the official warnings of the Bureau that the first was issued at 9.29 a.m. saying 16 metres - the relevant one - and to be fair, of course, it says there's a possibility of it getting higher?-- Mmm.

As, indeed, I think all the issued warnings said?-- It's standard practice, yes.

Exactly, but at 3.24 p.m. the warning is at 22 metres, so six hours has elapsed, and what I'm suggesting to you is that in that six hours the Bureau knew that there were hourly increases or at least hourly increases in the releases from the Wivenhoe Dam that would have an impact on the peak flood level of the Bremer River; do you agree with that proposition?-- Yes.

My question is simple?-- But if I can just add, sir, before you go on, the details, though, I'm not - I may not have been aware of. Just in very general terms my answer would be yes.

Just in terms of prewarning, in terms of prewarning communities, given the extraordinary releases under the W4 stage of the Wivenhoe Dam happening on an hourly basis, and given that that information was being fed to the Bureau, do you think it came to a stage where the communities may have been better served in terms of warning had the Bureau issued more frequent warnings, having modelled in the releases from the Wivenhoe Dam?-- Once again, that is a question I might have to refer to my chief hydrologist. The frequency of warnings is determined by a number of factors and I guess as a regional director I'm not fully familiar with what all those factors might be. So, frequency of warnings, I just - I can't answer that question.

Did you have a conversation with any of your staff on the 11th of January whereby it was suggested by some of your staff that the warnings should be more frequent, given the releases from the Wivenhoe Dam?-- Can you just repeat that question?

Did you have any conversations with any of your staff who suggested to you that the warnings should be more frequent given the releases from the Wivenhoe Dam?-- The simple answer is no.

Thank you, Commissioner.

COMMISSIONER: Thank you. Mr MacSporran, you're next?

MR MacSPORRAN: Thank you, Commissioner. Mr Davidson, just one topic. Have you read the official Seqwater report that was furnished in March after these events?-- The answer once again is no, but I did browse through section 6.

I was going to ask you particularly about section 6, because that's the area that concerns BOM, isn't it?-- Sure, okay.

Could I just have you look at, very briefly, that section of the report? It starts at page 55, I think. While that's coming up, do you recall that that section deals with the forecast rainfall-----?-- Sure.

-----the actual rainfall, and gives a series of tabulations and then comments upon the accuracy and reliability of forecast. Is that a reasonable summary of what that section contains?-- Yes, that's correct.

I don't want to waste time taking you through it chapter and verse. Can we just go to the bottom of that page? You will see the second dot point, which refers to the five forecasts issued between 1600 on Saturday, 8 January and 10 a.m. on Tuesday 11, and refers to the underestimation of the forecast rainfall, and goes on to refer to the average discrepancy of 225 per cent, and carries on in a similar vein by reference to the tabulations of the predicted and actual rainfall to highlight the discrepancies; is that so?-- Yes, sir.

Now, do you accept the accuracy of those assessments of the forecasts?-- It's my understanding that even though they may not be 100 per cent correct, they're in the right ball-park.

I should qualify my questioning of you in this way, that I am not in any way being critical of BOM, it is just a product of the science, is it not?-- That's exactly right. In fact, that's our only product - our only Quantitative Precipitation Forecast for those catchments. It's not as if it's a question of being the best or the worst, it is the only one at the moment.

Yes, yes. And whilst it's a tool that's available to the Flood Operations engineers, it has significant difficulties in its application?-- Yes, I can understand.

And the real difficulty is this, is it not, that whilst you can be reasonably confident in predicting, for instance, heavy rainfall in South East Queensland, it's an entirely different issue as to where that rainfall may in particular fall within that wider locality and, secondly, and more problematic, the intensity with which it might fall in individual areas within the locality?-- That's exactly right. The spacial and temporal scales 0 for small spacial scales and narrow temporal scales, it's a challenge, not only to the Bureau of Meteorology but around the world, to get reliable estimates of short term rainfall for particular localities.

And the science is such that at present, and certainly at the time of the event in January, the science was not sufficiently

developed to enable critical decisions to be made and reliance upon those predictions?-- The answer to that is that, of course, there is a suite of products, it's not just a quantitative - the QPF which we provide to catchment authorities, but reference in section 6 is also made to the WATL forecast we spoke about yesterday, reference is also made to ACCESS. So, it's my understanding that the dam operators do consider a suite of rainfall forecasts, one of which is the specific purpose QPF which we provide.

The QPF is the 24 hour one, isn't it?-- Yes, it is, sir.

And, of course, the longer range the forecast, the less reliable they traditionally are?-- Yes, and if I can just add too, most of the QPFs we provide you will find are a range, like 25 to 50 millimetres, isolated 100, providing what we call an aerial average for such a small - I know it's 7,000 square kilometres, but on a Queensland scale that's quite small. It is a real challenge and most forecasters will elect to provide a range for that reason.

Yes. All right. Thank you, your Honour.

COMMISSIONER: Now, Mr Ambrose, you should probably announce your appearance.

MR AMBROSE: For the record, Madam Commissioner, my name is Ambrose, initial P. I appear for Sunwater.

COMMISSIONER: You are replacing Mr Devlin for the time being?

MR AMBROSE: Replacing Mr Devlin for the time being, and we have no questions of this witness.

COMMISSIONER: Thank you. Mr Telford?

MR TELFORD: No questions, thank you, Commissioner.

COMMISSIONER: Mr O'Donnell?

MR O'DONNELL: No questions, Commissioner.

COMMISSIONER: Then Ms McLeod? Actually, Ms McLeod, I'm sorry, what I will do in the interests of fairness is just to ask my Commissioners if they have any questions before you start.

Thanks, Ms McLeod. Sorry to interrupt you.

MS McLEOD: Can I show you this document, Mr Davidson? It is a copy of a bundle of flood warnings issued by the Bureau for the Lockyer, Bremer, Warrill and Brisbane River, below Wivenhoe. It appears, if the Commission pleases, in appendix D, which is attachment D to the Bureau report, annexure JD1, and they are paginated. The page number I'm starting with is page 541. Can I just hand that up for you? You will be pleased to know, Commissioner, that the documents speak for themselves, so I am not going to read them out at large, but - sorry, I was going to hand it to Mr Davidson.

COMMISSIONER: I did wonder. We will probably get it on the screen anyway, Ms McLeod, I think.

MR McLEOD: So, I have opened the document attachment D at page 541 which is the Priority Flood Warning of 4.16 p.m. on Monday, the 10th of January 2011. Just while that's being brought up, Mr Davidson, is this the first flood warning to your knowledge that includes by mention in the heading, "Brisbane City" during January?-- Once again, counsel, I would need to check that.

I have sprung that on you. Sorry about that. Just reading through that, the heading, it records in the first paragraph, "Stream level rises causing moderate to major flooding recorded in Lockyer Creek, Warrill and along the Bremer River. Major flood levels are likely at Ipswich during Tuesday." So, there's a reference in that very first paragraph to major flood levels likely at Ipswich during Tuesday, issued at 4.16 on the 10th of January, and the second paragraph makes reference, does it not, to the fact that Wivenhoe Dam is providing significant mitigation of upper Brisbane floods?-- That's correct.

See that?-- That's correct.

Then what the warning does is set out for various creeks and rivers the situation as reported by the Flood Warning Centre?-- That's right.

And for this warning, which is 4.16 p.m., do you see under, "Bremer River.", the heights that are quoted and, as my learned friend noted, "Expected to reach at Ipswich about 12.7 metres on Tuesday afternoon.", and for this warning. It says, "Higher levels are possible."?-- That's correct.

Then if you go to the next page, it has, "Predicted River Heights and Flows. Ipswich reach about 12.7 metres (major)." So, is that a qualitative assessment by the Flood Warning Centre of the nature of the flood for Ipswich in that sentence?-- Yes, yes, that's correct.

Moggill, it describes 12 metres as minor. Do you see the next entry?-- That's right, yes.

And Brisbane is described as moderate flooding with some information, "(Three metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at

this location."?-- That's correct.

And then what the Bureau routinely does in these warnings is list river heights at various specific locations?-- That's right, yes.

There's three listed, you will see, for the Bremer River at various locations, and some are described as rising and some are described as falling. You see that?-- That's right, yes.

Now, if we turn to the page, the next warning on page 544, your Honour, is 6.12 p.m. on the 10th of January. If you turn to the second page of that warning on 545, for middle and lower Brisbane you will see a paragraph that says, "Seqwater advises releases from Wivenhoe will increase during Monday.", and then moderate flooding is expected at a couple of places. Do you see that?-- Yes.

So, to your knowledge, is it the practice of the Flood Warning Centre to make a report of what is expected in terms of the mitigation from Wivenhoe Dam?-- It's my - well, yes, from my experience, if the opportunity is there to provide such information, they will.

And I missed the reference on the first page of that warning at 5.44, but, again, there's a similar paragraph to the first warning that I took you to, talking about significant mitigation from the Wivenhoe Dam and flows to the Brisbane River. Now, I can jump a couple and ask you to turn to page 556, for example? Here we have the warning for 9.28 a.m. on Tuesday, the 11th of January 2010, and if I can invite you to look for the entry "Bremer River"? In this warning, you will see the reference in the second paragraph, "Bremer River at Ipswich is expected to reach about 16 metres during Wednesday. Higher levels are expected."?-- That's correct.

So that's a difference, is it not, from "higher levels are possible" of the previous warnings?-- That's right.

And then over the page "predicted river heights flows Ipswich reach at least 16 metres major. During Wednesday further rises"?-- Yes.

And then the one at 3.24 p.m. on page 559, Tuesday the 11th of January, this one was the one discussed with Mr Ayre - one of the ones discussed with Mr Ayre that talked about significant mitigation. Were you aware that at 3.24 p.m. on the 11th of January 2011, the bureau had received information from Seqwater indicating a significant increase in the releases from Wivenhoe Dam?-- Yes, I was.

And so - I am sorry, that happened before 3.24 but at 3.24 they issued this warning in response to that significant increase of dam waters?-- That's exactly right. And at the same time there was extensive discussion on the rainfall as to how much longer it would continue and - which was an important factor, of course.

And I went through the timeline with Mr Ayre yesterday, but my learned friend put to you that there was a phone call at around 3 p.m. from the Ipswich City Council seeking information at about 3 p.m., and that the fact was reported to that City Councillor at 3.24 p.m. - sorry, about 3 p.m. that rises of 22 metres or more were expected?-- That's right.

Are you aware of those telephone conversations having taken place?-- Once again, I have some recollection of those telephone conversations but the details I am not familiar with. I would need to research that.

Okay. I have nothing further, if the Commission pleases.

COMMISSIONER: Thank you. Mr Schmidt?

MR SCHMIDT: Good morning, Mr Davidson?-- Good morning.

Can you tell me did the bureau do any modelling as far as river height - predicted river heights for the lower Fernvale area in the mid-Brisbane section of the river?-- Once again, I can't answer that question. I would need to refer it to the hydrologists.

No further questions.

COMMISSIONER: Thank you. Mr Callaghan?

MR CALLAGHAN: I have no further questions, Madam Commissioner, but can I just ask that Exhibit 37, which was Mr Davidson's statement, be returned and replaced with this copy? He made some amendments. They are inconsequential. If anyone really wants to know, they are in paragraph 16A(ii). I

think the old copy was posted on the internet. It is just an amendment to some of the numbers, but an old copy of this statement got tendered by mistake.

COMMISSIONER: All right.

MR CALLAGHAN: Subject to that occurring, may Mr Davidson be excused for the time being?

COMMISSIONER: Yes. If anyone wants to look at those amendments, you can ask my associate over the morning break. Mr Davidson, you are excused until next week in Toowoomba. See you then, thank you.

MR CALLAGHAN: Until Monday, yes.

MS McLEOD: Commissioner, I note that a number of questions were addressed to Mr Davidson that he couldn't really answer. What - we might take the opportunity to supplement Mr Baddiley's statement with some of the information that's been sought from him. That might be the simplest way to do it.

COMMISSIONER: All right, thank you.

MR FLANAGAN: Madam Commissioner, may I raise one matter before my learned friend commences? Mr Baddiley, of course, is not on any witness list. So the questions that Mr Davidson couldn't answer, Mr Baddiley is not intended to be called, as I understand it.

MR CALLAGHAN: I will undertake to call Mr Baddiley.

MR FLANAGAN: I am happy not to lengthen proceedings. If we can put certain queries to the bureau that Mr Baddiley can address in a statement, we would be more than happy with that.

COMMISSIONER: Does that seem agreeable to you, Ms McLeod?

MS McLEOD: I think I have a preference for them to come through the Commission, but, certainly, if we have an indication of what else is needed, that would be helpful.

COMMISSIONER: It doesn't make a terrific amount of difference, I shouldn't think, if Mr Flanagan gives his questions to Mr Callaghan who provides them to Mr Baddiley.

MR CALLAGHAN: That process will certainly be hopeful but it was always anticipated Mr Baddiley would be called at some stage, just not necessarily this week. So he will be called.

COMMISSIONER: All right. That solves that.

MR CALLAGHAN: Ms Wilson will take the next witness, but I understand there has been a slight development in what this witness is going to say and some of the parties should be put on notice before we call her.

COMMISSIONER: Would you like an early break?

MR CALLAGHAN: If we could have a slightly earlier than usual mid-morning break?

COMMISSIONER: Yes, all right. 11.25.

THE COMMISSION ADJOURNED AT 11.05 A.M.

THE COMMISSION RESUMED AT 11.26 A.M.

COMMISSIONER: Yes, Ms Wilson?

MS WILSON: Thank you, Commissioner. We call Jenny Moore.

JENNY MOORE, SWORN AND EXAMINED:

COMMISSIONER: Thank you. Yes, Ms Wilson?

MS WILSON: Thank you, Commissioner. Is your name Jenny Moore?-- Yes, it is.

And do you reside at Rockin M, lot 4 Margaret Street, Harlin?-- I do.

Did you make a statement in relation for these proceedings?-- Yes, I did.

Was that statement signed on 7 April 2011?-- Yes, it was.

Do you swear that that statement is true and correct?-- Most definitely.

And attached to that statement is a submission that you made to the Commission?-- Yes.

And also includes a survey plan of the area?-- Yes.

And a series of photographs?-- Yes, it does.

Commissioner, I tender that statement with the attached exhibits.

COMMISSIONER: That will be Exhibit 41.

ADMITTED AND MARKED "EXHIBIT 41"

MS WILSON: Now, do you reside at your property in Harlin with your husband?-- I do.

And you and your husband purchased this property in November 2009?-- That's correct.

And at the time of purchase it was registered as 12 and a half acres?-- Yes.

And your property fronts the Brisbane Valley River?-- It does.

And this property - your property is upstream from the Wivenhoe Dam?-- Yes, it is.

Now, in 2010 you started a business of horse training and selling cattle?-- Yes.

And in January 2011 your property was flooded?-- Yes, it was.

Now, you say in your statement at paragraph 2 that the Brisbane River claimed somewhere in the vicinity of between four and five acres to your property, which equates to 30 to 40 per cent of your property?-- Yes, that's an estimation.

Can you give us a time-frame when this damage to your property occurred?-- January, the Sunday - Sunday night. It took about a process of a week for us to realise what we'd lost. Because they are low lying flats, from that Sunday of the floods in January, because we had to wait for the water to recede to see what was left.

Okay. So was it the case that your property was flooded by water from the Brisbane River?-- Yes.

On the Sunday, which is - was that the Sunday the - January the 9th?-- Yes.

So water started to come on to your property?-- Yes.

And when did you notice the damage to your property?-- It was probably not till the weekend after that we could actually see our land - or what of our land was not there.

Was that the case when the water receded?-- Yeah. We could see the damage to the opposite banks, the continuing pulling in of the banks and that, but it took at least a week for that water to recede for us to see the damage done to ours.

Now, Ms Moore, you have attached some photographs to your statement?-- Yes.

I might show you some of these photographs. If you could have a look at your first photograph that you've attached. Now,

this is a photograph of your land taken in June 2010?-- Yes.

Now, can you show to us where the Brisbane River is in relation to this photograph? Just in front of you, you might have a pointer. It is a white object?-- Yep.

If you point - if you could just point that up there, Ms Moore? Point the pointer?-- Oh.

Yes, and it has no effect at all. Do you see-----

COMMISSIONER: Ms Wilson, should we get somebody to have a look and see if they can make it work? It will be helpful, I am sure, if it will. There is probably a button that has to be pushed that has not been explained to her.

WITNESS: Okay, there it is.

MS WILSON: What are you pointing to there, Ms Moore?-- That is my boundary there, that line of tea trees.

Yes?-- That's a low lying bank. It was buffeted with river rock, kikuyu grass, ryegrass. The complete bank was lined with those tea trees there. That opposite bank there, that's on the other side of the river. That exposed bank there belongs to Neil O'Connor directly opposite from me. My line runs down through here and further back - that you can't see on the photo - and it runs right up here to there. You might not be able to see it but that's a fence that runs along there, fencing off my lower lying paddocks.

Perhaps if we can have a look at the second photo. Now, this photo was taken after the January 2011 flood?-- Yes.

Could you indicate to us where the edge of your property was?-- What's left of those tea trees is just there. That was or is my boundary. The river now flows down through here and that was all my land. So the river in fact has actually changed course due to the damage done to the land.

And the next photograph shows the - is that what fronts the river now?-- Yeah, that bank there is approximately 30 to 40 metres in front of my house, that we were measuring the depth - the soil taken. Now, we measured from the top of the water to the top of where my land was and that measured 3.9 metres.

And before the floods, what was the graduation of the land down towards the river like?-- The slope?

Yeah, the slope?-- It was - it is hard to tell by eye.

Was it like that?-- Oh, yeah, all the way. It was on a gradual slope down to the river bank. It wasn't a dramatic - from that point there, the dramatic bank is there standing behind my daughter, that bank is quite high, but the point where my daughter is standing was flat, low lying paddocks.

And the next photo shows - that's the banks that are fronting

your paddocks?-- Yeah. My concern here is, as you can see from the photos, there is no river rock, there is no trees, there is no - that is silt. That's the silt that's now lying in Wivenhoe. So even at its small rise of the river now, the water is going to continue to cut at that lower bank and then the top bank just folds in.

Now, what is your opinion of what caused your land to be claimed by the river?-- My opinion is it is a combination - well, this area we watched - witnessed 200 year old trees falling. Those 200 year old trees sat in the river bank. Those trees survived '74 and '55 floods which were higher than the January 2011 floods. The only difference between those floods and now we had two infrastructures in the river which weren't in the river '74, '55, which is the dam and Karreman's Quarry.

Karreman's Quarry, is that what you just said?-- Yes.

Okay. And what do you think was the influence of these two pieces of infrastructure that you are referring to in your statement and in your evidence?-- Well, post Christmas floods, I heard on the radio and also on the Brisbane National News that the dam was at 150 per cent capacity and it was coming across as a boasting point that the dam was holding enough water to supply Brisbane for 12 months without another drop of rain falling. Then within 10 minutes of hearing that report, you would hear the weather report which was forecasting this deluge, this next deluge. And my question back then was why weren't they letting that water go. That is going to back that water up against us. So that water is backed up against us saturating our land more, and with the quarry's place in a pinnacle point of the river, the choke or the brake which slows the water down - it was the speed of the water that took my land and I was not in a flash flood like Grantham and Toowoomba. This was rising water and fast. And you could also see when they were holding the water back, the water would travel at one speed and when they opened the gates, the speed of the water was phenomenal.

Now, in paragraph 6 of your statement you refer to the damage - the effects due to the infrastructure within the river. And you are also saying that you are having difficulties raising response from government agencies. What government agencies are you talking about?-- DERM and DEEDI. They're responsible for the river and the landholders and I that are in the area, we were trying to contact them to get them to come out and see our exposed bank. It is really important they see the banks as they stand. Once the banks look lovely and green with grass, it is not the same effect as seeing it, because the next load of water will take away that grass and the silt. We didn't get a response or anything until approximately a month ago Matt Sciacca come out-----

Matt Sciacca from where?-- DERM.

From DERM?-- To have a look at the damage. I mean, in our area it has been described as dropping a bomb in the river and

just exploding it out. There is not many other places that have got the damage we have.

Thank you, Commissioner. That is the evidence of Ms Moore.

COMMISSIONER: Thank you. Now, Mr Dunning, are you happy to go first?

MR DUNNING: I have no questions, thank you.

MR FLANAGAN: No questions, thank you, Commissioner.

COMMISSIONER: You might want to go later down, do you, Mr MacSporran?

MR MacSPORRAN: Yes, certainly.

COMMISSIONER: Ms McLoud, you might be next.

MS McLEOD: No questions.

COMMISSIONER: Mr Ambrose?

MR AMBROSE: No questions.

COMMISSIONER: Mr O'Donnell?

MR O'DONNELL: No questions, thank you.

COMMISSIONER: Sorry, Mr Rangiah, I hadn't realised you were back. Do you have any questions?

MR RANGIAH: Just one question. Is your property within the area administered by the Somerset Regional Council?-- Sorry, I missed the question.

Is your property within the area administered by the Somerset Regional Council?-- Yes, it is.

Thank you. I have nothing further.

COMMISSIONER: Mr Telford, I am sorry, I missed you on my way through.

MR TELFORD: No questions.

COMMISSIONER: Mr MacSporran?

MR MacSPORRAN: Thank you, your Honour. Ms Moore, there are a number of residents in that area that share the same concerns as yourself?-- Yes.

And one of them, I think, you mentioned by reference to the location on the photograph that you have shown us was Mr Neil O'Connor?-- That's correct.

Did you as a collective group meet with your local Federal member, Mr Newman?-- Yes, we have.

And approximately when was that, do you remember?-- Sorry, I don't - it was either at the end of January or the beginning of February that he met with us as a group, and Mick Karreman from the quarry.

And were there some gentlemen from DERM present at that meeting?-- No.

Did you meet with them on site at - that's people from DERM - a little later on?-- They finally turned - Matt Sciacca finally turned up about four weeks ago.

And he met with you?-- Yes, he met with us all.

With you all?-- Yeah, we met-----

It was on site?-- At Neil's place.

At Neil O'Connor's place?-- Yes.

And did you express to him your concerns about, firstly, the dam and, secondly, the quarry operation?-- Yes, we did.

And were you told that the allegation of the unlawful operation of the quarry, Karreman's Quarry, would be investigated by DERM?-- No-one has actually said they're going to do that, no. The documentation shows that the quarry has worked outside its permits, and that the government bodies and counsel have not policed the quarry correctly.

But you have made that allegation to the DERM through Mr Sciacca, haven't you?-- I believe Neil O'Connor and Barry Dunning have presented their paperwork to him. I don't have any such documentation. As I said, I have only been in the area for 16 months.

All right. And what you want to happen is you want that claim, that allegation about the quarry, to be investigated by DERM?-- Yes, we would.

And you're current complaint is you haven't yet been told that it's being done or will be done?-- No, not at all, nor have I been - because I asked the question of who's responsible for

investigating the stability of my bank up against the house, whether it's DERM or whether it's us. I have had no response.

Okay. Is your local State member or was your local State member Dorothy Pratt?-- Yes.

Have you met with her?-- No. I have not myself, but Neil has. I have been requested that I send my documentation through to her, which I have.

Do you know how recently Neil met with her?-- I think it was just prior to Matt Sciacca coming to visit us.

You haven't heard or Neil to your knowledge hasn't heard back from her as to what she did on behalf of Neil and yourself?-- Neil has, yeah.

Has he indicated that she has made representations to the Minister on behalf of the group?-- Yeah, I - and I do believe Shayne Neumann also has contacted our Premier and our government-----

All right?-- -----as well.

Is it the case that you haven't yet had any response back-----?-- No.

-----from the Government to Dorothy Pratt-----?-- No.

-----in respect to your concerns?-- Not that I'm aware of.

But that's what you are waiting for?-- Yes.

All right. That's all I have, thank you, your Honour.

COMMISSIONER: Thank you. Mr Schmidt?

MR SCHMIDT: Hi, Mrs Moore. I feel your pain. We have had exactly the same thing where we are. I just want to know, with the large trees that have now fallen into the river, was that - did that occur when the river level was up or did that occur when the actual subduction was happening from the massive release from Wivenhoe?-- Some of the trees my husband witnessed - actually witnessed them, some of those trees went on the Saturday, prior to the highest point of the water, but then some of them went - sorry, the highest point was Sunday night, sorry. So, some of those trees went on the Sunday night, and some went on the Monday.

Okay. So, the banks were fully saturated by the time that that water was-----?-- Yes.

Basically that rapid release was initiated and the water went down so quickly?-- Yeah.

Yes. So, in your opinion, do you think that added to the

subduction along the edge of the river to the bank slumping?-- My personal opinion, yeah, most definitely, the backing up. As I said, I just - it frightened me post-Christmas when I heard those reports and then you had the weather report warning on this and it's like what's going to happen to that water backing up on us? I understand it got to a point where the dam had to be held back so as not to cause more damage to Ipswich, Fernvale, Brisbane. You know, obviously if they'd let that water hit the same time as Lockyer, it would have caused much, much more damage, but the horse had bolted.

Okay. Thank you. No further questions.

COMMISSIONER: Thank you. Ms Wilson?

MS WILSON: No further questions, witness. May the witness be excused?

COMMISSIONER: Thank, Ms Moore. You are excused?-- Thank you.

WITNESS EXCUSED

MR CALLAGHAN: I call John Ruffini.

JOHN LAWRENCE RUFFINI, SWORN AND EXAMINED:

MR CALLAGHAN: Thank you. Tell the Commission your full name and occupation, please?-- My full name is John Lawrence Ruffini, and I'm director, Water Planning Sciences, within DERM.

Mr Ruffini, you have prepared a statement for the purposes of this Inquiry?-- That is correct.

Do you have a copy of that with you?-- Yes, I do.

I tender the original.

COMMISSIONER: That will be Exhibit 42.

ADMITTED AND MARKED "EXHIBIT 42"

MR CALLAGHAN: Mr Ruffini, I don't want to go through all of your statement, I just want to take you to particular aspects of it. In essence, it contains some explanations as to your own qualifications and, in particular, as to your involvement in the management of the Wivenhoe and Somerset Dams and, indeed, the North Pine Dam from the Flood Operations Centre in January of this year?-- That's correct.

In your statement, I think you refer also to a couple of other documents, such as the Seqwater report?-- That's right, yes.

And, indeed, you adopt some of the recommendations and comments made in that report?-- Correct.

You also refer, of course, to the Flood Event Log, which was maintained during these events?-- That's right, yes.

And, in particular, I am sure you are aware that there's an entry in that log that has attracted attention. I am talking about the entry at 12.55 a.m. on Monday, the 10th of January?-- That's correct, yes.

And we can show it to you if you need. It reads, "JR", that's you, "called Rob Drury to discuss Ken's view on damaging flow. JR confirmed that if flows were kept below 3,500 the fuse plug would be triggered. Agreed that situation reports will not allude to damage levels - the councils can make decisions on what to report in this regard."?-- Yes.

You are familiar with that entry?-- I have seen that entry in the log, yes.

All right. And, in particular, of course, you would be aware that attention has been attracted by which the entry purports

to record that you said if flows were kept by 3,500 the fuse plug would be triggered?-- Yes, I'm familiar - I am aware that that has caused some consternation, yes.

All right. And you respond to that - well, I will invite you to say what you'd like about that?-- Okay. My recollection of the - that particular entry was I recall taking the - having the conversation with Ken Morris from Brisbane City Council and the issue was we issued a situation report and in that situation report it made mention of urban damaging levels being out at 4,000. The reason we did that, because the way it's referenced in the particular manual. So, Ken had rung us up to advise us to say, "Well, look, hang on. While that's", you know, "While that might be what is in the manual, there is some lower damage that happens, starts to happen from three and a half thousand, and by the way, under the protocol it should be the council that's giving out information about damage in the Brisbane area." So we had agreed, you know, after that conversation to go back and change the next Situation Report and make sure we didn't have that mentioned in the Situation Report. I then had to decide that I - following that, I communicated with Rob Drury, because Rob was responsible for - under the communications protocol, he was getting out the technical situation reports to people. So, the purpose of my call to Rob was to make him aware that that - that was an issue. Now, I don't specifically recollect in that conversation talking about three and a half thousand releases and fuse plugs being blown, and I would like to sort of just point you to the next Situation Report which I wrote maybe five minutes after that conversation. I can go to it in the appendix.

Yes?-- But in that - in that appendix, that sort of describes my view of where we were at that particular point in time with the event and it certainly doesn't mention anything about three and a half thousand and fuse plugs. Now, I don't specifically remember - I could sort of give you an explanation of maybe why - why - because I didn't write the entry in the log, why perhaps the data collector may have done that, but I-----

Well-----?-- It might have been a case of, like, Rob might have said to me - you know, "Look, is the - if we change the manual at three and a half thousand", you know, "what does that mean?" I might have said, "Well, that will - three and a half thousand would - if you change that downstream objective to it, then you'd have a greater risk of blowing fuse plugs.", but that's - but I don't recall saying that, I don't actually recall saying the other statement, but I don't think Bill would not - the guy writing in would just write something that he didn't think he'd heard. So, that's the only reason that I can think that that would be in there.

And you make the important distinction that the situation report is your document?-- That's right.

The Flood Event Log is something recorded by someone else?-- That's correct, and the situation report is the stuff that

we're putting out as - that's going into the formal advice that we're asking people to respond to and, indeed, that's going to Rob Drury, who I just - how I had that conversation with, and that's what I am saying, "Rob, this is my view of exactly where we are now and how you should proceed with advice."

By the same token, as I understand it, you are not asserting that the phrase "fuse plugs" was not used, it may have been, but just not in the way that it's-----?-- I wouldn't think that he would have written it down there without - you know, I don't think he just - I don't think he would have written it down there without - you know, having heard that, but he's only hearing one side of the conversation.

Yes?-- But, as I said, if I believed that was an issue, I would have been putting it in the Situation Report.

Okay?-- And the modelling at the time, if you look at that, doesn't - doesn't show that to be the case.

Right. I was just about to say you'd also say, I suppose, that there's nothing else in the context of any of the other documentation that we have that would suggest that-----?-- Yes.

-----you would have said it in the terms that it's recorded in the Flood Event Log?-- That's right, yes.

Is that your position?-- Yes.

Yes?-- Yes, and I guess you could ask Rob Drury as well and see what Rob's view of it is.

Sure. Okay. In your statement you also, I think, talk about having taken part in simulation exercises?-- Yes.

Can I ask you, have any of those, to your recollection, ever involved a simulated exercise where the dam was being operated at W4?-- No, not with the current version at W4, no.

You qualify that by saying "not with the current version", and I appreciate the different versions may have expressed things in different ways, but have you ever taken part in the simulated exercise where the dam level was, say, at 74 AHD?-- No, not to my recollection.

Or above? All right. Can I also just ask you this: what is the maximum rate at which the gates at Wivenhoe can be opened? I understand the practice, which is to sequence them, and I understand the reasons for it?-- Mmm.

But just in theory, what is the maximum rate as which they can be opened?-- As in what is the physical limitations in-----

Yes?-- -----terms of how you - physically go in there and pressing a button?

And the actual time that it takes to open the gates?-- Oh, it's fairly quick, you know, if you - you know, it's matters of, you know, less than a minute sort of stuff.

Okay?-- Because you have got to go there, they have got to the turn power on, push the button and open it up, so it can happen pretty quickly.

The only reason it takes place over - an opening might take place over a series of hours is for the practical reasons that have been explained elsewhere about-----?-- That's right.

You might actually just elaborate on that?-- Physically the rates of opening and closing are basically worked on - they're there to sort of mimic and reflect the sorts of things that have been experienced in natural rises and falls, as much as possible. So, they're - the rates of rise are about making sure that the downstream levels do not rise too quickly because there are issues in terms of safety if you have rates of rises, you know, moving too quickly. So, basically, particularly at the bottom of the event when you are starting to open things up, then you want to keep those rates of rises - so, they're - in determining the manual, there was studies done and hydraulic models and thing like that that work out what sort of - were appropriate rates of rises. With the closure sequences, there were - there were issues with bank slumping that happened post the '89 events, and there was a study done that really looked at, you know, what we were appropriate rates of closure and some of the rates, closure rates, were modified in the manual that followed that time, just to make sure that the rates of closure mimicked as much as possible the last major flood there, which was the '74 flood, the theory being that many of the banks that would be impacted would have already been impacted so, therefore, you keep your rates of closure down to that sort of thing.

All right. Thank you. Can I direct a line of questions to the manual for the operation of the dams-----?-- Yes.

-----during floods? And you have addressed this, I think, in paragraphs 41 to 46 of your statement, your involvement in the development of the manual?-- Yes.

And it's really limited to the - your involvement is limited to the transition between revision 6 and revision 7; is that right?-- Could you repeat the question, please?

Your involvement in the development of the manual is confined to the transition from revision 6 to revision 7?-- I was involved on the - with earlier versions as well in terms of being on the similar sort of - I guess since '96, since I became one of the operations engineers, I have been involved - I have been involved in the various revisions since then in a similar sort of capacity, just providing - I haven't written them, but I have attended the meetings and provided input and comments on hydrology and those sorts of things.

I am specifically interested in the-----?-- Yes.

-----revision 7, and I would like you to just elaborate on those paragraphs around about 44, 45, 46 of your statement? What was actually involved in the process, and I understand you say - I understand what's said in your statement, obviously, but can you just tell us what that meant in practice? I am thinking of questions like who was coordinating this, what was the actual process, was it all done by flying e-mails or a series of meetings or-----?-- Okay.

-----what? Can you elaborate?-- Yeah, I guess Seqwater personnel were the primary - as in John Tibaldi and Terry Malone, who were also on the flood term, were the primary - they were involved in the - and John in particular in doing the authoring of the document, and they were also involved in terms of revising the various bits and pieces of the hydrology aspects of it. Also - so there were basically - the process was they - there was a series of meetings that were conducted over - you know, a period of time.

I am sorry, I just want to take it slowly because as you are probably aware, the manual is up for-----?-- Yes.

Up for inspection at the moment?-- Yes.

And the process by which it might be revised is something which we're interested. So when you say a series of meetings, I understand what that means, but who and-----?-- Okay. The meeting was - the four duty engineers were involved, Peter Allen, DERM Director of Dam Safety. I think Ron Guppy was - Ron was at a number of the meetings.

Who is he?-- He is in the dam safety area as well but I would have to check the things to be absolutely sure of it.

If you mention a name tell us where they are from?-- Sorry, Ron Guppy, he works under Peter Allen as one of the dam safety, so he was involved in a number of them. And the process was that we would - because it - in essence, there was the earlier version of moving to this version. It was - a lot of it was reformatting. And I guess my observation about - there was some extra detail in terms of how some of the stuff was constructed that was put in there.

You will have to tell us what that means?-- Okay. In the earlier versions of the manual, the layout was different, the layout was different so the layout - the layout was changed a little bit and how this time it was constructed. There were a few things that were changed in terms of, you know, with the organisational changes about who - about who was responsible for what. I also recollect in terms of some of the - some of the details into - about the fuse plugs, there were some extra additional information put in - put in there as well.

Was there one person steering this? Was it Mr Tibaldi who was convening these meetings?-- John was the main person steering it and, you know, doing the circulation, and I guess Peter Allen is - you know, his role is the other person - the main person about the approval process in approving the manual.

We can all read the manual as it reads now. It is fair to say that within W1 there is a range of strategies and the manner in which they are deployed might depend on certain judgment calls being made by the flood engineer at the time. Would you agree with that?-- Yes, I would agree with that.

But when you are moving between strategies, that's not really a matter of discretion, that's delineated essentially by reference to the level of the lake?-- It - well, yeah. You are moving between objectives. In the - you mean in the earlier-----

Well, let's focus on W4 in particular?-- Yes.

I mean, that's really triggered by the lake level going over - predicted lake level going over 74. Would you agree?-- I think you would want to be pretty sure that you were going to

get to 74 to trigger that one, yeah.

I am not really concerned about degree of confidence at the moment but just how the manual reads?-- Basically - yeah, basically, you know, you are going to hit the 74 and once you get to 74 you are starting to open up, yes.

Just starting with the manual?-- Yeah.

It says if the predicted lake level is 74, then you transition to W4, doesn't it?-- Yes, it does.

And I accept that it might be different ways in which you could predict the lake level?-- Correct, yep.

And just sticking with that level at the moment, we know, for example, that I think between 01:00 on the 10th and 00:00 on the 11th, that is a period less than 24 hours anyway, I think, there was an inflow of over 350,000 megalitres and a rise of about three metres in the lake level?-- Yeah, that's between - sorry, between?

01:00 on the 10th and 00:00 on the 11th. I am talking in rounded off terms. A period of less than 24 hours the lake level rose in three metres. That's the short point that I am making for the current purposes?-- Okay, yeah.

And what I am getting at is that when you were revising the manual and talking about lake levels, nothing of that magnitude would have been factored into your considerations? Nothing - the prospect of the lake rising that quickly when it was already at that level over that short a period of time wasn't something that history suggested was really going to happen?-- It is not something that's currently in the historical suite of floods, no, no.

No. We have all seen the graph with the level of Wivenhoe certainly back to '94. There was nothing remotely like a spike in the rise of the level of the lake over such a short period of time?-- That's right, yeah, yeah.

And if that wasn't really front and centre at the time the manual was written - and you can understand why it mightn't have been - would you agree that the very fact that we now know that the lake can rise like that, that very fact warrants a substantial revision of the manual itself?-- Well, I think after any significant event like this within the manual there is provisions to go back and relook at - relook at the adequacy of the various strategies and the weight between those strategies.

That's a general proposition?-- Yes.

I don't think anyone would argue with that?-- This is certainly - this is the biggest, you know, biggest event that's happened upstream of the dam for quite some time.

Yeah?-- It is a little bit different to what we have

experienced historically in terms of the dual peaks and the separation between the peaks, and the temporal pattern is quite different. Even when I look at the GTSMR study that I was involved in, which was one where we looked - you know, it was one of the ones that I mention in my statement, that was about looking at all the major, you know, tropical storm - tropical area based storms that had happened, there weren't in that series of storms that came out of that study many with this sort of temporal pattern. There weren't any that I remember that had this sort of big bit at the end. So it is certainly something to look at.

No. But now that we know that it can happen, what I am - let me start that again. You would accept that we know that can happen now?-- Yeah, well - yes, yes, yeah.

And just thinking about a revision of the manual generally, you rightly, I would suggest, volunteer that after an event like this the whole manual has to be looked at again incorporating all of the information that we know now?-- That's right, yes.

But that could be quite a lengthy process? It could take a while?-- It is. Particularly if you start to have considerations about where full supply level might be.

Yep?-- Which - which brings you into talking about, you know, water supply security. So you have really - you end up doing, like, two studies together when you are wanting to do that. So there is quite a bit of work involved in doing that sort of exercise, yes.

Well, this is something that I think you might have an opinion about, and that is if it is going to be revised, it is the case, I think, isn't it, that you endorse - I think you have volunteered somewhere it really has to be a coordinated approach between a number of different agencies?-- That's right. Particularly because - obviously, I think, if you want to look at sort of, you know, flooding downstream in all the areas, and I really think, you know, you need to - all the various councils and even Seqwater have got their own version - various versions of hydraulic models, but I suggest there has been significant channel modifications that have happened post this flood, so you would want to go and do a fair bit of survey and get a good hydraulic model working as part of this exercise as well, and I think there should be a coordinated effort in terms of getting that together.

Can I pin you down a bit? I mean, that's your opinion that you volunteered in paragraph 82 of your statement?-- Yes.

But while you are here, can you tell us, with your experience and in your opinion, who should be coordinated and what should they be doing?-- Well, as in who should take the lead in terms of a study like that?

Well, don't limit it to that. I mean, like I say, you could identify who should be involved-----?-- Yes.

-----and what they should be doing, and if someone in particular should be taking the lead, we would value your opinion on the topic?-- Well, I guess, if you look at some of the earlier sorts of these sort of responses, their being coordinated - like, when you look at the original - when the original manual and operation procedures were devised for Wivenhoe and Somerset Dam, that was something that came out of the Coordinator-General's office, and there was council staff involved, bureau staff involved and various State Government departments involved. So that was the process that they used at that particular time for a - you know, not an identical study, but would have had similar elements to this one.

COMMISSIONER: Who would you see now as doing it? Who would you pick? Which agencies would be involved?-- Who would be involved? Well, certainly DERM would be involved. I think obviously the various - you know, Seqwater, the councils, I think the bureau would need to be intimately involved in that as well.

MR CALLAGHAN: All right?-- Certainly emergency services and some of those other things. There is a little bit of this thinking starting to happen in terms of some of the floodplain stuff that's been looked at as well.

As you have said, that could be a process that takes some considerable time?-- Yes.

In the short term, would you agree that if you can have a spike in the dam level from, say, 70 to 73 in 24 hours, then dam safety should be a primary consideration, perhaps a little lower than 74? Could I put it this way: if you had a second such spike in the next 24 hours - if you had one spike like that in 24 hours, and if it could theoretically go from 73 to 76 in 48 hours, as the manual currently reads, dam safety is not the primary consideration even when you are at 73.9?-- Okay, I guess that's something I would probably want to talk to the bureau guys about. Part of the - when that GTSMR project was put together, part of the - part of the process involved in that is if there were bigger events that were big, major events that happened that might trigger some reanalysis of some of those sorts of things, so I would like to get some meteorological advice about how efficient was this storm, how likely was it that you would actually regenerate components, what's the likelihood of that generating components and extra spikes after that? So I think that would - I would like to get that sort of advice before I'd offer an opinion on it, yeah.

When we're talking about dam safety or even just triggering of the fuse plugs how likely - given that we know it can happen, how likely does it have to be before you'd want to start thinking sooner than 74 about dam safety being the primary consideration? Isn't that one lesson that we can learn from this already without thinking about it too much, I suppose is the question?-- I think if you look at the - it is about whether you think the risks changed or not. If you look at

the - if you look in the Seqwater report on what's the probability of the fuse plugs being triggered, I think what you need - what we need to do is make sure in this post-event analysis that we get a good assessment as robust as - we have done a preliminary - there is a preliminary assessment in the report about how big, the size and the magnitude of the report is. In those original design calculations, in terms of for the fuse plug and the reassessment of the spillway capacity, there is an assessment of, well, what was the likelihood of triggering that. Now, if we're saying out of this that we think there has been a shift, in that we've got to this more quickly than - you know, we've got to these levels more than the thing would attribute, then I think that would give you cause to go and sort of say, "Yeah, you need to review - review that context." Because you are effectively reviewing the capacity - you are saying, well, maybe the dam isn't secure as what it should be. I think that's one thing to look at.

What I suppose I am getting at, Mr Ruffini, I can understand the whole manual has to be reviewed - and I would suggest to you it is flawed in many respects, some perhaps unimportant in the scheme of things, some quite serious - and that a comprehensive review of the whole manual may well take a long time, or at least many months. But with a view to what might be done between now and the next wet season, do you see any scope for, say, the introduction of a strategy 3A, which at least allows the flood operations engineers a greater degree of flexibility as to the amount of water that can be released from the dam at some point prior to the dam hitting 74 AHD?-- Look, I think it is worth looking at, yeah.

And that of itself is something which might not necessarily take that long, inasmuch as it could be - a revision to that part of the manual is something which could be undertaken, well, within an amount of time which might make it meaningful before the next wet season, would you agree with that?-- You could but I would - you would want to look at all the - you know, at least cover off all the major historical events and make sure that in changing the rules you don't make things worse. Some rules might work - make things better under certain circumstances and worse under certain circumstances, so you really need to look at that, you know - you can do that analysis, yes-----

Yeah?-- -----but I wouldn't, say, jump to a solution without having done the work, yeah.

Well, it is never going to be a complete solution, though, is it, if all-----?-- No, you are always going to have winners and losers. Effectively what you are saying is you want to change the balance of the objectives.

Well, balance of the objectives - I guess what I am suggesting is whether or not the discretion of people like yourself should be introduced into proceedings at an earlier time than it is now, because, really, with the release rates, you have no discretion up to - until the dam hits predicted level of

74, do you? I mean, the manual tells you a maximum amount that can be released before that time?-- That's right, yeah, yeah.

And I am sure you know that part of this debate that's going on about what happened in January of this year suggests that releases should have been greater sooner, and if that had happened-----?-- Sure.

-----certain things might have been avoided?-- That's right, yeah.

And the question is simply whether that - whether there isn't some merit in that solution rather than straightjacketing the engineers until the predicted level is 74. There is always going to be judgment calls?-- It is, and in that respect you just need to understand that sometimes a strategy like that will go horribly wrong. You know, in a case where you will open up and the rain, instead of falling there will go south and fall over Brisbane, and the release that you have just ramped up - the release that you have increased a day before will end up coinciding with rain that falls on Brisbane, and that's just the nature of the quality - the nature of the forecasts at this stage, point in time.

They are the same sort of risks-----?-- That's right.

-----that you juggle at the lower level strategies, aren't they? That's the same sort of risk that you might run when exercising your discretion at W1, just that the stakes are higher if you are exercising-----?-- That's right, the stakes are high and the consequences of forecasts not going your way are higher as well, yeah.

Yeah. I suppose to some extent, the way it reads now - I will use the phrase let you off the hook - I don't mean it in a pejorative sense - but your hands are tied in terms of those judgment calls when the stakes are fairly high when you are releasing at 3,500 or 4,000?-- Yeah, to a certain extent there is clarity about what you have to do, yes.

And that's what you'd say has to be balanced against the benefits which might be introduced by having flexibility at an earlier stage?-- That's right. Because, you know, similarly while this is a back-ended flood, there are lots of others which are kind of front-ended but front-ended floods with rain down the bottom.

You might just translate that?-- All right. Well, the peak of this flood, the big - you know, we had that big volume at the end, but others you'd had a bit more volume at the front but you've got - but you can have a case of - you know, if I look at a '74 style flood which sort of - you had a lot more rain over Brisbane and you had a - but we didn't have, you know, as much of the double peak within the dam and it was a lower level. So in that sort of a case if you are going, well, you want to release earlier on levels but then you have got the flow coming in downstream, then potentially under that

scenario you could make that worse. So you would really want to look at it carefully about which way you want to go with it.

All right. It is, I think, clear enough that in terms of the way the Flood Operations Centre worked that when you were looking at the predicted lake level, looking to predict the level of the lake, you and the other engineers all worked on what's known as the without forecast model. That's correct?-- Yes, yes.

And we've seen the graphs with the blue line and the red line?-- Uh-huh.

It is fair to say that it was always the red line to which you had regard in working out the predicted level of the lake?-- That's right, yep.

And the blue line was effectively ignored for that purpose?-- That's right.

Is that-----?-- We use - go on.

Sorry, do you agree with that?-- Yes, yes.

And that - to the extent that the manual might suggest that you should do something else, if it does, would you say it should be amended to reflect the practice of looking at the predicted lake level on the basis of the without forecast rainfall?-- I think-----

To make that clear?-- I think as duty engineers we have a clear interpretation about what we think we should do. If there is some ambiguity - I think there is a bit of ambiguity in there, you know, which probably needs to be cleared up.

Yeah?-- But, you know, it is a question of where forecasts are going, too. The life of this manual is five years and I believe the forecasting, while not there today, I think is improving with time and the reliance on that, you know, in the future may be better.

Yeah?-- So it is - yeah, I think it is about sort of where you are today and where you are heading as well.

Would you factor into that consideration the results of those model runs during this event which, as we know, did predict a lake level of 74 some 36 hours before the without forecast model predicted a lake level of 74? Would that be something that you'd take into account in assessing-----?-- The - the-----

I am not - I am sorry, you say what you were going to say?-- The - the forecasts you use - like, if you look at the situation report, we sort of say - sorry, when I make one up, sort of say where we are, then I look at the forecast scenarios to get a sense of where the event is heading-----

Mmm?-- -----and that's what I sort of put in that situation report about where we're potentially heading, and that starts the wheels in motion about what people should be thinking, about saying, well, this rain hasn't happened yet, but if that sort of thing happens, then this is where we're headed. So that's sort of the way that we use it. In essence, the way that procedures are designed, you just grow from one to the other. Like, you don't - it is - the way they are designed - because they sort of build - they are not - it is not like kind of discrete steps, you actually build to the events. So I would also use - you know, when you are looking at the forecast, you have consideration to the drain times within the dam. So as those - as you - and that's something that, you know, me I look at - when I look at those forecasts and say, well, how are we going, are we still kind of good for that? And that just gives me a feeling for where the event's headed.

I accept that any event like this is going to be an evolving one?-- Yes.

And that your thought patterns would evolve with it, but insofar as the manual reads, whilst the specific strategies are sequential, you can only operate on one strategy at a time, can't you?-- That's right, yeah.

Subject to the fact that there might be substrategies within W1, you can only have W4 at a certain level and once you are there you are there?-- That's right, yeah.

Okay. To get back to my question, though, which was about your suggestion that forecasting - we should have a look at where we are now with forecasting and specifically with the prediction as to the lake level, do you think that the fact that the with forecast rain model - the with forecast model for the predicted lake level did so consistently predict that it would go over 74 for some time before the without forecast model did is something which might warrant another look at that model, the with forecast model, as being something which should be adopted when choosing strategies?-- Sorry, can you say that question?

No?-- It was a rather-----

I couldn't possibly say that again?-- Well-----

Okay, let's break it down. The with forecast model did appear to get it right earlier than the without forecast model?-- Yes and no. The with forecast model - I think Rob gave you that spreadsheet. I have got a copy of it. I have got a copy of that spreadsheet where he had all the model runs.

I am just confining it to the proposition that it was predicted that the lake level would go over 74?-- Yeah, but if at that point you jumped into a procedure 4-----

No, I am not asking about that?-- All right.

But I am asking if we were to rewrite the manual-----?-- Yes.

-----today, as you sit here?-- Yes.

We know that up until now you and your colleagues have all operated on the basis that the without forecast model-----?-- Yep.

-----for predicting the lake level is the way to go?-- Yes.

And this all started because I said, well, should we amend the manual to reflect what you actually do-----?-- Yes.

-----which is to ignore the blue line-----?-- Yes.

-----basically, okay? And you qualified that by saying, "Well, no, forecasting - we should look at with one eye on what's happened with forecasting and what's likely to happen with forecasting." In other words, you weren't saying, "No, we necessarily have to amend it to what we do now", you are a bit more open-minded?-- Well, I guess I was under the interpretation that what we do now, we're saying the zero forecast is - the no rainfall is the best forecast-----

That's right?-- So that's why - that's - in terms of our - you know, our interpretation that's what - that's in terms of the advice in our discussions with people we know in the bureau about that. We have some concurrence about that that being the view.

Exactly?-- And that's what the current practice is.

Yes?-- And my question is well-----

Is it still best practice?

MR O'DONNELL: Mr Ruffini hadn't finished his answer.

MR CALLAGHAN: I know but-----

COMMISSIONER: I am not sure whether he is being particularly responsive, though, Mr O'Donnell.

MR O'DONNELL: There are a number of interjections in the course of his answer.

MR DUNNING: And I would like to be heard after Mr O'Donnell's-----

COMMISSIONER: Oh, Mr Dunning.

MR DUNNING: I would like to be heard on Mr O'Donnell's objection, because I have some concern that things are being put to Mr Ruffini, and my only interest is those topics that I will have to visit in my cross-examination that put the matter too broadly. If I can give an example, I am not suggesting it is deliberate, but it is nonetheless happening, that he ignores the blue line.

Now, that, with the greatest respect, didn't seem to be the evidence the witness had given a little earlier.

COMMISSIONER: I thought Mr Callaghan had actually expanded on that and said, "Well, you do take that into account in the way you have described but not in predicting the lake level." Is that not what the evidence is?

MR DUNNING: Undoubtedly, Commissioner, but that's where I was only in support of Mr O'Donnell's objection. The way it is coming out is having the effect of some of that is actually being lost - I am not suggesting it is deliberate and I am not suggesting that the witness's style of answer is not a contributor to it. I am just raising it really from the point of view of somebody who sees the cross-examination of this witness expanding as a result.

COMMISSIONER: Well, my impression of the question is that it is really would it be worth reconsidering the with rainfall forecast as a factor in predicting lake level given the experience of the January floods. I would really like to know the answer, what Mr Ruffini thinks about it.

MR DUNNING: I have no objection to that question at all.

COMMISSIONER: All right. Mr Callaghan, I don't know, maybe you can make it crisper?

MR CALLAGHAN: Mr Ruffini, just to clarify one thing, when I did ask you about the current use being made of the with forecast model or of the model - the predicted lake level model, I did suggest to you that you and your colleagues, purely for that purpose, for the predicted lake level, look at the red line and ignore the blue line. And that's right, isn't it, purely for that purpose?-- For the purpose of determining-----

Predicting the lake level?-- Sorry, for the purpose of determining what strategy?

Yes?-- Yes, yes, yes.

Thank you. I haven't misrepresented that to you?-- Yes, correct.

That is what you and your colleagues, as I understand it, unanimously regard as best practice?-- Yes, correct, yes.

You are aware, aren't you, there's a suggestion that there is, at least to use your words, some ambiguity in the manual-----?-- Yes.

-----on that point?-- Yes.

And we don't have to sort out - we can interpret the manual. My question to you is this: is that still best practice in your view, in the light of January event, and it's, I suppose, yes, no, or maybe?-- I'd say yes, it still is, yes.

Okay. So, is it your view that the manual should, therefore, be amended to make that clear? If there is ambiguity on that point, that ambiguity should be removed?-- Yes.

And nothing that happened in the January event insofar as the blue line is concerned causes you to revisit that proposition?-- No, I don't think so, no.

No. All right. Thank you?-- I would want to think a little bit more about it, but, yeah, no, I don't think so, no.

This all started, I think, only because, I think, you said, "Well, we look at where forecasting is going before we made a definitive statement on that point." Do you want to qualify your last answer by something like that, by saying, "Well, let's have another look all the forecasting before we - before we settle that?"?-- Yeah, well - the - what was - sorry, I got a bit lost there.

Do you want to have another look at the quality of the forecasting before you reach a settled opinion on this question as to which is the appropriate level of - appropriate method of predicting the lake level? Do you want to go back and look at the forecasting data as part of the whole process of revising the manual. I am not suggesting we do it now?-- No - I don't know if I am being clear that we - the - there's where we are - I don't know if I am being clear about how we actually use those forecast runs, that we do actually - it's not that we don't use them, it is just that we don't necessarily jump into - like, you have - you might have a run here that said, "Okay, out at" - I think you suggested out at - where it sort of says, "Oh, you are going to reach level 74, therefore" - and, you know, it just goes above 74.1, therefore on the basis of that forecast you should go and jump into a-----

I have not suggested that and please, if that's your concern, you don't have to answer it?-- Then I go, well, no, I wouldn't - you know, I wouldn't - I wouldn't ever recommend that, but the - but we do - we do look at the forecast runs to sort of look where we're going, where the event's heading-----

Yes?-- -----and try and provide advice on that, so we are looking at and determining and getting ready for strategies in - you know, and as we progress up through the thing, but we are using the no rainfall information to be in - to determine exactly where we are now and where we're, in the immediate thing, heading now. Now, if there's - to the extent that there's ambiguity in the manual about that, and I still believe that's the - you know, unless we - I still believe that that is the best way to be operating, because I haven't seen - you know, analyses with forecasts that would demonstrate that that isn't the best way, and to the extent that, you know, maybe the manual's - there's ambiguity about that, then it needs to be sorted and clarified.

COMMISSIONER: Can I just make sure I have got this straight?-- Yes.

You don't use the with forecast model in predicting the lake level?-- You use it to predict the lake level to tell where you're going, but you are not changing your strategies on the basis of that, you are preparing to change your strategies, you're informing people that the strategy is about to change, because those windows could be one, two days out, and, remember, you are going to revise this thing in six hours time, so you are going to - you are going to be firming up on those forecasts as you go along. So, it's not that we're not using them, we are using them, and we are using them as a tool to get prepared and tell people where they're going, but we're not - we're not - we're not sort of thing, and this thing is the-----

Can I stop you, Mr Ruffini-----?-- Yes, sorry.

-----before you go on? I do want to get this clear. Would you ever move up a strategy on the basis of predicted lake level on the with forecast rain model, no matter how many there were of them? I mean, if there were six in a row, would that make you move up a level in your strategies because you had a predicted lake level above 74 where your without rainfall forecast was below?-- To date, I have never operated - in the time that I have been doing it, I have never operated in that fashion, and I - somehow I would have to have a lot of confidence, if that was - particularly when there were significant consequences for people downstream, you'd have to have a real lot of confidence in that - in that being right, and today I just haven't got the confidence in the forecasts to move to that scenario.

Is it fair to say that no number of repeated sets of models with rainfall above 74 would convince you; in other words, if you had six in a row, seven in a row, eight in a row-----?-- But-----

-----if you were still getting without forecast under 74?-- If you - if you ramped up to - say - it depends. If you ramped up to before - the consequences are, say, in this particular event, when some of those earlier numbers were over

74, if you said, "Well, you are going to adopt - adopt that principle", these are the things you would have had to ignore, you would have had to say, "Well, look, we have got this broader description of the system moving south, we have some forecasts, some forecasts which are telling us that there's going to be significant rainfall over Brisbane", and we would - we have got on that first peak, we have got stuff at 7,000, so we'd have to say, "Well, okay. We are going - because we're in the future going to - going to hit 74 based on this we are going to start ramping up and releasing down things." So, that's the difficulty I have with a forecast window.

Look, Mr Ruffini, I don't have any problem about your difficulties or the consequences that you talk about, I am just trying to work out what the practice is, because you seemed to say to Mr Callaghan before you would prefer the ambiguity removed from the manual?-- Yes.

In other words, any reference to forecast rainfall in predicting the level of the lake for the purpose of the change in strategy would go?-- Yes.

Is that right?-- Correct.

I want to make sure that's what you really want, so that's what why I am asking you-----?-- Yes.

-----can you see no circumstances in which forecast rainfall would enter into prediction of the lake for the purpose of setting the strategy?-- No, not at this stage.

Okay. Thank you.

MR CALLAGHAN: I have nothing further.

COMMISSIONER: All right. Thanks. Mr Rangiah?

MR RANGIAH: Mr Ruffini, can I take you, please, to paragraph 29 of your statement?-- Sure.

Now, perhaps I should just tell you as well, Mr Ruffini, that I represent a number of residents of Fernvale. In paragraph 29 you set out the times and dates when you were on duty at the Flood Operations Centre?-- Yes.

And that shows that you were on duty from 7 p.m. on Friday, the 7th of January to Saturday the 8th of January, 7 a.m.?-- Yes.

And then you return to the Flood Operations Centre for a meeting at 3.30 on Sunday, the 9th of January?-- Yes.

And you came back on duty from 7 p.m. on Sunday, the 9th of January?-- Yes.

And you remained on duty until 7 o'clock the following morning?-- Sorry, you are wanting me to confirm that?

I just want you to confirm that that's the case?-- Yes, yes.

All right. So, it is the case, isn't it, that you weren't rostered for duty as a Flood Operations engineer from 7 a.m. on the Saturday morning, that's the 8th of January, until 7 p.m. on Sunday, the 9th of January?-- Sorry, say that again, from?

From 7 a.m.-----?-- Yep.

-----on Saturday, the 8th of January to 7 p.m. on Sunday, the 9th of January?-- Correct, yep.

Okay. So, it must be the case, mustn't it, that you didn't have any direct input into the situation reports that were issued within that timeframe when you weren't on duty?-- Unless I was contacted or if - sometimes you were in there, generally, no, I would think not.

And when you came on duty at 7 p.m. on Sunday, the 9th of January, you were aware that the W3 strategy had been engaged?-- I would have to have a look.

Okay. Perhaps I can give you a shortcut? I suggest to you that the W3 strategy was engaged at 8 a.m. on Saturday, the 8th of January. Does that sound familiar?-- I'd have to look at the thing - in the thing, but I will take your word for it, yeah.

If you need it, it appears in the report?-- Yes.

At page 13?-- Yes.

COMMISSIONER: It's up on the screen Mr Ruffini. Just in front of you it should be?-- Good, thanks.

MR RANGIAH: Have you got that, Mr Ruffini?-- Yeah, I have got the page. Period 4 of 20, that one, yeah.

Well, I am looking at page 13 of the Flood Event Summary, and there's a column, "Background."?-- Yep.

And then the third dot point says, "Transition from strategy, W1E to W3 as it became apparent that Wivenhoe Dam level would exceed 68.5 metres."?-- Yep.

It has in brackets - sorry, 8 o'clock on 8 January 2011?-- Yes.

All right. So, what I'm asking you is that you were certainly aware, weren't you, when you came on duty, on the Sunday at 7 p.m. that the W3 strategy had been engaged?-- Yes, we would - yeah, the objectives had changed, yes.

All right. And can you recall having a handover meeting with

Terry Malone and Robert Ayre at about 7.30 p.m. on Sunday?-- If it's in there, yes - I mean, I don't vividly recall all the meetings but if it's in the record it's correct probably, yep. It would be correct, yes.

Well, did you recall that you had telephoned Mr Ayre and suggested that there should be two duty engineers on at the same time?-- I don't recall - if it's in the record, then it would be correct.

If you can't remember, just say so?-- Yeah.

But I'm suggesting to you, then, that what happened is that there were two duty engineers on duty from about 7.30 p.m. on Sunday, the 9th of January, that was you and Mr Ayre?-- Mmm.

And that you had a handover meeting with Terry Malone?-- Yes.

And-----?-- And John Tibaldi.

Well, I suggest that John Tibaldi wasn't there, it was just the three of you?-- Yes, all right.

If you can't remember, just say so. But what I want to suggest to you-----?-- It is just that I don't - it's a long - I don't remember every detail of every meeting that we had during that time, but, yeah.

That's all right?-- I have to rely on the record but, yeah.

I need to ask you this question: did you tell Mr Ayre that you had advised Peter Allen, the Dam Safety Regulator, that you would have to increase releases to around 3,000 cubic meters per second based on the latest model run?-- That was the point where we started to do - it was the model - we'd started to do some model runs, the model runs had been done that had just indicated that we were shifting - you know, things had been shifting in priority and we were just flagging to Peter that - in that call that we would be ramping up flows, you know, so I'd spoken to him and sort of said that we would be - over a period of time we would be sort of moving the flows - flows up to - you know, higher levels, yeah.

It might just jog your memory bit if you go to-----?-- Yeah.

-----the schedule that I think you referred to earlier, Schedule 1A that's attached Mr Ayre's supplementary statement?-- Yes. Sure.

It's a little bit difficult to make out, but on the first page you will see that there's Sunday and there's a model run done at 7 p.m.?-- It's 19 - yep.

Do you have that?-- That's model - that's - hang on. 7 p.m.. 1900.

Yes, 1900?-- Yep.

And then further over towards the right, there's a column that says, "Predicted WD levels. No rain."?-- Yep.

And that figure was 72.1?-- Yes.

And then, "Predicted WD levels forecast rain 73.." 9?-- Yep, that would be right, yep.

So, what I'm suggesting to you is that you had done this model run which showed a predicted dam level at 72.1 on a no rainfall basis?-- Mmm-hmm.

But you then had a handover meeting with Terry Malone and Robert Ayre and that you told Robert Ayre that you would have to increase releases to around 3,000 CUMECS based on this model run; do you recall that?-- I - you know, I don't recall the - that's what's in the log, but I don't recall specifically there, probably that the - if I went to the situation report that I would have written about that time, it would probably be a better record of - you know, the details, but I have got no doubt that we probably - you know, the purpose of calling Peter there is that - let him know that things are shifting up a gear and starting to change, yeah.

And is that level - is that predicted level of 72.1 then consistent with you thinking that you would have to increase the release rate to around 3,000?-- Well, the - that's just sort of flagging where the - where the event's heading.

All right. See, I'm suggesting to you that Mr Ayre agreed with you about that. You can't recall that?-- No.

That's all right. Now, I will take you then to the next situation report that was issued and that was at 9.04 p.m.. You will find it in appendix E, though, as I am sure you are aware?-- Appendix-----

It's Situation Report 12?-- Appendix-----

You will find it on page 21 of appendix E?-- Yep. Uh-huh.

And if you - firstly, if you just turn over to page 22 to the end of the Situation Report, it's - the report seems to have been prepared - suggests that it was prepared by engineer 2, but, in fact, this was prepared at a time when you were on duty?-- Yep.

Well, is it 9.04 p.m., 21.04, on Sunday, the 9th of January?-- Yeah.

And you started, you recall, on duty at 7 p.m.?-- Yes, yes.

So, this is now 9.04 p.m.?-- Yes. Are you asking me did I prepare this one; is that-----

Yes?-- Oh, it says - I - you know, I guess if you went to the unredacted - if you look at the original there would be the signature of the person who-----

I am just asking you really whether when it says "engineer 2" it might be a mistake because Mr Malone had gone off duty and instead you might have prepared this situation?-- Well, sometimes, I guess - sometimes people would - you know, you'd stick around a little bit longer and write the situation report, particularly if you'd been involved in the modelling doing it, so it could - Terry could have stuck around for an hour or two and written it for sure.

In any event, because you were on duty-----?-- Yeah.

-----you presumably had an input into the content of the situation report?-- We would have already reviewed it, whoever was there at the time would have reviewed before it went out, yes.

Thank you. So, in this situation report-----?-- Mmm.

-----it was noted that, "Very heavy rainfall has been recorded in the upper reaches of the Brisbane and Stanley in the last six hours.", totals up to 140 - to 140 millimetres?-- Mmm-hmm.

And that a severe weather warning remained current for heavy rainfall?-- Yes.

Under the heading, "Wivenhoe Dam.", it was said that, "At this stage, the dam will reach at least 73 metres AHD during Tuesday morning." Do you see that?-- Yes.

And it was said, "Given the rapid increase in inflow volumes, it will be necessary to increase the release from Wivenhoe Monday morning."?-- Yes.

Do you see that? Then on the next page, it was reported that the current release rate is 1,400 CUMECS?-- Yes.

And it was said that the gate opening would start to be increased from noon Monday and the release is expected to increase to at least 2,600 cubic meters per second during the Tuesday morning?-- Yes.

Now, at this time, you were operating within the W3 strategy; do you agree with that?-- Yes.

And it was open to you to increase the release rates so as to produce the flow of up to 4,000 CUMECS at Moggill?-- But we still need to be mindful of what's happening downstream in terms of the flows.

Yes. But I am just asking you it was open to you to increase it to that extent?-- Oh, at this stage there wasn't a need to do that.

All right.

COMMISSIONER: There's a difference between what you can do

and what you need to do?-- Okay.

I think Mr Rangiah is asking you-----?-- Under the thing you could, provided you had some certainty that you weren't going to, through downstream inflows, go above those thresholds within - with that limitation then you could, yes.

MR RANGIAH: Do you know what flow past Moggill that figure of 2,600 CUMECS would have produced at that time?-- I'd have to look it up, but, yeah.

Where would you find that?-- Have to look at - into the spreadsheet to see where that was, but, yeah. Do you want me to have a look or - do you want me to have a look for it?

Yes, please?-- So this is for which time, this is the time relevant for the situation report?

Yes?-- Okay.

What was anticipated here was that it would reach 2,600 CUMECS?-- That's the release.

Yes?-- Sorry about this.

If it's going to take some time perhaps I should just ask you some other questions and you can have a look at it over lunch?-- Yeah, it is I have just got references on the spreadsheet, so, yeah, that would be better, that would be good, thanks, yeah.

But presumably a flow of 2,600 would produce a flow at Moggill of less than 4,000?-- That's right, yes.

And at this stage of this Situation Report, you were at 1,400?-- I haven't checked it, but, yeah, that should be right, yep.

All right. And so you certainly had significant room to move within the W3 strategy?-- We were still within W3, yes.

And you had significant room to move within that strategy in terms of increasing rates if you thought it was appropriate?-- If we thought it was appropriate? Well, yeah, if we thought that there was a need to crank it up, yeah, I guess.

All right?-- Yes.

And the with forecast basis for the model run at 7 o'clock showed a predicted Wivenhoe Lake level of 73.9 metres, didn't it?-- Sorry, say that again?

The with forecast model run at 7 p.m. that Sunday showed a predicted lake level for Wivenhoe of 73.9 metres?-- The with-----

The with forecast?-- I would have to check it but, yeah.

I took you to it just a little while ago?-- Yeah, yeah.

And I think you agreed with me that the no rain model predicted the lake level of 72.1 metres and forecast rain model predicted 73.9 metres?-- Yes. All right.

But do you say, then, that you took no account of the with rainfall model in determining the appropriate rate of release?-- Well, we took account of the synoptic situation that was happening at that point in time, given that we did have the southerly movement that was happening with that rainfall thing. So, the thing we were trying to balance off is were we under that - at that point in time, were we getting water out, you know, enough water out to meet the draining requirements of the dam, but we also had to take into consideration or - you know, where is this rainfall system moving and where - you know, where would - you know, is there going to be downstream inflows happening sort of below the dam as well.

But you set a strategy-----?-- Yes.

-----whereby you at the time of this Situation Report at 9.04, you were releasing 1,400 CUMECS?-- But basically if - you are asking me did we base it on the no rainfall forecast?

Yes?-- Yes, yes, that's right.

And if you based it on no rainfall forecast, then that means that you didn't take into account the with rainfall prediction?-- We took it into account in terms of looking at where the scenario was going, but not in terms of the physical releases that were being made at that point in time.

You didn't take the with rainfall prediction as to the lake level into account in determining the release strategy?-- We determined where the strategies were going, we were looking at that, we were using the no rainfall forecast to sort of say where is this event heading.

Perhaps instead of release strategy, I will say - I will substitute the words "rate of release". So-----?-- Yes, yeah, yeah, okay. Well-----

I will try again just to make it a bit clear. I'm suggesting to you that you did not take into account the predicted level of Wivenhoe using a with rainfall model in determining the appropriate rates of release?-- We - the rates of release that were happening at that particular time were based on the no rainfall forecast.

I think you're agreeing with me.

COMMISSIONER: Is that a convenient time, Mr Rangiah?

MR RANGIAH: Yes, thank you, your Honour.

COMMISSIONER: Adjourn till 2.30, please.

THE COURT ADJOURNED AT 1.00 P.M. TILL 2.30 P.M.

THE COMMISSION RESUMED AT 2.33 P.M.

JOHN LAWRENCE RUFFINI, CONTINUING:

COMMISSIONER: Yes, Mr Rangiah?

MR RANGIAH: Mr Ruffini, I wonder if I could ask you to turn to situation report number 13? You will find it in appendix C. It is on page 23?-- Yes.

Now, this is a situation report prepared on Monday the 10th of January 2011?-- Uh-huh.

At 1.14 a.m.?-- Yep.

And you were engineer 3?-- Correct.

Now, in the report you recorded that very heavy rainfall had been recorded?-- Yes.

And you also recorded that severe weather warning remained current for heavy rainfall in the dam catchment areas, is that correct?-- Yes.

Now, under the heading "Wivenhoe Dam", you have said that, "The dam level was rising quickly with the current level being 69.6 metres." Do you see that?-- Yes.

And over the page, it is said that, "At this stage the dam will reach at least 73.3 metres during Tuesday morning." Do you see that?-- Yes.

And that predicted level was on the basis of a no predicted rainfall model?-- Yes.

Even on that basis, it was really not far off 74 metres, was it?-- It was 73.3.

All right. Now, I can take you to it in a moment but I am going to suggest to you that at 1 a.m. a model was run which showed that on a predicted rainfall basis - or with predicted rainfall basis, the level of Wivenhoe was predicted to reach 74.7 metres. Do you recall that?-- I would have to look it up.

All right. We can do that in one of two ways, neither of them particularly easy. One way is to go back to schedule 1A that you looked at earlier?-- Yes.

Or there is a second way which is that you - have you got a large copy-----?-- Yeah, I have got - given the difficulties earlier this morning, I a procured a larger copy in the break.

Could you have a look at the run at 1 a.m. on Monday the 10th of January?-- Yes.

Does that show that the level of Wivenhoe was predicted to reach 74.7 metres using the with forecast rainfall method or model?-- You are looking at the Monday 10th, 1 a.m.?

Yes?-- Yes, it shows - yeah, 74.7, yeah.

And is it the case that that prediction of 74.7 metres was not taken into account when deciding the release strategy?-- The release strategy was based on the no rainfall case, yes.

Now, could you turn to the first page of the report? That is the report on the operation of Somerset Dam and Wivenhoe Dam?-- Yes. Sorry?

Could you pick up the first volume and turn to page 1?-- Yes.

This has a heading "executive summary"?-- Mmm.

Then there is a subheading "background"?-- Yes.

I will just give you a chance to read that first paragraph just to familiarise yourself with it?-- Yes.

And could I ask you then did you help to compile this report?-- I - the report was primarily written by - this part of the report was written by John Tibaldi, but I have seen it, yes, and can offer comment on it.

Did you agree with this part of the report?-- Yes, I agree with this, yeah.

Well, at the end of that first paragraph under the heading "background", it says, "Accordingly, the manual must account for an infinite number of flood event scenarios." Do you see that?-- Yes.

Then it goes on to say, or to refer again to the manual in the next sentence, and then there is another sentence that says, "The objective followed and strategy chosen at any point in time depends on the actual water levels in the dams as well as the flood modelling predictions based on the best observed rainfall, forecast rainfall and stream flow information available at the time." Do you see that?-- Yes.

So according to this report, the strategy chosen at any point in time requires consideration of modelling predictions based on forecast rainfall?-- Well, consideration of it and it was - as I said, the consideration that we had was that the no rainfall situation was the best one to move forward with.

Well, so to put it a different way, what this indicates is that the strategy chosen at any point in time depends upon matters including flood modelling predictions based on forecast rainfall?-- I wouldn't agree with that interpretation. As I said, we considered it but we chose to

use the no rainfall forecast one in that situation.

Well, when you say you considered it, do you mean that you gave active consideration to that model when deciding the strategy, or did you just ignore it because that was the practice?-- No, we saw - we - as I sort of said, what - our practice is to use that to sort of see where this event is taking us, where the event is going to evolve from here, and that's what I used it for.

But what this passage indicates is that it is not only the-----

MR MacSPORRAN: Your Honour, there really is a qualifying paragraph that puts that paragraph quoted to the witness in context and I ask that that be put. I mean, it can be done much later by me in re-examination, perhaps, but it really should-----

COMMISSIONER: Do you mean the next paragraph?

MR MacSPORRAN: It is the one over the page, the last paragraph in that section which says "finally", starts with the word "finally". It really does - it is relevant to that other paragraph it puts in context what's said there.

COMMISSIONER: I don't know if it puts it in context or contradicts it, personally, but I think it is perfectly reasonable for Mr Rangiah to cross-examine on what appears in the first part and you can take it up, Mr MacSporran.

MR MacSPORRAN: Thank you.

MR RANGIAH: I will move on to the next paragraph. Do you see that it says in the second sentence, "Objectives and strategies change as flood events progress, as rainfall is received in the catchments and as forecast rainfall predictions change." So, again, does that suggest that forecast rainfall predictions must be taken into account in deciding the strategies?-- The way that I took the forecasts into account was to look at the with rainfall forecast things and to consider where the event was heading in the future and how those strategies might change.

I will take you to the paragraph that Mr MacSporran wanted me to. If you go over to the next page and just above the heading it says "Significance of January 2011 flood event". The second sentence says, "These forecasts are derived using the best available meteorological practice but, as shown in this report, are not sufficiently accurate to be used as the basis for making decisions on releasing floodwater from the dams." Do you see that?-- Yes.

And what that indicates, I suggest, is that you can't use forecasts as the basis, that is the only basis, for making decisions on releasing floodwater from the dams?-- Could you say that again, sorry?

What I am suggesting is what this sentence means is that you can't use rainfall forecasts as the sole basis for making decisions on releasing floodwater from the dams?-- Yeah, I guess, yeah, sort of. I don't quite get where you're at, sorry.

I am not sure, Commissioner, I can really take that any further.

COMMISSIONER: Well, it isn't something that Mr Ruffini has written anyway, so you are really asking him to construe somebody else's language.

MR RANGIAH: Yes, I understand. Now, you did have an input into revision 7 of the manual, though, didn't you?-- Yes, but I am not the author or the approver.

All right. I might just take you to that anyway for completeness. Can you go to page 22?-- 22, was it?

Yes. Do you see under paragraph 8.4, "flood operations strategies", the third paragraph says, "The strategies chosen at any point in time will depend upon the actual levels in the dams and the following predictions which are to be made using the best forecast rainfall and stream flow information at the time." Do you see that?-- Yes.

And you were involved extensively in using this manual during this flood event, weren't you?-- The manual forms - the whole manual forms - not just the paragraph - forms the basis of the operation, yes.

Yes?-- Or guiding the operations, yeah.

So you were required to interpret and to understand the manual?-- Yes.

Do you agree with that?-- Yes.

And I suggest to you that that sentence indicates that the strategy that is chosen depends, at least in part, on the best forecast rainfall?-- The best - well, there is two things. It is the predictions and using the best forecast rainfall. And for the purpose of setting the strategies, my opinion was that the no rainfall forecast was the best one to use and that's consistent with the advice that we'd been provided by the bureau. I used the forecast rainfall stuff to then inform where the event was heading.

So in other words you think that the best forecast rainfall is obtained by assuming that there won't be any further rainfall?-- For the purposes of your out operation and the immediate one, that is the case, but remember operationally you are revising that all the time and we're also looking - me, I look at, well, what are the predictions telling us and is that - and where is that taking us in terms of operational strategies. That's the way I used it.

COMMISSIONER: But as assumption that there won't be rainfall is hardly a forecast, is it?-- But in terms of - the actual rainfall on the ground that we've got, there are other elements that go - the forecast in terms of the predictions, like the rainfall - there is a fair bit of interpolation and stuff that needs to go on just in terms of the recorded rainfall, and the time it takes for that rainfall to get into the system and move forward there is a certain window. So you have got a time-frame that follows with that anyway. So the predicted stuff then tells you where the whole thing's headed. And if you look at-----

You have said that?-- I am sorry?

You have said that?-- Yes, yes. So from that point of view, that's how I used it, yeah.

I understand that.

MR RANGIAH: So at a point in time in the Flood Operations Centre-----?-- Yes.

-----you have to make a decision as to at what rate to release water from Wivenhoe. That's a fundamental part of your job, isn't it?-- Yes.

You can phone up someone at Wivenhoe and find out that it is raining there?-- Sorry?

You can tell at any point in time whether it is raining or not raining at Wivenhoe?-- We have the Real Time Flood Modelling System tells us rainfall over catchment and we're getting that information in in real time, yes.

And, yet, when you run a model and you make a decision, you only take into account the rainfall that has actually fallen and not the rainfall that is continuing to fall or is predicted to fall?-- Well, we look at where that's heading us with the event-----

COMMISSIONER: I don't think you are ever going to get a different answer on this one. Look at where it is heading.

MR RANGIAH: All right, I will move on. Can I take you to situation report 14?-- Yes.

Now, this is a situation report prepared at 6.30 on Monday the 10th of January 2011?-- Yes.

And you prepared that report?-- Yep.

And you noted under the heading "rainfall", "moderate to heavy rainfall had been recorded"-----?-- Yes.

-----"in the last 12 hours with totals up to 90 millimetres"?-- Yes.

And you also said that, "A severe warning remained current for

heavy rainfall in the dam catchment areas"?-- Yes.

And then over the page you said that "The dam would reach at least 73.3 metres during Tuesday morning."?-- Yes.

And that it was "necessary to start to increase the release in Wivenhoe during Monday morning."?-- Yes.

And that at that stage the current release was 1,753 CUMECS?-- That's what it says, so that should be right, yep.

And the plan was to increase the release to at least 2,600 CUMECS in the next 12 to 24 hours. Do you see that?-- Yes, yes.

Now, I suggest to you that there were no models run between 1 a.m. and 6.30 a.m. on that Monday on a predicted rainfall basis?-- I would have to look at the schedule but if they are there they are there. If they are not, they are not. So this is from when to when you say?

From 1 a.m. to 6.30 a.m.?-- So that's Monday?

Yes?-- From Monday the 10th from 1 a.m.?

Yes?-- To?

6.30 a.m. at the time that this situation report was prepared?-- Well, if they are not there, they are not there. Oh, no, sorry, there is 20 - probably runs 24 and 25 don't appear to be on the sheet that I have got in front of me.

They do or don't?-- They are not on this particular sheet.

Okay. Do you know when those were conducted?-- I would have to get the - they are not on this sheet but there are numberings sort of suggest that for some reason they are not on the sheet. There is two runs between - run 24 and 25 don't appear to be on this sheet.

Well-----?-- I would have to-----

There appears to have been a run 25 at 4 a.m.?-- I just haven't got it here in this thing, that's all.

24 at 3 a.m. so would any model run show the with rainfall prediction?-- I would have to check. I would have to check.

I wonder if the witness could be shown model runs - Exhibit 22?-- Right, okay. So what's your question again?

Perhaps if you could check - was model run 24 run at 4 a.m.?-- Uh-huh.

Does it show a level of predicted - level of Wivenhoe with rainfall?-- Yes.

What is that level ?-- 74.8.

COMMISSIONER: Can I just ask you does the modelling assume no outflow from the lake?-- Sorry?

Does the modelling assume with no outflow from the lake? When you get the predicted level with and without rainfall, is that assuming that you are not making releases?-- No, the - on the chart here we'd say what the - in this particular case there is a predicted peak outflow. That particular point, too. So in this case here you've got - in this case the with dam maximum release, where you get up to 72.9, is 2,700 maximum release, and the with rain for this particular run - sorry, for this particular run is 2,830.

How do I see that, Mr Ruffini? I am having trouble following it. How do I see it on the hydrograph, or don't I?-- There is - probably the best one for this would be to - and we should have really had the releases out of the dam for this sort of thing but if you went down to, say, the Lowood - is it the Lowood - Lowood - the Lowood sort of plot, that will let you actually see the release there with it. That's the levels. You will need to go-----

MR O'DONNELL: Can I make a suggestion?

COMMISSIONER: Yes.

MR O'DONNELL: There is a convenient summary of this in the flood report in appendix A. If your Honour would have a look at that.

COMMISSIONER: Thank you. Okay.

MR O'DONNELL: There are two summaries at the start of appendix A, a summary of the without forecast and the summary with forecast. If you look at the summary with forecast, it doesn't include all of the model runs but it includes under the model run what's going to be the peak outflow and includes what on this forecast will be the peak level of Wivenhoe Dam. So if your Honour looks at the one - let's take Monday the 10th at 9 a.m., if you count across underneath the column Wivenhoe, the predicted peak is 74.7 and the predicted outflow is 2,860 CUMECS.

COMMISSIONER: All right. Thanks. I suppose my next question then is, Mr Ruffini, how do you arrive at the predicted peak outflow?-- The predicted peak outflow, there is the two things that in this particular - that you are considering is that flow at Moggill, like your target - you know, whatever that - you know, whatever the particular target objective is that you are doing.

Is this the Wivenhoe figure which will achieve that-----?-- Yes, yes.

Thanks for your help with that. Thanks, Mr O'Donnell. Yes, Mr Rangiah?

MR RANGIAH: Now, can you just for a moment clarify what is the document that you are looking at?-- I am sorry, this is just that summary spreadsheet - sorry, this one?

No, no, the large spreadsheet that you have got?-- This is the one that - who gave it to me?

So-----?-- Sorry, this is the summary sheet that Rob prepared in his evidence, I think.

So does it say schedule 1A on the top?-- It says-----

Top left-hand corner?-- Yes, it does, that's correct.

All right. But that shows, does it, that there were two model runs at 4 and 5 a.m. on Monday?-- It's got run 24 and 25, yeah.

And those two do show, do they, predicted lake levels using forecast rainfall?-- Yes.

All right?-- With this sheet, yeah.

And what was the predicted lake level on model run 25 with forecast rainfall?-- 74.5.

And were there any more between then and, say, 6.30?-- No.

What was the next model run - what time was the next model run that showed a predicted lake level on a with rainfall basis?-- 9 o'clock.

What did that show?-- Sorry?

What level did that show?-- With rainfall?

Yes?-- 74.5.

All right. Thank you. So, it is the case, isn't it, that from about 1 o'clock on Monday morning, that's the 10th of January, you were getting consistent readings - I'm sorry, consistent predicted lake level readings of over 74 metres?-- The runs - the runs were - from that time on were going over 74 with that release schedule, yes.

I should make it clear, that was on a with rainfall forecast basis?-- Yes, yes.

If you had taken into account those levels, then one option for you would have been to increase the flows within Strategy W3 but to a level of up to producing a flow of 4,000 CUMECS at Moggill?-- But then the release discharges, as you see, wouldn't have been much different.

Why do you say "as you see"?-- Well, the peak discharges are not that much - between the two are not that much different, but - sorry, I shouldn't - yes, yes.

Would you agree that if at that stage the rates of release had been increased, then the peak release rates could have been lower on the Tuesday?-- They perhaps could have been a little bit lower, but it depends. Once you'd gone over that 74, the issue we had with that rainfall was just - in the Tuesday, from that Tuesday morning forward, was there was just such intense rainfall, so you would have quickly gone over EL74 regardless of what you did here, and then we would have had to open up to equalise that peak discharge and stabilise the lake levels, and so within those timeframes, we probably would have ended up with a pretty similar discharge, I would think, maybe a little bit lower, but it was - the thing that drove that actions on the Tuesday morning was the intense rainfall that fell over the dam, the immediate dam area into the thing, and

it's, you know, also indicated if you go over the range to sort of North Pine we see in that 350 square kilometre catchment where we almost got the 3,000 CUMECS come in, that it was a big event, the rainfall analysis that we have got in there shows it was a pretty large and unusual event. So, in part, they - you know, I would think that by the time we got to the Tuesday, as soon as we get over the 74, we're into that sort of area where we're having to - we're having to sort of equalise - equalise the discharge that's coming in.

And when you say "got into the 74", you mean on an actual rainfall basis?-- No, I am just saying in operational terms, once you are over that 74 level and you have got the flow coming in to the dam and you have got that flow increasing and rising, then the procedure is that you need to, you know, match - you know stabilise the rise in lake level as quickly as you can, such that inflow is matching outflow.

Yes?-- Because the inflows, which were - you know, gone up to, you know, 11 and a half thousand CUMECS were coming in to the dam, we still would have been facing that scenario, I believe, on the Tuesday.

But you ended up with releases of up to about nearly 7,500 - sorry, 7,464 at the peak on Tuesday at 7 p.m.?-- Yes.

And you agree that to some extent-----?-- It would have been - it would have been a little bit lower, yes.

And another option, I'm suggesting to you, although I understand that you have a different interpretation of the procedure required, but I'm suggesting to you that you are required to take into account under the manual the predicted level of Wivenhoe on a with rainfall basis and that was a factor that might have resulted on the Monday of moving to W4?-- I don't have that view.

Can I take you to attachment JLR11 to your statement?-- JLR?

11?-- Yes.

That's the Flood Event Log comments?-- Yes, yes.

And is it the case that what you have done here is you have taken extracts from the Flood Event Log and then annotated those with your own comments?-- Yes, that's correct.

And if you go to Monday at 12.55 a.m., and this is the entry that records that, "Engineer 3 confirmed that if flows were kept below 3,500 the fuse plug would be triggered.", now, you say - I'm sorry, I will just - I will ask that a different way. Is it the case that you can't recall whether you said or didn't say that?-- That's correct, not specific - my recollection, as I said, of the - as I - I have already been asked this question. Will I answer it again? The - what I said was that my recollection of that, and it was about the situation report, the one that had gone out which had - where we'd mentioned urban damage in it, the - I had a call from

Ken Morris at Brisbane City Council, and Ken said, "Look", basically, you know, "that's not right because"-----

I'm sorry, sorry to interrupt you, but I am really only asking you whether you can recall what you said that or not, rather than asking you to repeat the answer that you gave before?-- I didn't write that statement down.

Yeah?-- That was written by the thing and I don't recall saying it as it is recorded there.

Right. But there was somebody who was typing down notes of conversations, was there?-- Yeah, he was typing down our end of the conversation, yes, and, as I said, look at the situation report that I put out five minutes after that call was taken, which has my formal advice to Rob Drury who had made that call to about what I thought the situation was at that point in time.

Now, I need to take you to another entry in the Flood Event Log. It's not contained in those extracts?-- Yes.

But if you have a look at the report, the Flood Event Log that's attached to it, there's-----?-- Sorry, which one is this?

If you have a look at the full Flood Event Log?-- Have you got a page number for me?

Look, I'm sorry, I don't have a copy of it in front of me so I can't give you that, but I am asking you to go to Sunday, the 9th of January at 7.15 p.m.?-- Sorry, I'm just - sorry, what volume - I have just to locate where the volume is, sorry.

It's appendix M?-- Yeah, I just need to find out what report it's in, that's all. Okay. Yes. Now, to?

Sunday, the 9th of January?-- Yes.

See an entry for 7.15 p.m.?-- Yes.

And can you just read that entry out?-- "FOC called Seqwater CEO advising him" - "Flood Operations Centre called CEO advising him that high rainfall is expected overnight and releases from Wivenhoe causing damaging floods are likely to be necessary."

Sorry, I don't have it in front of me, is there a reference to 7.15 to "increasing to 3,500 by midnight"?-- Yes, the, "Flood Operations Centre called Dam Safety Engineer advised him that Flood Operations Centre is now looking at much higher flows and will have to ramp up to 3,000 CUMECS as by as early as midnight which is likely to have flooding impacts on low-lying areas of Brisbane."

And you were on duty at 7.15 that night?-- I'd have to check the thing, but - is that within my shift? If it is, yes.

All right. I can tell you that you were, according to your statement, and-----?-- That's it, yep.

Do you recall-----?-- Is the - have we got the - does it say in the - is it just the FOC in that? Like, I know Rob - there was an unmodified version that had names in it, whether that was me or not.

No, it only says FOC?-- Okay.

What I was going to ask you was whether it was you who had that conversation?-- Could have been, I don't know. I would have just come on shift or whether it's a person who's just going off shift that makes that call, I am not sure.

But you don't have any recollection of saying that?-- No, but it could have been me, yep, it could have been me.

Thank you. I have nothing further.

COMMISSIONER: Thank you. Mr Dunning?

MR DUNNING: Mr Ruffini, can I first of all, please, start with this issue of the reference in the manual to 4,000 CUMECS being the upper limit of nondamaging flow rates in Brisbane. You are aware of the fact that an issue has arisen about that reference in W3?-- Yes.

Do you have a copy of the manual in front of you?-- Yes, I do.

Can you turn that up for me? It's Exhibit 21 for those people following. Now, that manual is revision 7 and we see from your statement, paragraph 45 to 46, that you were involved in the preparation of that revision?-- Correct, yes.

All right. And the persons involved were yourself, the other FOC members, and some persons with dam safety responsibilities; correct?-- Yes.

Some other people who are interested in the results of its use were also involved in a wider consultation group. The group that were advised were the ones I have just described?-- Yes.

Thank you. Now, at the time that you revised it, that is those members responsible for its revision, were aware of a 2007 damage report that had been prepared by the Brisbane City Council?-- Yes, I had seen that report.

Thank you. And its contents were considered in determining what if any changes ought be made to this revision?-- That's right, yes.

Thank you. Now, can I ask you, then, please, to go to page 28 of the manual and you will see there under the box a

reference, "The intent of Strategy W3 is to limit the flow in the Brisbane River at Moggill less than 4,000 CUMECS.", and then critically these words, "Noting that 4,000 CUMECS at Moggill is the upper limit of nondamaging floods downstream."?-- Yes.

All right. Now, when you came to revise W3, the decision was made in knowledge of what was contained in the damage report to nonetheless maintain the upper limit of W3 at 4,000 CUMECS?-- That's right, yes.

All right. And the reason for that was, I suggest to you, that what yourself and your colleagues determined was that whilst you appreciated that would involve some damage and flooding in Brisbane, it would be limited and that was really the tolerable limit that you would go to in an endeavour to remain within W3?-- That's right, and it was consistent with other curves that had - similar curves that had been produced in the past.

All right. Thank you. And it's the case, isn't it, that within any of these strategies, the aim is to keep the release rates as low as possible?-- That's right.

Now, can I then suggest to you that in so much as there's any difficulty in expression in relation to W3, it's merely those words that appear after the comma in the second line, and that it should either be a reference to 4,000 CUMECS being the lower limit of damaging floods downstream or, alternatively, 3,500 being the upper limit?-- That's right, yes.

Now, that lack of felicity in expression, it had no impact in the operation of this flood event, did it?-- No, I believe it didn't.

All right. Thank you. Can I then, please, turn to another topic, and that is the removal of the reference to 3,500 CUMECS being the upper limit in the Situation Report of 9 January, the evening of 9 January. You are familiar with that issue?-- Yes.

All right. Thank you. Sorry, I misstated that. It appeared in the Situation Report on the evening of 9 January?-- That's right, and in the one that I prepared just after midnight we'd taken it out.

That's right. You took it out as a result of discussions with representatives of the Brisbane City Council at some time approaching 1 a.m. on the 10th?-- That's right, yes.

All right. Thank you. And that was as a result of somebody from the council bringing to your attention that the figure that had been nominated, 3,500, in the previous Situation Report was inaccurate in the one you were proposing to issue?-- That's right, and it was from the - the responsibility for providing that sort of information lay with council and not with - we didn't want it to be confused in this Situation Report.

Certainly. So, what they all said was directed, in effect, attention to the fact there was a protocol now in place that ensured each agency dealt only with those topics that were specifically germane to its area of responsibility?-- That's right, yes.

And when that was brought to your attention, you were in agreement with that?-- That's right, yes, I was.

All right. Thank you. And can I, then, suggest to you the tone of the telephone call and its content were throughout professional?-- Yes.

And the matter that had been raised with you was not only important for the protocol, but ensured that the information that was issuing from the FOC was robust, accurate and consistent?-- That's right, yep.

Thank you. Can I, then, please, turn, finally, to the issue of the decision to remain at a release rate of approximately 2,000 CUMECS in the morning of 9 January? Now, you are familiar also with this issue?-- Yes, I am. I wasn't on shift during that, but yes, I am familiar with it.

Sorry, I might have said 9 January. I meant to say 10 January obviously?-- Yes.

In fact, you'd gone off shift early in the morning, that is around 7 o'clock-----?-- That's right, yes.

-----on the 10th of January, and one of the last things you had done was to have issued Wivenhoe Directive 9 which would have achieved, when fully executed, a flow rate of 2600 CUMECS; correct?-- That's right, yes.

Now, you are aware of the fact, aren't you that not long after your colleagues, Messrs Tibaldi and Malone came on shift, as a result of some work they did they resolved to issue Wivenhoe Directive 10, which was to give effect to some of your earlier directive, but not the balance of it. So, in effect, it was to maintain a rate of around 2,000 CUMECS?-- That's right, yes.

And it's your understanding that was informed, at least in part, by what was understood of the upper limit of nondamaging flows for urban areas of Brisbane?-- That's right. They had done some modelling and thought they could try to minimise the flooding a bit more downstream by, you know, taking those actions.

Now, would you agree that was a decision, given that in effect countermanded part of the decision you made, that was a decision that was in every sense open to them on the information available?-- It - it seemed reasonable. We had a look at it when we came in, yes.

And when you came in, you considered it to be consistent with

a proper attempt to execute W3?-- Yes.

All right. Thank you. And in so much as it was informed by information that had been provided by the Brisbane City Council, it reflected the sort of interagency cooperation and sharing of intelligence to produce the maximum overall response?-- Yes.

Yes. Thank you, Mr Ruffini. That's the cross-examination.

COMMISSIONER: Thank you. Mr Flanagan?

MR FLANAGAN: Mr Ruffini, on the 11th of January 2011, you finished your shift at 7 a.m. in the morning; is that correct?-- Yes, if that's what - yep.

And you came in to assist between the hours of 1 p.m. and 7 p.m.; is that correct?-- Yes.

Will you take it from me that in that time 10 directives were issued in relation to the releases from the Wivenhoe Dam?-- Yes.

In respect to those releases, did you personally do any modelling that led to those directives being issued?-- I'd have to look at the time - that's between-----

You were there from 1 p.m. to 7 p.m.?-- This is on the-----

11th of January 2011?-- No.

All right. To your knowledge, was that modelling undertaken by Mr Malone and Mr Tibaldi?-- They were - on the Tuesday morning - on the Tuesday morning then, I know that Terry and John were trying to get the modelling, having a lot of difficulty because the rainfall wasn't - it wasn't actually being - all the rainfall that was happening wasn't - wasn't being picked up and they were struggling with it. The Bureau too were having a lot of problems in actually getting - because the rainfall wasn't being picked up and gauges to get that - to get that thing to work - work properly, yeah. So, they were struggling with it for sure.

Did you find that out by discussing the modelling being undertaken by Mr Tibaldi and Mr Malone at the time?-- When I came in, I guess I went off shift in the morning, went home, had a kip, then got the - got the messages when I woke up, checked my mobile and said - you know, kind of wondered - wondered what the hell had happened in the intervening hours that I'd been asleep, and got myself into the Flood Control Centre and - you know, probably took me an hour or so to get my head around exactly what was happening.

In any event, you didn't do the modelling yourself?-- No.

Thank you, your Honour.

COMMISSIONER: Thank you. Mr MacSporran?

MR MacSPORRAN: I think I am further down the list, your Honour. It's my witness.

COMMISSIONER: Is Mr Ruffini not employed by Seqwater?

MR MacSPORRAN: No, he's a DERM employee.

COMMISSIONER: He's a DERM employee on secondment of some sort?

MR MacSPORRAN: Yes.

COMMISSIONER: I see. Thanks. Mr Ambrose?

MR AMBROSE: We have no questions.

COMMISSIONER: Mr Telford?

MR TELFORD: No, your Honour.

COMMISSIONER: Ms McLeod?

MS McLEOD: No questions.

COMMISSIONER: Mr O'Donnell?

MR O'DONNELL: You were asked some questions about changing between strategies?-- Yes.

And particularly changing to a W4 strategy?-- Mmm.

And I'm interested in that area. One of your answers was you'd want to be pretty sure you are going to get to 74 level before you changed to a W4 strategy?-- That's correct.

Could you explain why that is, please?-- A W4 strategy, in essence, sort of - you have got to start to match the flows that are coming in there, so, you know, if you are going too early on that, then you could - chances are you may exacerbate flooding downstream if the flow doesn't arrive or doesn't keep going in the direction you were thinking its going in. So, it's a pretty serious thing to contemplate, going to that strategy, so you want to be pretty sure of yourself that you're actually going to get there, because if you started at - you know, if you went on a prediction and you started, you may not even get to 74 EL.

You say "if you went on prediction", you mean like went on a prediction of rain yet to fall?-- That's right.

And then the rain didn't fall?-- That's right.

You may have caused flooding in Brisbane which-----?-- Yeah, unnecessary flooding in Brisbane.

Which turned out to be unnecessary. So, it was part of your thinking that going to a W4 strategy, because of the seriousness of the consequences, was something you should only go to if you were very, very confident that the level will actually cross the 74 line?-- That's right, and plus I was conscious of the southerly movement of this system and the southerly movement of the system in terms of the rainfall - you know, the rainfall falling on Brisbane and once you - once you lose control of the water, once you open up and let it out of the dam, you can't pull it back. So, own when you have got a system that has generated big bits of rainfall and it is moving south, you want to - and we did have some of the - some of the products were showing, not - the QPFs don't deal with Brisbane, but some of the WATL and some of the ACCESS modelling was showing, you know, that rainfall going over Brisbane, so we'd want to be pretty certain to make that call.

Do you mind just explaining for those of us who don't follow these thing what's the significance of the rainfall system moving south and the rain perhaps going over the Brisbane?-- Well, if the rainfall falls over the south and it doesn't - because we didn't really have - the stuff that fell on the Tuesday wasn't predicted, you know. Even the stuff that we had just before, it really wasn't saying-----

Right?-- -----that volume and that intensity was going to fall, but-----

Try and keep to my question. We are talk about rainfall heading south. Now, does that mean downstream of Wivenhoe?-- Downstream of Wivenhoe, falling on the catchments below Wivenhoe.

So what happens if that occurs and you have moved to a W4 strategy?-- If we have moved to a W4 strategy and we have released the water out already, then there's nothing we can do about it. It will combine with that downstream flooding to make the flooding worse in Brisbane.

So, you could exacerbate the flooding in Brisbane by moving too early to a W4 strategy?-- That's correct.

Was that part of your thinking?-- That was part of my thinking.

Over what period before you actually moved to the W4 strategy?-- Well, in the period leading up to the - in the period leading up to the - you know, probably about 24 hour period before we moved to it, yes.

All right. You said also as to what's the consequence of moving to a W4 strategy?-- Yes.

Can I ask you about your - your understanding based upon the manual, as you understood it, during the flood event. What do

you understand would be required once the engineer said, "right. We're in W4."?-- Well, the - that's when you start to have to match the flows that are coming in to the dam, you want to stabilise the flows and stabilise the levels, so, you know, becomes - I think it becomes a tricky exercise if you initiate that before you have actually hit that elevation 74.

Can I just expand on your answer to make sure we're not as cross-purposes?-- Yes.

Do you mean by that the engineer in charge has to increase the releases from Wivenhoe to the point where the releases exceed the inflow?-- Well, if you don't do that you are not really moving to a W4, you are pretty much still in the same strategy, yes.

Is that, as you understood it, what a W4 would require?-- Yes.

You would have to increase the releases to the point where the releases exceed the inflows so the lake ceases to rise?-- That's right, you are going - you want to stabilise and bring that level down, which is the whole purpose of writing that. Now, as I said, that interpretation has become quite complex when you are not over that elevation.

All right. Now, you were asked by Counsel Assisting a number of questions about the model runs. He was asking you about the with forecast model runs, remember? What he said to you was from about the Sunday evening, the evening of the 9th you had a consistent pattern of model runs where the blue line for the Wivenhoe lake level was over 74?-- Yes.

He was asking as to essentially should that have prompted the engineer on duty to have moved to a W4 strategy much earlier than occurred. That's the area I would like to explore with you a little bit more if I could?-- Okay.

I would like to look at the actual situation?-- Uh-huh.

Get some specific times while you were on duty. Can I ask you before we get to specific times, is it right to say that your understanding was that the question of moving to a W4 strategy was a judgment call for the flood engineers on duty?-- Yes.

And a judgment call in which they had to decide what weight to give to different pieces of information then available to them?-- Yes.

And did you accept that the with forecast models was included amongst that information?-- It was part of the consideration. As I sort of said, we - we went with the no rainfall, but yeah.

But it was a judgment call as to what weight to give it?-- That's right. And we determined that the no rainfall one was - we considered more robust.

And was the weight to give to the with forecast prediction informed, at least in part, by the seriousness of the consequences of moving to a W4 strategy?-- That's right, yes.

Now, can I take you to some specific times, please? Could the witness see Exhibit 22, the folder of model runs, please? And

you will also need the flood report, particularly volume 1?-- Yes.

COMMISSIONER: Mr O'Donnell, can you try and bellow a bit because I think they are having trouble hearing you up the back?

MR O'DONNELL: Yes, your Honour. I am looking at the model first at 4 a.m. on Monday the 10th?-- Yes.

It is run 25?-- Uh-huh.

And the model shows the lake level at Wivenhoe with the blue line above 74 - looks to be about 74.5?-- That's right, yeah.

And can you accept, without me taking you to it, that similar modelling had been done since about 7 p.m. on the Sunday night?-- That would be right, yep.

So there were a series of model runs over Sunday night and the first half of Monday morning showing a consistent pattern of the blue line over 74 but the red line under 74?-- Yes, that's right, yes.

Could we look at what's the situation at Wivenhoe at that time. Can I ask you to look at the flood report in volume 1 at page 157? I ask you to go towards the end of your shift. You finish your shift at about 7 a.m., page 157?-- Yes, uh-huh. Right.

If we look at the 10th of January, maybe if we go 6 a.m. just before you finish your shift?-- Uh-huh.

The level of the lake do we see as being 70.96?-- Yes.

So we could say roughly 71?-- Yep.

If we look over to the right-hand columns, the total outflow is then 1,806 CUMECS?-- Yes.

And the inflow is 9,312 CUMECS?-- Yes.

So at that time the lake has about another three metres to rise until it crosses the 74 threshold?-- That's right.

You are currently then in strategy W3?-- That's right, yep.

And you are working on keeping within 3,500 CUMECS at Moggill in light of the advice from the City Council-----?-- That's right, yes.

-----at this stage. And you have got a situation report at about 6.30, you may wish to look at to refresh your memory as to the circumstances operating at that time?-- Yep. Yes.

What I want to ask you about is your judgment in that situation of whether to move to W4 at the end of your shift on Monday morning at 7 a.m.?-- At that time I didn't think it

was a W4 situation, no.

Right. Well, let's say that Counsel Assisting the Commission is standing there with you in the Flood Operations Centre and he is saying, "Look, you have got a consistent pattern of modelling showing that on the with forecast modelling the blue line is consistently over 74. We need to move to W4 now. Not wait for the rainfall, now we should move."?-- Yes.

What would be your assessment in that situation?-- I would say no. What would we do if we now said, yes, we're now in W4?

Well, why would you say no? Why would you say you are not moving to a W4?-- I would not - because at that point in time we have got a fair bit of inflow coming in and we've still got storage available within the flood storage.

Do you mean by that the difference between 71 and 74?-- Yes. Between that and the trigger of 74.

Yeah?-- So if we move to a - and we have - at that particular point in time we have still got the southerly movement of the system. So to - really, to move to a W4 we're saying, okay, we're going to start cranking up releases out of there. So we're going to start to bring on damage earlier in Brisbane and we're going to do that into the face of a system that's moving south. And in the W4 we're going to have to probably start to - opening up to match the inflows and stabilise the inflows, which is sort of the - I guess the key crux of that process. So, yeah, it would be a challenging thing, I think, at that point to move to a W4.

If you did move to W4, what sort of releases would you have to begin making?-- Well, under the W4, you don't have the constraints on the releases, so you would start to move quickly to equalise the inflow.

So what sort of rates? Can you tell us figures by reference-----?-- Well, by that point in time what did we say the inflow was?

COMMISSIONER: I think it was about 8,933 at 6 a.m.?-- Yeah, well, you would have to start to crank up towards that. So that sort of level, yeah.

MR O'DONNELL: That would involve a release that was higher than the maximum release that occurred from Wivenhoe during the whole flood event, wouldn't it?-- Potentially if it didn't stabilise, yes.

And with the downstream inflows from Bremer, Lockyer and other sources of the Brisbane River, what's the likely consequence within Brisbane?-- You possibly could have got a worse outcome for Brisbane.

More flooding, you mean?-- Yes, but you would have - you would have to look at it. We would have to look at it and see

what was happening, yes.

So even with hindsight, do you think you should have moved to W4 at this time because of that consistent pattern of with forecast modelling?-- No.

Do you want to expand on that?-- Well, I don't think this is justification at this point in time to move to a W4, no.

Could we progress on in time?-- Yes.

Now, during - you are at 7 a.m. on Monday. Let's progress on during the day on Monday. You can look at a model run if you want to but I think you will find a consistent pattern on the Monday of the Wivenhoe Lake level, blue line being above 74. Now, you weren't on shift - you weren't at work during Monday?-- No.

Can I nevertheless ask you to comment on whether that consistent pattern of with forecast rain should have led to that W4 decision earlier? You will see on the flood report at 157, the hour-by-hour breakdown of the rise in the lake level?-- Mmm.

And the hour-by-hour breakdown of what was the releases from the dam compared to the inflows to the dam. You start your next shift at about 7 p.m., don't you?-- That's right.

By that time the lake has risen to just under 73 metres?-- That's right.

The outflows is about 2,400 CUMECS?-- That's right.

And the inflows is down to about 5,286 CUMECS?-- That's right, uh-huh.

The state of the inflows, do we see, during that Monday the 10th, had risen pretty much during the day until about midday when it reaches a high point. Then the rate of inflow began dropping, didn't it?-- That's correct.

And it drops from about 9,000 CUMECS at midday to about half of that-----?-- That's right.

-----by about 7 p.m. when you start your shift?-- That's right, yep.

So when you start your shift, the lake level's around 67.3. The rate of inflow has dropped, the rate of outflow has increased, but you have still got that consistent pattern of the blue line on the lake level being above 74?-- That's right.

Now, should there have been a movement to W4 at that stage?-- No.

Can you explain why you say that?-- Well, at that point we're in control, we're in control of the flood. We're still

reaching - on the forecasts we've got we're still reaching, you know, being able to manage - manage that flow, increasing above those sort of releases that we had would once again - you are starting, you are running that risk of creating damage downstream that you don't have to do, and you have to, you know, start cranking up flows again if the flow went up.

But if Counsel assisting was standing in the room with you, he would say, "But we've got this consistent pattern of the blue line, so we're now at 73. Because of that consistent pattern you can now be confident or sufficiently confident that we're going to cross 74 so we should move to W4 now."?-- Well, I didn't think at that stage there was a case for doing it.

All right. Is there anything else you wanted to point to? Do you want to look at your situation report or anything else to indicate what was happening at the time to assist you?-- At that stage we're trying to minimise the urban impact, keep it below 4,000. So, as I sort of said, if you wanted to start increasing flows above what we were, that would mean you'd start to be creating the damage downstream.

Can I direct your attention to something else as well, please?-- Yeah.

If you look in the flood report, volume 1?-- Yes.

In the summary at page 21?-- Yes.

See this is dealing with the same time period I have been asking you about, Monday up until about 8 p.m.?-- Yes.

If you look in the right-hand column, the fourth dot point?-- Reduced rain, yep.

I was particularly going to the reference to contacting the Dam Safety Regulator for permission to exceed the 74 level?-- That's right, yes.

Without invoking W4?-- So at that period of time we made a call to Peter Allen to just sort of flag with him that, you know, because we were trying to manage that 4,000 target at Moggill, and sort of at that stage we were thinking that perhaps by - that it is a little bit touch and go on whether we go over 74, and we said, "Look, if we - if we only go over 74 for a short period of time and only by a little bit of elevation, would that be - would that be a thing, if we put it to you, that you consider as a reasonable decision to handle - you know to stop the flooding in Brisbane." Peter sort of said, look, in principle that he wouldn't - he would agree to that but that would have to be closer to the point of - we didn't actually get approval at that point in time, but we just saw it as a thing to sort of say, well, is that a reasonable thing to do, so yeah.

So was part of your thinking then as long as there was a prospect of avoiding a W4 situation and releases which would cause flooding in Brisbane-----?-- That's right.

-----you wanted to keep that alive?-- That's right, yes. We were trying to keep Brisbane safe.

Is that reflected in the last dot point in the right-hand column?-- That's right, yes.

Finally, if I could take you to early the next morning, the Tuesday morning the 11th. You are on duty. There is a couple of model runs, I think, at 3 and 4 a.m., and this shows the red line - I think at 3 a.m. the red line just lines up with 74. At 4 a.m. it just nudges over 74?-- That's right.

Now, if you want to look at your situation reports to refresh your memory on the circumstances, feel free?-- Yes.

Now, again, the question should you have gone to W4 at that stage. If Counsel Assisting was in the room with you, he can say, "Well, mate, I have been telling you for 36 hours you have got this pattern of the blue line over 74"-----.

MR CALLAGHAN: I object to the repetitive nature in which I'm being drawn into this personally. It is inappropriate and, for what it is worth, it is inaccurate. It doesn't reflect any position that I have actually put and I would ask counsel to desist from doing that.

MR O'DONNELL: I was only speaking hypothetically. But let's assume someone is in the room with you saying you have had this persistent pattern of a blue line over 74, now you have got the red line nudging or just going over 74?-- Well, we're still trying to hold on, if we can, and meet that downstream objective, but it is now - you know, we're now flagging that, you know, that's becoming increasingly more challenging to do so.

What's the lake level at this time? Can you look at that, please?-- The lake is 73.5 and rising.

So you have got about half a metre left?-- That's right.

What's the rate of inflows? Do we see that on page 158 of the flood report?-- Sorry-----

158?-- Yes. So this is at-----

We're looking on the 11th at about 3 and 4 a.m.?-- Okay. Total inflow at that point in time at 3 o'clock is 4,388.

So did that influence your thinking that the rate of inflow was around 4,400 CUMECS?-- Yes, in a sense, that's where we started to flag that things are changing in the report. We're starting, you know, to get a scenario where we're going to hit the 74 and move to the next procedure in terms of the - in terms of, you know, "Further rainfall, dam releases may need to be increased further and this may result in river flows in lower Brisbane exceeding 5,000."

But in your view you're not there yet?-- No, because we haven't - you know we haven't hit the 74.

And the rate of inflow is much less than it had been over the previous 24 hours, isn't it?-- That's right. And we hadn't really - at that point in time when we did that, we had that big block of rainfall that hit the dam that went from that sort of 6, 7 o'clock forward period, hadn't really started hitting - because this 6 o'clock situation report didn't - hadn't sort of seen that bit of rain come in yet.

Is the major difference between the decision at 3 and 4 a.m. and the decision at 8 a.m. not only had the lake level risen a little bit more by 8 a.m., but also the rate of inflow to the dam increased substantially?-- It is the rate of inflows and the intensity of that rainfall that is starting to fall in the catchment was the thing that determined it at that particular point in time.

Do we see the rate of inflows at page 158 increase from around - from 4,000 CUMECS it went up to about 8,000 CUMECS over that four or five-hour period?-- That's right.

All right. You can close that up, thank you. Can we leave the past aside for a moment? You were asked some questions about what should be the practice in the future regarding the extent to which flood engineers rely on with forecast modelling. Can I ask you about that for a moment?-- Yes.

So forget about what the manual says at the moment. If we asked ourselves what should the manual say for the future, would south east Queensland's best interests be served by a manual which required the flood engineer to make decisions based on with forecast modelling, or do we adopt the current practice? Could you give us your views on that, please?-- I think it would be dangerous to sort of say that, you know, you have to - you have to use this forecast and you without - without any scope for rejecting it as a good idea. So I still have reservations about the accuracy of the forecasts in being able to use them in making those sort of operational determinations.

So do you think the public's interests are best served by the current practice of the flood engineers?-- Yes.

Could you explain why that is?-- Because the forecasts at the moment - as I sort of said, I think you are going to get - the accuracy of them isn't good enough to rely on. I think the way the no rainfall forecast stuff does is you get a general sort of movement through. The forecast stuff, that if we'd done it earlier we would have been releasing higher flows and more damaging flows earlier, and I don't necessarily think that would have given a better outcome.

Well, would you say there is a particular need to continue the current practice if you are considering moving to a W4 strategy because of the drastic consequences of that?-- Yes.

Because it is likely that moving to W4 will entail urban damage within Brisbane?-- Well, W4 will entail urban damage, yes, it will.

It is more a sort of last resort when the safety of the dam is at risk that you move to that strategy and bear the consequences of flooding people in Brisbane?-- That's right. And in changing - the flood objectives are competing objectives, you know, they compete against each other, and you could, you know, just in broad terms - in broad terms, that specific thing if you try - if you want to sort of say let's change some rules so we get water out earlier and sooner, and if the forecasts aren't as good, then you end up with some blunter tools and rules to get water out earlier and faster. The danger there is that you may sort of - some top level people that got flooded this time mightn't get flooded - if you had exactly the same flood they mightn't get flooded, but what will happen is the people who didn't experience flooding in the '99 event and earlier events, you would have more frequent low level flooding. There isn't a free lunch, there are trade-offs between them in sort of changing those sort of objectives. So, look, the manual needs to be reviewed and you need to look at all these sort of things. Now, including having a look at the forecast robustnesses, and if you want to do that and see in a constructive way whether it does ultimately produce better outcomes or not. But, you know, at this point in time sitting here, in my experience in using these forecasts and looking at them and examining them, I just haven't seen that that's in there. And in talking to the bureau guys and that, they share a similar sort of view.

Such as Peter Baddiley from-----?-- Yes, Peter.

The manual's reviewed every five years?-- Yes.

If-----?-- And after - you know, after a major event like this as well, yes.

Sure. If the reliability of the forecasting of rainfall, particularly forecasting for specific locations and intensity were to improve significantly, is that something that could then be taken into account in a five year review of the manual?-- That's right. And I think that, you know, we will see that technology improve, you know, over the next, you know, little while.

Could I ask you about another matter for the future?-- I think you could extend that to say, well, why upgrade a gated dam spillway if the forecast is so good and have such a good thing, then we can just start releasing whenever and we don't have to upgrade the spillways. So it is a - you know, it is how much reliance you want to place on them.

All right. Can I move to something else, again concerning the future? So we're looking at what changes should be made to the manual so as to best serve the public. One change that was proposed to you was introducing strategy somewhere between W3 and W4 - call it 3A - which was along the lines that if you

have rises in the level of the dam but the dam is short of the 74 level, you could move to a strategy which allowed increases more than 4,000 CUMECS at Moggill, sort of an interim strategy before you get to W4?-- Yes.

Which would give the flood engineers a wider discretion?-- Well, yes, possibly.

I wanted to ask you about the wisdom of that course?-- I'd want to test that against all the historical floods, all the designed floods, also look at the - you know, you'd want to have that in terms with your general operational storage uses and you'd want to do the simulations to determine that, you know, looking at your overall risk profiles that you are trying to manage that this - that, indeed, would give you a better outcome. So, I'm not going to dismiss it out of hand, but I think it's - with all these things that you probably need to test them properly before making a determination of what - there's been a lot of thought and time and - not - in quite a number of man years of studies gone into the current rules and you'd want to re-do a fair bit of that work to look at how those these things fit in with that, within that context.

Right. Can I ask you about another aspect of this? Is part of the thinking behind the rules at the moment to give the flood engineers during a flood event a reasonably concrete set of strategies to follow; in other words, reasonably concrete, defined rules?-- I like to think it gives you some guidance on when you shift between objectives, you know, because they are competing objectives, so it tries to define and gives you some guidance about when is the best time to shift between those - those objectives.

Has part of the thinking been that if you don't have the sort of clearly defined objectives or rules as to shifting between them which you have in the manual at the moment, the flood engineers in the flood event are subject to more pressure?-- That's right.

They have an untrammelled discretion, whereas the flood engineers would like to have a more clearly defined set of rules, such as we find in the manual?-- That's right, because all decisions are made will be in - have a risk of not working or going the wrong way or the weather pattern working against you, and having a little bit more structure in it gives you that guidance, but if you - and while in some ways discretion is good, you then are making that - you know, justifying those decisions becomes a little bit more tricky.

In other words, too much discretion can add to the pressures on the flood engineers?-- It would, yes, for sure.

Just a couple of last things. Would you mind look at in the Flood Report - you were asked about a Situation Report at 9.04 p.m. on Sunday, the 9th of January, which I think mentions engineer 2, Mr Malone?-- Sorry-----

Page 21 of appendix E of the Flood Report.

COMMISSIONER: You can just look at the screen, you know, Mr Ruffini?-- Oh, sorry. Thanks. Yes?

MR O'DONNELL: You were asked some questions as to whether you had written that on the basis that Mr Malone's shift ended at 7 p.m. and yours started at 7 p.m.?-- Yes.

Can I show you something in the Flood Report volume 1, page 34, please? See the first entry on that page?-- Yes.

It notes, doesn't it, that-----?-- Oh, yeah.

Sorry?-- "Engineer 2 assisted until 2200.", yep

So, he stayed on after his 7 p.m. shift finished, helping you and Mr Ayre until about 10 o'clock?-- I'd say it's very likely that Terry wrote it then because he was tidying up stuff after the end of his shift, yeah.

Yes. Thank you. Then could I ask you another matter, please? Could you look in the Flood Report appendix A, page 3?-- Yep.

My learned friend, Mr Rangiah, put to you a number of questions about Monday, the 10th?-- Mmm-hmm.

What he said in summary was this, and he was focussing on the with rainfall predictions model, and he said, "The with rainfall modelling showed a consistent pattern of the blue line being over 74 for the Wivenhoe Lake level."?-- Hmm.

On Monday, the 10th we're in Strategy 3, so he says that the rate of releases from Wivenhoe could have been increased to the maximum allowed under Strategy 3 on that day?-- Mmm-hmm.

Now, page 3 gives us a summary of the with rain forecast modelling, doesn't it?-- Yes.

It doesn't give us every model run, but it gives us a selection of them?-- That's right.

Is it right that we see that on the with forecast modelling the lake level for Wivenhoe had reached 74 or above throughout Monday, the 10th?-- Yes.

But if we look over to the right-hand side of the page under heading, "With Wivenhoe.", does it show us that on the with forecast modelling the flow at Moggill is in excess of 4,000-----?-- Yes.

Through Monday, the 10th?-- Yes.

So, if you are relying on the with forecast model, was there any further room to move under W3 strategy so as to increase the releases from Wivenhoe?-- No.

One last topic, you were asked about that call early in the morning of Monday, the 10th, the 12.55 one?-- Yes.

Which mentioned about, "If we keep releases at 3,500 the fuse plug might trigger."?-- That's right, yep.

I can take you to it if you want to see it again, but there was some ambiguity whether the 3,500 was referring to releases from Wivenhoe or flow rate at Moggill. I am not asking you to comment on that, I am just telling you there is. Can we look at the model run done at that time to see what the model run was telling you? Could you look, please, in the model - the model run Exhibit 22. So, there is a summary actually in that Flood Report appendix A?-- Yes.

Page 2, the without forecast one. Model run 23, which is at 1 a.m.-----?-- Mmm-hmm.

-----which is five minutes different from the conversation?-- Yes.

Does that show us that the prediction was, at 1 a.m., that the Wivenhoe would peak at 72.9?-- That's correct, yep.

The predicted peak outflow would be 2,700 CUMECS?-- That's right, yeah.

Producing a peak flow at Moggill of 3,240 CUMECS?-- That's right, yeah.

So, on the modelling that had been done within five minutes of the call, the peak outflow from Wivenhoe would be less than 3,500 CUMECS?-- Yes.

The peak flow at Moggill would be less than 3,500 CUMECS?-- That's right.

And the highest lake level at Wivenhoe would be less than necessary to trigger a fuse break?-- That's right.

By some metres?-- That's right.

So, on that model run, can you see any objective justification for a view that if the releases from Wivenhoe or flow at Moggill was kept less than 3,500 the fuse plug could be triggered?-- No. But as I said, the Situation Report I wrote immediately after that, which is five minutes after that call, reflected what my view at that particular time was.

So, do you think at that time you actually held the view that if releases at Wivenhoe were kept below three and a half thousand or flow at Moggill was kept below three and a half thousand a fuse plug would be triggered?-- No, and if I'd had that view, I would have put it in the Situation Report that I wrote five minutes after that call.

Thank you, Commissioner.

COMMISSIONER: Thank you. I will just my fellow Commissioners if they have any questions.

MR CUMMINS: I have a couple questions, Mr Ruffini. We have spoken at some length about the modelling of inflows to Wivenhoe?-- Yes.

And we have spoken about the - your measuring rainfall, your adjusting the loss rate to come up-----?-- Yes.

-----with inflows and you were matching the stream gauge readings to your actual measured change in storage levels?-- Yes.

You did touch on the question in response - you did touch on it in response to Madam Chairperson's question before about the modelling of the outflow from Wivenhoe. Now, clearly each of these runs shows a predicted maximum outflow. There must be an algorithm built into the model to relate that to something. Could you explain that?-- Okay. I'm not sure if Rob went through this in his testimony, but the - we do the modelling in the system and then we have a spreadsheet that we - where we transfer out the inflow or the derived inflows at the various locations into dams and put them into the - what we call the operational spreadsheet. Now, within that operational spreadsheet we have got all the gate openings and those sorts of - those sorts of things, and that's where we actually put in the - you know, do the release strategy stuff and come up with the - come up with the operation strategies.

So, the model results that we see are post the determination of the strategy?-- Yes, yes.

So, when we see a curve, you have already put into that a release strategy?-- Yes, you have to put in a release strategy to come up with those things, yes.

Okay. That answers my questions pretty well.

COMMISSIONER: Mr MacSporran?

MR MacSPORRAN: Thank you, your Honour. Mr Ruffini, just going back to that flood log entry at 12.55 a.m. on the 10th?-- Yes.

And in respect of the fuse plugs, you have told us that the entry is made not by you, but by an flood officer?-- Yeah, I think it was Bill - Bill might have been on that day, Bill Stephens, yep.

Could that be a reference in error? What you actually may have said was that the fuse plugs would not be blown?-- As I said, I don't - it could have been, yes, but I don't recall.

The person's reporting a conversation they have overheard you having and done their best to make it an accurate record, but clearly you couldn't have said what's recorded?-- No.

It doesn't make sense?-- No.

It might have made sense if it said, "The fuse plugs would not be blown", or, "they would remain intact"?-- That's right, it

could have been that, yeah.

Now, when you were first shown that earlier on, you said you would like to see the Situation Report to see what you had, in fact, recorded?-- That's right.

If we just go to that again for the moment? That's appendix E, page 23. That's the one you made about 1.14 on the morning?-- That's right.

So, a few minutes after your flood log reference, and do you recall then the actual situation?-- That's right.

And what at that stage were the releases? What was the release rate at that stage, can you tell us, by reference to anything else you need to look at?-- There were-----

COMMISSIONER: Aren't we flogging this horse to death, Mr MacSporran? I mean, Mr Ruffini has already said he's pretty sure he didn't say that, it doesn't make sense in context, it doesn't match the Situation Report, is there anywhere to go from that?

MR MacSPORRAN: I have moved past that, your Honour. I was just going to clarify that one point before I move on to this point. I am probably flogging this one to death as well, but I will just see what Mr Ruffini can tell us about this. The actual release rate at that stage?-- It will be in the report.

COMMISSIONER: Can you give him a clue?

MR MacSPORRAN: I think he's coming to it?-- The current release date from Wivenhoe, 1400 CUMECS.

1400, and that strategy - which strategy were you then in at that level?-- I'd have to look at it.

COMMISSIONER: That's just a matter of record.

MR MacSPORRAN: W3, aren't you? You are under W3?-- Yes, probably I - yeah, yeah - yeah.

And you can under W3 go to a maximum of three and a half CUMECS?-- That's right, yes.

About thousand CUMECS?-- Yes.

So, you have to make a judgment as to what level of release you will employ under the strategy you are then in W3?-- Yes.

If you think it's justified, you can go to a maximum under W3 of 3500 CUMECS?-- Yes.

But you didn't?-- No.

And it seems from the Situation Report, one of the things that you seem to have taken into account was the - you say here

under, "Rainfall.", you say, "Rainfall of similar magnitudes is expected in the 12 to 24 hours around the dam downstream catchments as the system tracks south."?-- That's right, yes.

When you say the system is tracking south, you are talking about a prediction of rainfall falling below the dam?-- That's right.

Now, is that a relevant factor for you to take into account when you are looking at what level of release you choose under W3 from Wivenhoe?-- I think that's a consideration to sort of say, well, you know, if you're - at that stage, that level of release and the strategy had in place was going to be - was going to deal with it, so - you know, and we were just flagging that, you know, there was rainfall going down so that would sort of - you know, we would say, well, you know, you are not really wanting to go higher than that at that stage, yes.

Was that rainfall, if it's as predicted, falls below the catchment area, below the dam, you are adding to that with releases from Wivenhoe to?

COMMISSIONER: Mr MacSporran, I am pretty sure Mr O'Donnell's already been here.

MR MacSPORRAN: All right. I will move on. Thank you. Now, with the model that's done, the results were obtained by the model?-- Yes.

They allowed you a lead in time, don't they, to make a decision about where you are going to go?-- Yes.

And what's the significance of that lead in time? What does that allow you to do in terms of taking into account the various factors you have to take into account?-- That just allows you preparation and, you know, people to get ready to - you know, if you have got to close bridges, close bridges, and do all that sort of thing, so it gives - you know, you give heads-up and gives people preparation time.

So, when there's a series, for instance, of modelling that's done with rainfall that predicts a dam level of over or at 74, that is a predicted level obviously some time in the future, isn't it?-- That's right.

So, you still have some time to adjust if that event comes to pass?-- That's right, and, you know, people - and that gives a bit more lead time to councils and things like that that need to prepare for it.

Can I this you this: you are aware of various articles that appeared in the media in the lead up to the Commission commencing its hearings?-- Yes.

In particular, one that refers to an engineers's report, an general near by the name of Mr O'Brien?-- Yes.

You have seen a copy of his report?-- I have read bits and pieces of it, yeah.

Do you agree with the interpretation he places on the events?-- No.

All right. I am not going to take you through it, but have you seen a critique of that report done by Mr Ayre?-- Yeah, I have seen something that Rob's done, yeah.

And what are you able to say about whether you accept or reject Mr Ayre's critique of Mr O'Brien's report?-- Yeah, I generally endorse the comments that Rob's made, yeah.

Thank you, your Honour.

COMMISSIONER: Thanks, Mr Schmidt?

MR SCHMIDT: No, I have no questions.

COMMISSIONER: Mr Callaghan?

MR CALLAGHAN: No questions, as such, Madam Commissioner, but just before Mr Ruffini is excused, I will tender a transcript of interview between Mr Ruffini and Commission staff. Everyone at the Bar table has had access to that for some time, but I should tender it while he's here.

COMMISSIONER: Exhibit 43.

ADMITTED AND MARKED "EXHIBIT 43"

MR CALLAGHAN: And with that, if there is no comment, Mr Ruffini might be excused?

COMMISSIONER: Thank, Mr Ruffini, you are excused.

WITNESS EXCUSED

MR CALLAGHAN: In a similar vein, I am just going to tender another document. A similar interview was conducted with Mr Ayre on the 30th of March. Again, everyone had that - access to that prior to Mr Ayres being called, but I should furnish the record with a copy of the transcript of that interview.

COMMISSIONER: All right. That will be Exhibit 44.

ADMITTED AND MARKED "EXHIBIT 4 4"

COMMISSIONER: Now, anything to be done at 20 past 4?

MR CALLAGHAN: We could swear Mr Malone in and tender his statement. I understand he's here.

COMMISSIONER: All right. If he's here.

TERRENCE ALWYN MALONE, SWORN AND EXAMINED:

MR CALLAGHAN: Could you tell the Commission your full name and occupation, please?-- Terrence Alwyn Malone, I am a principal hydrologist with Seqwater.

Mr Malone, you have prepared a statement on the 25th of March 2011 for the purposes of this Commission of Inquiry; is that correct?-- Yes.

I tender that statement.

COMMISSIONER: Exhibit 45.

ADMITTED AND MARKED "EXHIBIT 45"

MR CALLAGHAN: And there's a second statement that you prepared, which is dated 11 April 2011; is that correct?-- That's correct.

I tender that.

COMMISSIONER: 46.

MR O'DONNELL: I think it's already Exhibit 33, your Honour.

COMMISSIONER: That's right, it went in earlier.

MR CALLAGHAN: But you also took part in an interview with members of the Commission staff on the 30th of March 2011; is that correct?-- Yes.

I tender that copy of that transcript.

COMMISSIONER: 46.

ADMITTED AND MARKED "EXHIBIT 46"

MR CALLAGHAN: That's a matter for you, Madam Commissioner, if we keep going now.

COMMISSIONER: Well, just having got you comfortable, Mr Malone, we will have you on your way until tomorrow morning at 10 o'clock.

Would you adjourn, please?

THE COURT ADJOURNED AT 4.22 P.M. TILL 10.0 A.M. THE FOLLOWING DAY