Transcript of Proceedings

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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 08/11/2011

..DAY 55

THE COMMISSION RESUMED AT 10.02 A.M.

COMMISSIONER: Yes, Mr Callaghan?

MR CALLAGHAN: I think we have some appearances that might be noted. I'm by myself.

COMMISSIONER: All right. So, we still have Mr MacSporran. Now we've got Mr Duffy?

MR DUFFY: Thank you, your Honour. I appear for Arrow Energy Pty Ltd pursuant to leave granted by the Commission.

COMMISSIONER: Thank you. Mr Ure?

MR URE: Local government Association of Queensland.

COMMISSIONER: Thank you. And Ms McLeod for the Commonwealth still?

MS McLEOD: Yes, thank you.

COMMISSIONER: That's everybody? Thanks.

MR CALLAGHAN: I call Graham Cordingley.

GRAHAM DAVID CORDINGLEY, SWORN AND EXAMINED:

MR CALLAGHAN: Could you tell the Commission your full name and occupation, please?-- My name is Graham David Cordingley. My occupation is Manager of Compliance and Reporting at Arrow Energy and currently acting manager - Acting Environment Manager, doing a dual role.

Mr Cordingley, you provided a statement dated the 26th of September 2011. That's a statement with 17 annexures; is that correct?-- Yes, that's correct.

I'll get that shown to you and tender that. That's your statement and the annexures?-- Yes, that's correct.

Yes, I tender that.

COMMISSIONER: Exhibit 923.

ADMITTED AND MARKED "EXHIBIT 923"

MR CALLAGHAN: Do you have a copy of your statement with you?-- I just have a copy of the statement, not the annexures.

That's fine for the moment. You might have clarified one aspect of it when you just stated your occupation. Is that something that you'd like to clear up in paragraph 5 and 6?-- Yeah, my current occupation has been Compliance and Reporting Manager, but also Acting Environment Manager. Just the dates, I guess - from late April 2010 - 2011 to currently I was the Compliance and Reporting Manager.

Was there also something you wanted to tidy up in paragraph 33 and perhaps 35?-- That's correct. The reference to Table 6 should be Table 7 in 33 and 35. And paragraph-----

And-----?-- Sorry?

And in paragraph 33 where it refers to release limits-----?-- Yes, that should be Table 6 that's referred to in there - Table 7, sorry.

Yeah, it was the term "release limits". Is that the right phrase which should appear in that paragraph?-- No, they're Investigation Trigger Levels, I believe, should be referred to.

Okay. Now, Mr Andrew Brier from the Department of Environment and Resource Management has provided a statement to the Commission about the Moranbah Coal Seam Gas Project. I might tender that statement now.

COMMISSIONER: That will be Exhibit 924.

ADMITTED AND MARKED "EXHIBIT 924"

MR CALLAGHAN: The Moranbah Coal Seam Gas Project is in the Bowen Basin; is that correct?-- That's correct.

It's the site being bisected by the Isaac River?-- That's correct.

That's a river which is not always flowing; is that right - what we call an ephemeral-----?-- Ephemeral river, yes.

-----river. I don't think we've yet had a witness speak to the concept of coal seam gas operations. Can you, just for our benefit, give us a brief explanation as to the means - or as to how water is used in the extraction of coal seam gas?-- Okay. It's not my area of expertise to actually get the gas or the water out of the ground, but I can tell you an overview of the process. Basically we release the pressure on the coal seams by dewatering the coal seams; in effect, depressurising the gas, and the wells are designed apparently such that they

separate the gas and the water, the water is brought to the surface and kept in associated water dams. The gas is directed to compress the stations and compressed - and directed to power stations and the like.

So, in the first instance, it's clean water that's used in the process; is that right?-- No water is used in the process, it's extracted. So, the water in the coal seams is generally saline to some degree. It varies depending on where you're pumping from, but the water isn't entered into the process per se.

I see. Is this the process that's known as fracking?-- No.

What's fracking?-- Fracking is a process where the coal seam itself is not capable of producing enough gas, the water doesn't move and the gas doesn't move through that coal seam very quickly. So, from my understanding of that process, they pressurise it with high pressure water and fracture the coal seam so that it can release the water and the gas.

So that's another way in which water is involved?-- Yes, but generally it's associated water or coal seam gas water that's used-----

That's used for that, not clean water?-- Sometimes clean water, but generally it's associated water.

Well, we read in the materials about wells?-- Mmm.

Can you just explain those to us?-- It's not really my expertise area, but the wells, as an overview, are drilled down into the coal seams and screened down in the coal seams for the purpose of dewatering and extracting gas.

Okay. Well, I think you've already mentioned the concept of salinity. That is the issue with the water in coal seam gas operations; is that right?-- That's correct.

We had some evidence yesterday from Mr Laurence about - in his statement he referred to issues associated with underground coal mining which include what he described as sulphide mineralisation. Are you aware as to whether that is any part of the coal seam gas activity?-- No. I'm not aware of any sulphide as a contaminant of concern in our industry at this point, but it would depend on the geology of the area that we were dewatering. That particular mine site might have had sulphide issues.

So far as your concerned, though, salinity is the only issue involved in the water?-- Yes.

And in terms of dealing with the water associated with production, there are different uses made of it. There are evaporation dams; is that right?-- That's correct - currently.

Some of it is reused by farmers or the mine itself?--

Beneficial uses for the water are being sought. With respect to the Moranbah gas project, we do have one beneficial use, being for supply of associated water to Millennium Coal, but there are no other current beneficial uses with respect to providing water to land holders on that tenement.

Associated water meaning water which-----?-- Basically pretreated water, yeah.

Okay?-- Associated water.

And, of course, then there's the option of discharge into the Isaac River; is that right?-- That's correct, but that's for actual treated water.

Treated in what way?-- Through a reverse osmosis plant to remove the salts or the ions to make it a better quality, fresher water.

And is there still some salinity associated with treated water?-- To some degree. You can't remove all of the salt, but, yeah - there is some salinity, but it depends on the water quality objectives you're trying to treat the water to.

So is the only water discharged into the Isaac River water which has been treated?-- No, that's what our EA permits us to discharge.

Yes, okay. We'll come to that. The wet season just passed caused your operation two main problems; is that right? There were safety issues regarding access and concerns about dams overtopping?-- Yes.

Can we deal with the safety concerns? I think we might pick up on those in paragraph 10 of your statement. What do you mean in paragraph 10 when you say "field access was restricted"?-- We have various rivers and creeks flowing through the tenement. Access to all dams was not able to be made. Basically, if vehicular access isn't able to be made, the areas aren't allowed to be accessed purely for safety reasons. Arrow aren't allowed to cross waterways during flowing water events.

Purely for safety reasons?-- Purely for safety reasons.

And perhaps we can pick up at paragraph 14 where you indicate that the inability to access some areas affected the management of the dams at the site. Why was that?-- Some of the dams were inaccessible during periods - during the 2010 to 11 event.

And was there a reason why people had to be there that affected - that had the subsequent effect on the way in which things were managed?-- Yes, steam inspections were required.

Was that the only-----?-- I think general maintenance of the field and inspection of the field as well. So, there would have been various reasons for requiring access to the field.

In advance of the wet season, the company knew that it would have difficulties with water capacity if there was significant rainfall; is that right?-- That's correct.

And you referred a moment ago to your environmental authority. It sets out certain levels that the dams on site should be at prior to each wet season; is that right?-- That's correct.

And I think if we pick up at paragraph 26, you say there that the environmental authority - the applicable environmental authority didn't satisfactorily provide for high flow emergency discharges?-- No, it didn't. The environmental authority at the time reflected a discharge of treated water from - I believe it was July 2011, so that was - the provision for the discharge was post-July 2011, and we didn't have treatment facilities installed at the site at that point in time.

Sorry, is that why you say the environmental authority which was applicable during the 2010/2011 wet season wasn't satisfactory?-- It didn't allow for discharge of the water that we were holding in our dams at the time.

All right. Did it allow for discharge of any water?-- No, the discharge or the date that was in that EA was July 2011.

COMMISSIONER: What's the logic behind that, do you know?-- I think it was more than likely a reflection of Arrow working with the regulators on setting a timeframe by which the RO treatment plant would be installed on the site, rather than anything else.

Did you not envisage that you might get a wet summer and have some problems?-- No, we were prepared to the extent that we were constructing additional storage facilities at the time. The lead-up to the wet season was quite wet as well, and that delayed the construction of that water storage facility, and I guess that was one of the causes - not having that actually available to us to store a large amount of water.

Thank you.

MR CALLAGHAN: Well, in the lead-up to the wet season in October, you advised DERM that one of your dams would be above the prescribed level; is that right?-- That's correct.

And you refer to that, I think, in paragraph 19 of your statement?-- Yes.

What was DERM's reaction to this?-- I was not working for Arrow at that point in time, so I actually don't even recall the response E-mails from the regulators from that correspondence.

Okay. In paragraphs 20 and 21 you reflect the fact that there were concerns about the safety - or concerns that some of the dams might overtop; is that right?-- That's correct.

And what's the concern then if they overtop? Do they collapse? Or what's the anticipated danger?-- Of all of the dams that we have installed, only one had an engineered spillway. If the other dams were to fill up and overtop, without an engineered spillway, it is essentially an uncontrolled release, and I'm not a dam engineer, but from my understanding of this, the dam walls could be subject to collapse purely from the velocity of the water pouring out of it.

During the flood itself, there were some structural problems with Dam 2 which meant it couldn't hold as much water as normal; is that correct?-- That's correct.

And there was quite heavy rainfall at the site around about the 13th, 14th of December?-- That's correct, yes.

And that required water to be pumped out of Dam 2 into the Isaac River?-- That's right.

That release was in accordance with some draft TEP conditions which had been submitted by arrow, but there was no actual TEP in place at that time; is that right?-- No, there wasn't.

So, can you tell us anything about the communications between Arrow and DERM on that topic?-- I can to some degree. From what I've been told by the people dealing with the issue at the time, program notice was submitted earlier, the dam was inspected, just as general routine maintenance inspections of all the infrastructure, and additional issues were identified with Dam 2, and on - I believe it was the 14th of December, a meeting was held with DERM that identified there were some structural issues that had been exacerbated from the rain on Dam 2, and, yeah, I guess that was the extent of the correspondence and-----

Mr Brier in his statement, paragraph 27 - I think someone might have put a copy in front of you - says that, "Arrow was unable to provide any engineering advice in regards to concerns about the structural integrity of Dam 2." Back in your statement, paragraph 22, you indicate that Arrow had engaged URS to evaluate the structural integrity of the dam and that the subsequent report recommended lowering the dam level. Are you able to assist us as to when or how or if that report was communicated to DERM or given to DERM?-- The URS report certainly was, and I think it is more a date thing here, because that initial release occurred on the 13th to the 14th of December. From my understanding of the situation, when the structural issues were identified by our engineers, we commissioned URS to inspect the dams, and they got on to site by the 22nd and provided us a report by the 24th of December, which confirms our fears that there were some issues with that dam.

Just getting that in sequence, you talk about things on the 13th and 14th. I think if we go to Annexure 13 to your statement, there's an E-mail there. It is just being passed

to you now. Just to get this in context, if you go back to paragraph 31 of your statement, you talk about releases being made and they were ceased after DERM threatened enforcement action, and I refer you to annexure 13 of your statement. There's an E-mail there; relevantly, perhaps, it includes the sentence, "Arrow should consider ceasing this discharge after careful consideration of other available options for the untreated CSG water contained in dams at the site." Is that what you're describing as the threatened enforcement action, or was there something else?-- No - well, that was the written evidence of the enforcement action, but, from my understanding, there was a meeting that was held.

Yes?-- What was specifically said in that meeting wasn't recorded, but from my understanding the tone of that meeting was stop discharge or enforcement action was going to be brought forward, or reviewed, I guess, to see if they were going to enforce it.

Who were the attendees at that meeting, do you know?-- Ben McMahon, who was the former compliance and reporting manager, Tim Dean, who was the former site manager, and I believe that was it.

You don't know who from DERM?-- No, no.

And where was that meeting?-- I don't know.

When you say there was no record of it, do you know that for a fact or have you required-----?-- I haven't got access to any minutes or records of that meeting.

And I suppose I'm asking have you looked for them and you know that there was no such thing, or there may be some record of it?-- I've looked for - this is the only evidence of that meeting, yes.

All right, thank you. There were some further releases on the 20th of December from the dams' releases into the Isaac River; is that correct?-- That's correct.

And was the Isaac River in high flow at that time, or-----?-- Yes, that's correct.

And arrow advised DERM about those releases?-- That's right.

And what was the substance of those communications?-- I believe that at that point further rain had fallen in the area, additional pressure was placed on all of the infrastructure, including all of the dams. We were in a situation where everything was being pumped towards Dam 10 which had the engineered spillway, and most of the dams were nearing their full capacity, and I believe that there was just no other option at that point in time other than to discharge to maintain the stability of Dam 2.

And was that communicated to DERM?-- I think through that process, whilst we were working through the TEP process at the

time, we were working closely and informed DERM of all of our discharges, and additional work was being done in the background with Arrow, too, to make sure we were managing the environmental effects of those discharges, to the extent that the water being released was sufficiently diluted into the system.

You mention the TEP process. You deal with that between paragraphs 29 and 40 of your statement, and in paragraph 38 of your statement you say that, in your view, "The process associated with the application and issue of TEP for water discharges was and remains ambiguous." Can you just elaborate on that for us?-- That's stated in the context of an emergency situation, I guess. The word "ambiguous" probably could have been wordsmithed out, possibly.

What would you replace it with, if anything?-- Basically it was unclear how the process of a TEP was intended to be applied for an emergency situation with respect to the timeframes requires for that assessment.

Can we go back to paragraph 33 where you report that you've been advised that DERM were aware that the water quality limits detailed in the TEP would be breached prior to the issue; is that the-----?-- That's so.

-----substance of the complaint?-- Not at all. The water quality limits that are referred to in Table 7 are regarding the water quality in the Isaac River at downstream locations versus upstream locations, and looking at the effect of our water quality on the Isaac. The process, I guess, for - in terms of that item - with regards to the statutory process associated with the application and the issuance of the TEP, that was related to the water quality. That was purely related to the process of assessment - the timeframes required for an approval through the TEP process.

Well, coming back to paragraph 38, I mean, do you have any complaints with the TEP process that you retain?-- No. I don't - I understand the TEP process. For longer term, where you've got proper planning prior to the requirement for a TEP, that process is totally sound. I guess the nature of the situation that we were in warranted a process that was slightly shorter timeframe to allow - to minimise the risk of losing 90 megalitres at once versus a small discharge to minimise the environmental effects of that release. That's about it.

Sorry, had you finished?-- Yes.

All right. I understand that Arrow did shut down some higher water-producing wells during the wet season; is that right?-- That's correct.

Were there other wells that could have been shut down that weren't?-- I don't know.

And just finally, at paragraph 55 of your statement, you talk about crystallisation technologies?-- Mmm.

What sort of technologies are you talking about and what's involved in that?-- Those processes will come later. At the moment we're in a position where we are only collecting associated water or water pumped out of the coal seams. The crystallisation of the salts is a - is changing the waste products into potentially a resource and reducing the volume of waste. So it was - it's more a - looking at options for reuse of the salts. Rather than just being able to create a nice clean water supply, we have a brine that's left over. We want to crystallise or reduce that to a salt that's potentially a commercial product.

I see. All right. Thank you. I have nothing further.

COMMISSIONER: Mr MacSporran.

MR MacSPORRAN: Thank you, Commissioner. Mr Cordingley, I appear for DERM, so you understand. With a coal seam gas operation, you know exactly how much water is going to be produced, don't you?-- To some degree. It does vary.

It's a product of the underground operation itself. As you've described, you access the coal seam by pressure and dewater the coal seam, and the water then is brought to the surface and stored?-- That's correct.

So the only water generated on site is the water that comes out of the ground; you don't use other water from the surface to conduct the operation, do you?-- No, that's correct.

So if, for instance, you wanted to limit the amount of water that you were storing, one, albeit a drastic measure, would be to stop the operation altogether?-- That's correct, but that wouldn't limit rainwater.

No, certainly, you can't control - well, we don't think you can control the weather, so you can't control the rain, but you can control how much water is produced during your operation?-- To some extent I believe that's the case.

And indeed you told Mr Callaghan a moment ago during the wet season just passed you did shut down some high produce - high water producing wells?-- That's correct.

And that was done to limit the amount of water you would otherwise be required to store on the surface?-- That's correct.

Mmm. So when you're talking about an emergency situation, one

way to deal with it, albeit a drastic measure for the mine operator, or the well operator, would be to simply stop production, and then deal with the rainwater as it arrived if you are able to?-- That could be true, I guess, yes.

All right. Now, can I just take you back to the environmental authority you had - or the company had in respect of these wells? The first one was in 2004, late 2004; is that right?-- I don't know if that was the first one, but that one is referred to in my statement, yes.

Yes. And then it wasn't until 2006 that the company was given permission by virtue of conditions attaching to the environmental authority to actually discharge albeit treated water to the Isaac River?-- Yeah, that's correct.

And the proposal in the condition as at 2006 was that the water to be released to the river would be treated by a reverse osmosis process on site?-- That's correct, yeah.

So you had that permission from 2006; is that so?-- I understand that's correct.

But at no point prior to the most recent wet season in 2010/11 did the company have in fact any reverse osmosis plant?-- That's correct.

So you weren't able to avail yourself of the condition of your environmental authority to reduce your water storage on site?-- No, that's not correct. We had a beneficial use agreement with Millennium Mine that took up to 500 megalitres a year, and that was, I understand, up until 2008 dealing with the water volumes that we were producing.

But had you had a reverse osmosis plant which was permitted by your environmental authority as at 2006, you could have released water pursuant to that condition, couldn't you?-- Yes.

But the company chose not to commission a reverse osmosis plant at any stage between 2006 and the wet season just passed?-- That's correct.

Do you have one now?-- One is due to be completed in December this year.

Is there any reason why it's taken, what, six years for the company to commission a plant that was a means by which the operation could have dealt with storage of water as at 2006?-- I believe that all of the planned infrastructure had it met the planned timeframes would have been able to cater for even last year's event had it been constructed on time.

All right. We come then to 2010, and the way water is stored on site is through a process of the linking of a number of storage dams; is that so?-- That's correct.

And how many dams do you have on site?-- I believe there's about 12 with additional dams being constructed.

And depending on where the water is stored, the water can be moved between dams, can't it, on occasions?-- Yes, it can.

Now, at some point in 2010, prior to the wet season, the company did plan to upgrade one of the dams to increase its storage capacity, did it not?-- At what timeframe, I'm sorry?

I think it was 2010, sometime during 2010, but perhaps earlier. You can tell us if you know?-- I don't know about that.

It's dam 11 I am referring to, if that helps?-- Righto. That was being constructed during 2010.

So dam 11 was a completely new dam, was it?-- That's correct.

And it was proposed to increase the storage capacity of - for water on site by the amount of 400 megalitres?-- I don't know that it's - yeah, it might be about 400 megalitres. I thought it was a bit less than that.

Had that dam been in place prior to the last wet season, you wouldn't have had a difficulty, would you?-- Not at all.

You would have been able to use dam 11 to store the excess water and deal with it on site without having to have any emergency situation in place?-- Absolutely.

But the company hadn't commissioned that work, I'm suggesting to you, until it was too late, in effect. You just didn't have the time to get it up and running before the wet season hit?-- I wasn't with the company at that time. The only dialogue I've seen regarding that matter was included in my statement with our water management plan.

Okay. But that's the net effect, isn't it, that as it turned out, the - whenever the dam was commissioned, it seems to have been sometime in 2010, it wasn't ready for use prior to this wet season?-- No, that's correct.

And had it been ready, you wouldn't have had any problem?-- That's correct.

Now, in addition to those factors, as at - as early as 16 February 2010 one of your other dams, dam number 2, was discovered to have issues in respect of structural integrity?-- That's correct.

How big was dam number 2 in terms of available storage? Can you tell us?-- I believe it was between 90 and 100 megalitres.

So it's a significant volume of water?-- That's correct.

Well, the company finds out in February, mid-February 2010, that there's - there is a potential significant problem with storing water in dam number 2?-- That's correct.

But it seems that the company does nothing about that until it later discovers that dam 11 will not be ready for commissioning, and it then sends - or has an assessment done, albeit belatedly, I suggest, an assessment done of what needs to be done with dam 2 to make it safe?-- That's correct. The - there were recommendations made in the report that was provided by the February - in February 2010. Those recommendations were to reduce the levels in that dam, and the site was attempted to manage that within those levels, but for the 2010 and '11 wet season, that dam was intended to be - the entire pressure reduced off that dam basically, to turn it into a transfer dam, as it's working currently.

Yes. But, of course, turning that dam into a transfer dam, you are losing a significant capacity on site to store water, aren't you?-- That's correct.

And you knew that as early as early 2010?-- That's correct.

Well, then it's - if we go to paragraph 22 of your statement, we see that it's not until the 22nd of December 2010 that a report as to the structural integrity is actually produced in respect of dam number 2?-- Yeah, that's correct.

So by that stage you're well into the wet season, aren't you?-- That's correct.

And this is really how the company finds itself in this predicament?-- Yeah, there were - there were three sort of unforeseen circumstances, I guess. There was one, dam 11, as you've mentioned, not being completed on time, additional damage being done with heavy rainfall to dam 2's structural integrity, and the unforeseen weather conditions that were experienced.

You see, the real problem seems to be, I suggest to you, that although the structural integrity issue is identified for dam number 2 in February 2010, nothing is done to actually rectify that problem with dam 2 so it can store the full amount of water until after December 2010?-- That's correct, but it - you can't do work on a - from my understanding - I'm not a dam engineer, but you can't do the work that's required to that dam with it full of water, which it was for the entire - entire period.

But plans could have been put in place as early as February 2010 to deal with that issue, couldn't they?-- I believe they were.

All right. So you then find yourself - the company finds itself in the position where the rain is falling, dam 2 is essentially largely out of action, dam 11 is not completed for storage purposes, so you're then looking around to see what

can be done to reduce the amount of water stored on site?-- That's correct.

Now, I suggest it's the company's own activity or inactivity that has you in that position, a lack of planning for these eventualities?-- I'm not sure that that's the case. I believe that four days before the November 1 deadline for identifying the DSA for all of the dams we were over on one dam and we were rectifying that to have it under control within a week. Now the design storage allowance for dams is intended to include rainfall and production water over a set requirement for a one in 20 year wet season, or for a significant hazard dam, or a one in 100 year rainfall event for a - I think it's a high hazard dam. We were able to meet that requirement. The rainfall that was experienced during the period was in excess of that. So whilst we met our obligations with regard to water management and curtailing production throughout that entire period, I believe that it was unforeseen levels of rainfall that really put us into the predicament rather than lack of planning.

In spite of what you have agreed with me in terms of the position in respect of dams 2 and 11 in particular?-- I believe that dam 11 was one of the solutions to the dam 2 issues, and that dam was being constructed. The delays associated with construction of that dam are included in the annexures to my statement.

Now, in terms of the involvement of DERM, you first wrote to DERM about these problems on the 26th of October 2010?-- That's right.

And that was to advise that you had exceeded - the company had exceeded the design storage allowance in dam 1 due to the then recent rainfall?-- That's correct.

You advised that it had taken actions to ensure that the net evaporation was higher than net inputs by reducing the production of gas and water from wells?-- That's correct.

And that no discharge had occurred or was threatened by dam 1 exceeding its DSA?-- That's correct.

Then DERM emailed back seeking information including information about distances, the sensitive receptors from the dam, and you understood that to be - or is that designed to ascertain how it can be established if there's an overtopping of the dam and where the water might go?-- Definitely. We would have been looking at the same things, the potential environmental effects of a release.

Then later in October, on the 29th, the company wrote to DERM advising they were in the process of transferring water, as you've said, to keep the levels below the DSAs?-- Yes.

20th of November, about a month later, the company wrote to DERM advising that following additional recent rainfall, the

DSA for several dams was now exceeded and that it would not have sufficient storage in the event of heavy or prolonged rainfall over the wet season?-- That's correct.

Now, in none of that correspondence I suggest to you did the company ever advise DERM that there had been identified a structural integrity issue in respect of any of these dams, and, in particular, dam number 2?-- No, I don't understand - I don't believe that that was stated to DERM at that point in time.

Shouldn't that have been a feature of this correspondence to DERM, that there was a structural integrity issue that had been identified with dam 2?-- From my understanding they were managing to work the DSA on dam 2 below its recommended or keep the volume below its recommended volume through that period. The dam wasn't or the structural issues of the dam were - the exacerbated structural issues with that dam were identified at a later time.

Then the 24th of November, DERM wrote to Arrow warning them, that's warning the company, to take all reasonable and practicable measures to ensure compliance with the - with its environmental authority?-- Yes.

And DERM also sought additional information about water management measures at the site to assist in quantifying potential risks should discharges or overtopping events occur at a later date. Now, relevant to that I suppose will be the question of the risk of overtopping any of these dams would be impacted by the inability to store the full amount of water in dam 2, wouldn't it?-- Definitely.

But again there was no notification to DERM of that issue at that time, was there?-- Well, the DSAs - we had a requirement to keep the dams below the DSAs recommended by the engineer. In the February 2010 report, I believe there was a DSA recommendation, and that was reduced because of those structural issues. Later in the year after the wet season or the early onset to the wet season had affected the dam further, it was inspected and - by our engineers, and the - they facilitated getting a structural engineer from - that's an expert with dams in to have a look at that dam to look at the further impact on that dam. So - and that further reduced the DSA level-----

Yes?-- -----or the water holding capacity of that dam at that point.

And that most - that last event you talk about, as we know, from your earlier evidence, occurred on - as late as the 22nd of December 2010?-- That's correct.

It's late in the day, isn't it, in terms of managing the water on site?-- I believe it was within a couple of weeks of the issues with dam 2 being identified though, or the exacerbated issues with dam 2 being identified.

Well, the issues had been identified back in February. You thought the exacerbated issues are identified later in December?-- That's correct.

Anyway, we then come to the 13th of December where you advise DERM by phone, that's the company again, obviously you weren't there, advise DERM by phone that you have received significant rainfall, that some dams are approaching the maximum level, and that you've formed the view that pond number 2 dam, number 2, was in danger of suffering structural failure which would lead to the overland flow of coal seam gas water?-- Yes.

So that brought it all to a head, didn't it, on the 13th of December?-- Absolutely. Yeah, I understand that's about the time that the issues with dam 2 were identified.

In any event, then the company then commenced to release water via a pipe over the wall of pond or dam 2 because of concerns about structural failure?-- Yes.

So that was done without any transitional environmental program in place or permission from DERM?-- No, that's correct.

But you understood, didn't you, that because it was a safety issue, being a structural failure matter, that you were able, as it were, to release water rather than take the risk that the dam itself could fail and all of that water that you have told us about stored there would flow out?-- We had a responsibility to minimise environmental harm associated with that dam.

But where there was a structural failure issue, you understood that DERM's guidance about these matters was that you could release water rather than risk the dam failing, you understood that, and that's what you did, you released water?-- Yes.

And between the 13th and 14th of December you released 2.6 megalitres of coal seam gas water, which technically were in breach of your - the conditions of your environmental authority?-- Yes.

But in those circumstances where it was to avoid structural failure?-- That's correct.

Yes. You advised - correct me if I am wrong - the company advised DERM that you would apply for a transitional environmental program to cover these events and you made that - you gave that advice on the 13th or 14th of December, thereabouts?-- I'm not sure of the date with that one. It was when the program notice was submitted.

Okay. I think the 3rd of December was the program notice?-- In that program notice I understand that we made reference to the provision of a TEP.

Okay. That's the 3rd of December. Water is released on the 13th and 14th. Further water is released on the 20th. There is 34 megalitres released on the 20th?-- Yes.

And then ultimately the application is made not until the 23rd of December; does that sound correct?-- That sounds about right, yes.

All right. All right. So the position is this, is it not, that the company understood or should have understood its responsibility to manage its water on site, to properly store it so that the environment was not in danger? The company understood that?-- Absolutely.

As it turned out, for reasons that we might disagree about, the company was unsuccessful in managing that water appropriately on site?-- I believe that considering the circumstances the company managed the environmental risks associated with all the releases exceptionally well.

I won't go over the ground I have been with you, but had dam 2 been dealt with earlier and had dam 11 been finished sooner, none of the so-called emergency situations would have arisen for consideration, would they?-- If it had been - if dam 11 had been constructed or completed earlier and not been delayed by the early onset of the wet season, definitely we would not have been in the position that we were in.

All right. Thank you.

COMMISSIONER: Mr Ure?

MR URE: I have nothing, thank you.

MS McLEOD: No questions, thank you.

COMMISSIONER: Mr Duffy.

MR DUFFY: I have no questions, thank you, your Honour. Might Mr Cordingley be excused?

COMMISSIONER: Anything further?

MR CALLAGHAN: Yes. No, Mr Cordingley should be excused.

COMMISSIONER: Thank you, Mr Cordingley, you're excused.

MR CALLAGHAN: I call Brendan Nelson.

BRENDAN JOHN NELSON, RECALLED, RESWORN AND FURTHER EXAMINED:

MR CALLAGHAN: Your full name is Brendan John Nelson?-- That's correct.

Mr Nelson, of course you gave evidence previously on the 19th and 20th of September-----?-- Yes, I did.

-----this year, and at the conclusion of your evidence then it was suggested that you be stood down so that you could provide a further statement-----?-- That's correct.

-----to the Commission, and furthermore the Commission also sought some information from you by way of a requirement-----?-- That's correct.

-----on some specific topics?-- That's correct.

And as a result of all that, a supplementary statement signed on the 21st of October 2011 has been prepared?-- Yes, it has.

I will get that shown to you. That's your supplementary statement?-- Yes, that's correct.

And in fact is there more than one?-- There is a second supplementary statement as well.

And that second one addresses the matters required of you by the Commission; is that correct?-- That's correct.

Yes, I tender both of those.

COMMISSIONER: They will be Exhibit 925.

MR CALLAGHAN: They are two completely separate statements.

COMMISSIONER: Are they? 925 and 926 then.

ADMITTED AND MARKED "EXHIBIT 925"

ADMITTED AND MARKED "EXHIBIT 926"

MR CALLAGHAN: I might at this point also tender the statement of Mr Stephen Jacoby. He is one of the DERM officers who assisted the QRA to create the maps. He has provided a statement dated the 17th of October 2011.

COMMISSIONER: Exhibit 927.

ADMITTED AND MARKED "EXHIBIT 927"

MR CALLAGHAN: Mr Nelson, I've just got a few more questions for you. You've previously explained to us that one of the key requirements of the QRA in producing these maps was to use a set of data that was available statewide; is that correct?-- That's right.

And that's so obviously a set of statewide maps can be-----?-- So you can develop some consistency across the State.

And can I just get a sense of timeframe that you were working to? Mr Jacoby says I think at paragraph 22 that QRA's first contact with DERM was in late May of 2011; does that sound right?-- That's about right.

And that by the 19th of October DERM had created 2504 map books mapping 63 sub-basins?-- They created 2504 map sheets in 63 sub-basins.

Yes?-- So not the map books, but actually map sheets.

Map sheets?-- That's correct.

Okay. How was that timeframe set?-- Well, originally when we sat down with DERM, we asked DERM to provide us with an overview of what was possible, and whether or not a consistent statewide data set existed. They advised that it didn't. We then worked through a number of data sets with the Banana Shire Council as a pilot area in the Dawson, and using that information we road tested it with Banana Shire, and when we were satisfied that those data sets with the approach that we've outlined to develop the mapping was satisfactory, we then went into full production of the other sub-basins across the State. Originally we were looking at the priority areas which I think in attachment 13 of my original exhibit was the review of the planning schemes undertaken across the State. We identified those planning schemes where there was no flood mapping, and where a population was such that we felt that we could, I guess, provide some benefit to the councils by doing this work. So we set some priority areas. Initially we asked DERM to complete 27 sub-basins in the first phase. They were able to complete 24. The three that weren't completed were completed soon thereafter. That was I think to the end of July. In the second phase of mapping, we then went up to I think about 63 sub-basins which were completed, roughly on schedule, and we've said that we will complete the rest of the remaining sub-basins across the State where they're appropriate.

But what's the schedule? That's what I'm asking?-- The actual schedule to complete was as quickly as possible-----

Right?-- -----so that we could provide councils with a tool

kit which they could then do some local verification within each of their own local government areas.

Okay. So the date that Mr Jacoby has drawn a line at is just where he happened to be up to at the time, is it, or was there any significance to the date 19th of October?-- No, 19th of October was a couple of days prior to the completion of the statement, when it was due.

All right?-- So I can advise that DERM is still working on the production of the remaining sub-basins at the moment.

I see?-- They're significantly advanced in another 20 or 30 at this point in time.

Because before the 19th of October the existence or the - well, the existence of these maps was announced, you will recall, by the Premier on the 17th of September 2011, and at that time her press release records her as saying that, "The maps do not show a defined flood event, but rather areas where based on geological evidence we know there has previously been inundation or there is a probable chance of inundation." The last part of that sentence is just wrong, isn't it, because we know that the maps show nothing about probable chance of inundation?-- I wouldn't agree that it's wrong. I don't think you can assign a probability in terms of a number, but based on the data sets that we've reviewed, I think that there is a very significant, I guess, expectation in those areas that flooding could occur, and that's consistent with what the State Planning Policy says.

You say there is a significant expectation that flooding could occur in the areas - what are we talking about, the yellow shaded areas?-- Yes.

How do we distinguish between significant expectation and probable chance? Do you say there's any distinction between those concepts?-- Well, I think probably the relationship back to the State Planning Policy is-----

No, no, sorry. Can we get the transcript of the Commission's hearings up, perhaps page 2821?

COMMISSIONER: What day was that, Mr Callaghan?

MR CALLAGHAN: The 19th of September. We see at the top of that page I suggested to you that these maps say nothing at all about the probable chance of inundation and you agreed with me, "They don't comment on the probable chance, that's correct."?-- In the context of assigning a percentage as we commonly know probable chance, then, yes, that's correct.

So you would agree that the phrase "a probable chance of inundation" commonly conveys assigning some sort of percentage?-- I can't speak on behalf of the Premier who made that - those comments but what I can say is that in the context at which they were made, I believe that that was accurate.

Let's be fair to the Premier because it may be that she did no more than take at face value that which is written on page two of the guideline where it is stated that, "...what the maps do show are areas where inundation has previously occurred or is likely to occur". You are familiar with that part of the guideline?-- Yes, I am just bringing myself up to speed with that, yes.

Again, it's just wrong, isn't it? They show nothing about likelihood or probability, as those terms are commonly understood?-- In an engineering sense they do not confer a probability, as you would commonly refer to a Q100 or a one per cent but they do show evidence of historical events.

What I am suggesting to you is that says nothing about probability or likelihood. Can I take you to page 2830 of the same transcript, which was the following day, sorry. If we can just scroll down perhaps. You agreed again that the maps show nothing about the probable chance of inundation. You said that was never intended?-- I think, Mr Callaghan, in the context of that sentence you need to look at the second paragraph above where it makes reference to an AEP or an ARI. That is the context in which those comments were made. These maps do not represent an AEP or an ARI. They show some evidence, though, of previous events.

Well, whether it be AEP, ARI or any other measure of probability or likelihood, what you said then was absolutely correct, wasn't it? It was never intended. They just don't do it?-- They don't go to demonstrating an AEP or an ARI. They do collate a series of data sets which - some of which demonstrate some previous flooding events.

Yes, and I am suggesting that the demonstration of the previous flood event says nothing about likelihood or probability of a flood event occurring in the future?-- No, no, it doesn't.

So would you accept that that part of the guideline is at least misleading or it says that they show areas where inundation is likely to occur?-- No, I don't accept that.

Okay, I won't take it any further. Can you tell us what might have been involved in collating the data necessary to produce a map that did say something about probability, as that term is commonly understood?-- So doing the verification process with the council where a flood study might exist or doing an actual engineering assessment?

They are the sorts of things that would be involved, is that right?-- Yes. So traditionally-----

No, it's alright. Look, all I want to-----

MR MACSPORRAN: Commissioner, can I please ask that Mr Nelson be allowed to finish his answer before my learned friend wants to ask the next question.

COMMISSIONER: You did cut him off a bit there.

MR CALLAGHAN: The question had been answered in effect. They are the sorts of things that would be involved in drawing a map which did say something about probability?-- Traditionally in engineering hydraulic, hydrological assessments would provide you with a percentage figure or a recurrence interval. That would be the traditional method, yes.

Are there other methods?-- Well, the national guidelines, Best Practice Guidelines, acknowledges in locations where data may not be available that mapping can be prepared based on historical data or based on the best available local information.

Yes?-- So the SCARM report, number 73, provides quite detailed process where you can go through and it does acknowledge, as does the State Planning Policy 1/03 guideline.

I understand that, but again, in terms of indicating something about probability, you have referred to the traditional engineering methods, with which we are familiar?-- Yes.

In terms of actually indicating probability, that's pretty well it, is that right?-- That's right.

Okay. It would have clearly been impossible, in the time available, to undertake that sort of process on a State wide basis?-- Not only impossible but uneconomic across the entire State.

Well, impossible for whatever reason?-- Yes.

You mentioned when you previously gave evidence - and this is concerned with Part (ii) of the process?-- Yes.

That a flood study template is proposed. It can be used by councils for the preparation of flood studies?-- That's-----

So there can be a degree of consistency across the State?-- That's correct.

I think you indicated in your evidence previously that it was hoped that would be complete by November?-- The end of this month that will be complete in a draft form for consultation.

You probably just answered my question which was just to give us an update on that?-- Yes, we are progressing that work at the present time and it will be completed by the end of this month.

Can you just give us - and I am hopeful that there would be no problem with providing the Commission with a copy of that when completed; is that right?-- Oh, absolutely. That will be fine.

Can you just foreshadow for us what's actually included in it?-- There's two components in the guideline. The first component deals with a standardised flood study template. One of the things that we have identified going throughout the State is that councils, when they're having to do flood studies largely by themselves, have to embark on setting out a template for their contractors and what we find is that within the same sub-basin you could invariably have flood studies being completed with different methodologies rather than focussing on a coordinated outcome for that particular sub-basin. So what we would like to see happen is some consistency. We think that that will provide a tool kit for councils as they're going and doing further refinement in this work. The second part of the guideline will be focussing very much along the lines of councils with their new sustainable planning schemes. We know that at the present point in time there's no council in the State has their new SPA planning scheme on board. We know that there will be two early in the new year and probably at this point next year there will be around about 10. So there will still be plenty of planning schemes over the next few years which would benefit from a bit of guidance in terms of how you translate those flood studies and that further work into a new SPA Queensland planning provision compliant planning scheme. There is a lot of words there but it's to get the consistency across the State so that we don't end up with situations that perhaps have emerged over the last decade.

I am not going to ask you to time it to the minute, but are you confident that that will be complete by the end of the month?-- Yes. Yes, I am.

Thank you.

COMMISSIONER: Mr Duffy, I don't imagine you have any questions.

MR DUFFY: No, no questions.

COMMISSIONER: Mr Ure, Ms McLeod?

MR URE: No.

MS McLEOD: No.

COMMISSIONER: Mr MacSporran,

MR MACSPORRAN: Mr Nelson, could I just ask you, briefly if you would, explain the, as you see it, usefulness of the flood mapping QRN has put together?-- Thank you. The flood mapping is part of a tool kit. There has been some commentary made recently focussing purely on the flood mapping in isolation of the actual words that support the flood mapping and, really, the words that are in the - or the model code that's been drafted, and it's in the guideline, is an integral part of the tool kit because what we have found across the State - and I can give you particular examples. In Hinchinbrook Shire, Ingham, they have some of the best flood mapping that's available in terms of both consequence and probability. They show that information particularly well but the words in their scheme perhaps don't reflect the quality of their mapping and they have seen some examples of development in that community which are probably not what they would like to see. We have - so we have focussed on working together a model code which is - offers value to those planning schemes, particularly those existing schemes, in light of the advice I gave to Mr Callaghan about the extent of IPA planning schemes over the next few years which will still exist, so we can provide that support in an immediate sense into those planning schemes. The actual mapping itself though, it really is, I guess, a first in terms of pulling together data sets for flooding but it's not a first in terms of looking at similar applications of this type of approach previously. You will see in the State Planning Policy with respect to bush fires there's a very simple, I guess, approach that councils can take to incorporate bush fire mapping in their planning schemes. The percentage of planning schemes that has bush fire mapping included is about 75 per cent across the State. What we are talking about is, in terms of flooding - is less than 20 per cent. So the complexity associated with including flood mapping compared with bush fire mapping has been there through the State Planning Policy for the last decade, or almost. The approach that we have applied with the flood mapping is a very similar approach to bush fire mapping. Bush fire mapping was developed with three data sets which relate to slope, aspect and vegetation type. The data sets that were relied upon for the flood mapping have been outlined in the guideline but include contours, imagery, alluvial soils, previous flooding events, satellites, land SAT images. They include a whole

series of additional data sets, and gauging stations I should add. So the valve of this work in a comparable sense to bush fire I think can be - the bush fire provisions of the State Planning Policy can certainly be reflected upon by way of comparison.

How is it believed, at least by the QRA, that this mapping will be used?-- Well, we would expect the councils will pick you up the mapping as we have produced, which we are not so naive to think that the mapping is a hundred per cent correct. We have said that at the outset. We have said that we have put this out for local verification and the process we are going through at the moment - myself and my team, we have been to 34 councils in the last few weeks and we will keep that going. We intend to visit every council individually and run through with them the tool kit that we have provided but we would expect them to actually pick up the mapping, look at it locally. Does it make sense? Have we gone too far? Have we not gone far enough? There is no better person out there than typically the shire engineer and in a lot of our local councils the shire engineers have been around for some time and the validation that the shire engineer can often give is absolutely crucial, but we know that through the review of planning schemes there's been absolutely limited visibility of flood studies across the State. So what we want is the councils to tell us where they have those flood studies and we want to incorporate those flood studies into the mapping. We believe the mapping can be dynamic, is dynamic, it's living and breathing. So as this better information becomes available, we see that mapping actually being upgraded and improved over time and we have started that process already. I can advise that yesterday Central Highlands Regional Council were the first council to resolve to pick up this work, this tool kit, and adopt it into their planning schemes. I can tell you that there's another council going tomorrow to pick up this work and to adopt it into their planning schemes and I understand that there are two more next week who are on their - who are on their council agendas to pick it up. We have been told by the councils that we have - in fact, we haven't received any negative feedback across the State, apart from councils who have said that they would like to obviously go away and validate the mapping and include that information. In my statement I have included an example of some work we are doing with Western - sorry, with Southern Downs, around Stanthorpe and Warwick, and that gives a terrific example of how an area, where there's been a flood study, can actually be incorporated into the State wide mapping that we have developed and that line can be refined over time. What it also shows is that the mapping that we have produced will actually fill in the gaps outside of those flood studies. So typically there's very few councils who have actually got complete coverage of flood mapping across their whole local government area and what this will do will actually fill in those gaps between the flood studies.

Can I just ask you then to elaborate on an example you referred to, the Stanthorpe, Warwick one where you are doing some work currently?-- Yes.

Where there have been some flood studies done and they can be incorporated into the - and refine the line picked up in the flood mapping overlay produced by the QRA?-- That's right.

Can you just explain that process if you wouldn't mind?-- Sure. So we've produced the information in what's called a Shapefile, which is computer speak for - it's an on-line system where the councils can download that information directly into their system. They can go through and validate that line based on their own information. We know that most councils have better data, particularly in some of the contours, and so we are looking forward to that information being provided to us. We would ask the councils then to verify and validate that information and then provide it back to us electronically and what we will do is then make sure that that information gets uploaded into the master set which gets across the State.

The line that you are talking about that the Stanthorpe and Warwick council use, download it into their system?-- Yes.

What does that line on the QRA mapping indicate?-- Well, what that - the line would then be picked up by the council. There will be two elements. There will be one element which has been derived as a result of a flood study, which will be hatched. So we will know very clearly, as that gets dropped into the planning scheme, that anyone who is looking at it can identify very quickly that it's derived as a result of - the flood studying can assign the probabilities that we spoke of earlier. The area that's outside of those flood studies, we would be asking for councils to validate that based on best local information and how that tool is then used is that the council, with the words, the model code, if they haven't got any provisions in their planning scheme, would use the mapping and the words, when they receive any development applications, to assess those development proposals against the provisions of the model code.

Can you just ascend to a little more detail on that example and just show us what word will be picked up in the code, the model code, and the mapping, to combine to help the councils process a development application for instance?-- Sure. So Schedule 1 of the guideline contains a model code. That model code has been - we have acknowledged that we are dealing with across a very broad part of the State and we are obviously trying to make sure it's suitable for not only western rural local governments but also metropolitan and major cities. We've developed those words which will focus on a better built form. So what we are looking for there is if a council receives a development application in an area that is mapped, then the provisions of the model code would kick in, if the council has adopted them. So what they would then do is when the development application is being assessed by the council's town planner, an additional consideration that the council's town planner would give it would be, "Does the development comply with the performance outcomes of the code and the acceptable outcomes?" If it doesn't comply with the

acceptable outcomes, what is the developer or the proponent proposing in lieu of that? Those performance outcomes have been derived from the principles of the State Planning Policy 1/03, which we consider to be very valid and certainly best practice, still today. So it really becomes an additional consideration for the town planner at the council when they are considering that development application.

You mentioned earlier, when you were being questioned by Mr Callaghan about the fact that the QRA mapping doesn't deal with probabilities, likelihood of a flood occurring, and you said you agreed ultimately that it didn't, but you said it was consistent with the principles of SPP 1/03. Can you tell us something more about that, please?-- Sure. The State Planning Policy nominates a-----

And by all means refer to whatever you need to in your statement or any other documents you have with you?-- Thank you. What I would like to do is perhaps refer to specific elements of the State Planning Policy. The council is certainly - if I can just bring up the relevant provision.

I am just wondering, Commissioner, if that was a convenient time, Mr Nelson might be able to marshall his documents and be a bit more efficient about it.

COMMISSIONER: We will come back to 25 to by that clock, which is a bit slow.

THE COMMISSION ADJOURNED AT 11.20 A.M.

THE COMMISSION RESUMED AT 11.35 A.M.

BRENDAN JOHN NELSON, CONTINUING:

COMMISSIONER: Yes, Mr MacSporran?

MR MacSPORRAN: Thank you, Commissioner. Mr Nelson, before we adjourned, I think you were about to embark upon some comments about the QRA flood mapping exercise as it relates to the requirement set out in the State Planning Policy 1/03?-- That's correct. The State Planning Policy outlines in section 5 that the identification of natural hazard management areas within each of the local government areas would be the process by which a council would seek to identify an area that should be considered for the purposes of either bush fire, landslide or flooding. The natural hazard management area, as defined in the State Planning Policy, actually talks about an area that has been defined for the management of natural hazard - flood, bush fire or landslide - but may not reflect the full extent of the area that may be affected by the hazard, and it goes on to talk about an example of the 1 per cent AEP flood line. Natural hazard management areas for flood and bush fire are described in Annex 3 and Annex 3 was dealt with in the recent temporary State Planning Policy. If we then take that to the next step and then consider what was actually intended in the drafting of the State Planning Policy, the guidelines supporting the policy is actually quite helpful, and by reference to the actual State Planning Policy guideline, it does go on to actually identify how you undertake or how you identify a natural hazard area - management area - for the purposes of flooding, and it goes on to talk about historically it has been based around AEP 1 per cent, which is what we've heard quite a bit of, but it also goes on to say that there's methodology for applying a natural hazard management area in areas where data may not be available or where flood studies may not have been completed, or where it goes on - and by reference to section A2.12 in the natural hazard management area - it may be beyond the capacity or needs of some local governments, particularly those with low growth rates or low rate base to actually go and undertake a flood study or - by conventional means - the hydraulic and hydrological study - to ascertain the risk profile. In terms of taking that one step further, it does go on to describe some methodologies by which you would seek to develop that natural hazard management area, and it goes on to say that the alternatives can include historical flood data, existing flood studies, topography, and so on and so forth. So, the methodology which has been applied by the authority and DERM in this mapping exercise has been, in our view, very much consistent with what was expected or perhaps foreshadowed in the State Planning Policy in the guideline. There is reference in the guideline that perhaps the treatment of flooding might have been different eight years ago when the

State Planning Policy first came out if there had have been a consistent state-wide data set. If, perhaps, this flood mapping had have been done at the point when the State Planning Policy was conceived, the same approach to landslide and bush fire would have been applied to flooding. So, in terms of the approach taken by the State Planning Policy and the rationale behind what the authority and DERM have created, I think it is consistent with what was expected in that regard.

Now, you were in the process at one point before we adjourned in speaking to an example, and you mentioned Stanthorpe-Warwick as being a Council area where you had had some discussions and you were going to step us through the process by way of example of how this flood mapping and the code provisions might combine and work in an example you can give?-- Yes, in my statement - the second supplementary statement - at paragraph 350, there is reference to a couple of examples which call up two maps. The maps that we have - that I've exhibited in my statement are for Warwick and Stanthorpe. The first map which is shown at Exhibit 41 shows a brown line and it shows an area of blue hatch. Now, what I can tell you is that the brown line is the area or the line that has, in fact, been - that's it there - so the brown line which goes across the top and you can see it weaving down north-south to the eastern corner - that line is, in fact, the extent of the interim flood plan assessment overlay which has been developed by the authority and DERM using those data sets. This was a classic example of a Council, who had access to better information that wasn't available to us at the time, could go on and actually refine this line and refine this area. So, the area that's blue hatch is an area that has gone - the Council have undertaken a flood study and overlaid the two. What you will see there is that there's a high degree of correlation, but what you'll also see is the ability - if we go to Exhibit 42 - sorry, attachment 42 to my exhibit - you will see that the line which comes up in red would be an example of the refinement - it would be an example of refinement of the - there we go - so the red line which comes up is that example which would show that the brown line that the authority had prepared for Stanthorpe would be, in fact, replaced in the township by the higher and better quality data which has been developed as a result of the flood study.

All right. Now, we can compare them if we like, but just assume for the moment that Council didn't have that flood study which allowed that refinement to be, how would the Council, for instance, use the QRA map?-- So, the Council - given it is a voluntary tool - it is part of a tool kit - the mapping which we've produced and the model code are elements - the Council would be expected to - in terms of if they wanted to adopt this into their planning scheme - review the information that we've provided. An example of a map book that we would produce for the Council - this is a hard copy map book, but we've actually produced these for each of the sub-basins that we're working in. This is available electronically as well, but we know the further west we go in Queensland, the councils tend to like using the hard copy, so

we have, in fact, produced those. If the Council were to pick this work up, we would ask them to actually go through and verify this mapping. So, the mapping that we've produced - you will see the example for Stanthorpe, which is a small part over the township of Stanthorpe-----

Yes?-- -----our mapping covers the whole of the sub-basin, so the areas outside of the areas that have been mapped by the Council at least have some coverage, and there's not gaps that might occur if we simply rely purely on the flood studies being undertaken themselves. So, we would ask the Council to review this mapping in light of the words in the code. We've provided a streamlined adoption process with the Department of Local Government and Planning if the Council are happy with the work. So, as part of the process, we'll go backwards and forwards with them until we get the line and the location that's agreed, we'll ask them to review the words in the model code. Once that's to a point, we'll then ask them to make a Council resolution adopting this work. Once the resolution has happened, that will be sent to the Department of Local Government and Planning - the Minister for Local Government is the responsible Minister - and we would ask that the - the process we go through there is a minor change under Statutory Guideline 02/09, and that statutory guideline basically says that for a minor change, you don't have to go through a State interest check or public consultation. The authority is doing that on behalf of all councils. So, we've asked the Department to actually expedite these minor changes into the planning schemes, and that could happen in as little as two or three weeks. Our expectation would be - and then it would go back to the Council, whether it be the CEO or whether it be the full Council for inclusion in the relevant schemes.

It provides a very straightforward, quick method for a Council to incorporate into their scheme?-- Not only that, it also provides a full coverage for a local government area who might, at the present point in time, only have small areas of their local government with coverage, and in the event of wanting to go and do further flood studies in the future, we would say that's appropriate in appropriate locations. This mapping can incorporate that.

Yes?-- They are not mutually exclusive. This mapping supplements that work and will certainly be dynamic and be refined over time.

And that - I assume from what you've said, that was the case with Stanthorpe. It only had the flood study done for a small portion of the local government area, being the town centre area?-- That's right.

But not elsewhere?-- I think they're also looking at Warwick. There's an example also in my attachments of Warwick where a similar situation has been undertaken and there are examples there of that similar refinement process. We would expect that process to occur right across the state where the flood study work has been completed and, where flood studies will be completed in the future, I know that through the NDRP program

which recently funded a further six or eight flood studies this year, I know that when those studies are completed, the expectation would be that that work gets incorporated into this flood mapping as well. So that, over time, we end up with a document, and certainly mapping across the state which is highly valued, but also highly useful to councils in the - not only in planning for the future, but also in the development assessment process.

All right. Now, the State Planning Policy requires a defined flood event to be chosen to make the policy applicable; is that so?-- Yes, it does.

So, how does the QRA work - assist in that process for a Council that has limited resources and access to other data?-- So, what the State Planning Policy refers to is a - the natural hazard management area, nominating that. What it then refers to is a defined flood event and there is some guidance provided around that that generally it should be 1 per cent. It does make reference to local variations, where they're appropriate, based on the individual circumstances. The expectation would be that the Council, in adopting the mapping with the updates that they might have, based on local information and verification, that would become a natural hazard management area for the purposes of the State Planning Policy, which would then allow the Council, through any development assessment process - so, whenever any development, whether it is for units or whether it is for service stations or the like - it would allow those to be considered against the provisions of not only the State Planning Policy, because there would be coverage within the planning scheme, but it would also - if they pick up the provisions of the model code, which really focus on that built form, would allow those uses to be assessed against those provisions as well for any sites that might be located within those - within those mapped areas.

So just descending into some greater detail, if we can, for a moment, how would a development application be assessed by a Council who picked up flood mapping and the code provisions from the QRA work?-- Sure. So, the expectation would be that Council would resolve to pick this up as a natural hazard management area. That would give them then the coverage of the State Planning Policy. We would also be asking them to pick up the model code or elements of the model code. We know that in review of planning schemes across the State, the level of sophistication in schemes varied greatly. There were some very sophisticated and less sophisticated schemes. So, some of these elements of the model code will need to be adjusted to suit the circumstances of the local government area, but what we would be saying is that if - say a developer came in and wanted to build some units and it was in an area that was triggered by the mapping, whether that be the mapping that was derived as a result of a flood study or whether that was the mapping derived as a result of the authority's data set, the Council's town planner, in the assessment of the application, would - if the model code was adopted as we've produced - would go through each of the performance outcomes and assess

that development against those performance outcomes. So, the first performance outcome would be as outlined in the model code. "The development siting and layout responds to flooding potential and maintains personal safety at all times." Some of the acceptable outcomes that have been identified for that particular scenario are, "New buildings are located outside the overlay area." Well, in this case, if the entire site is within the overlay area, that can't be complied with. "They're located on the highest part of the site to minimise the entrance of flood waters." Again, that's quite logical, but you would expect in the design consideration that would be taken into account by the designer. "It is elevated and is provided with clear and direct pedestrian and vehicle evacuation routes off the site." You then go on to look at the other performance outcomes, focusing on the actual materials, making sure that the materials are resilient. So, it could well be in those situations, if the Council were looking at the development application, they might call for a further flood study from someone to assess the risk elements of it - of that proposal. It could well be that they're satisfied, based on local knowledge, that the risk is - does not warrant that action, but it does require some deliberate decision-making by the Council, particularly the planners, in terms of whether or not that use is appropriate for that locality.

Yes, that process is triggered by the flood mapping, giving coverage in that area?-- That's right, and if the Council nominates a flood level, which we would ask them to consider - not all councils can do that, but we would ask them to consider that - even in the absence of a flood study, certainly best practice in this country says that reliance on historical data, highest recorded flooding events are appropriate, plus appropriate freeboard. That would at least allow the Council to make sure the built form, if it were units - that the built form were elevated enough to be above the - whatever that defined flood level is.

If you don't have mapping, even as basic as the raw QRA product, how does a local authority deal with any natural hazard management area, or declare one?-- Difficult - it's difficult for a local government in that particular situation. There is some inconsistency, perhaps, in the way the State Planning Policy - you might interpret it. What I would say is that most councils would consider it, but you are very much relying on local knowledge and you're very much relying on the officer at hand to have an understanding of where it might flood and where it might not flood. At least this gives the councils the trigger to ask the question about that issue, and we know that certainly with a lot of the western or remote councils, they don't have planners on staff - they rely on external contractors to come in and do the work for them, who are very good - but this would provide them with certainly a tool which they could utilise and have some confidence that there is some baseline information available.

And, as you say, it is expected that that baseline will be validated by local knowledge?-- Absolutely.

And added to by local knowledge?-- These maps are interim for a very deliberate reason. They're dotted lines for a very deliberate reason because we are after that local verification and that local validation. We are expecting, through this process, councils to come back and tell us where they have better information. We're also asking them to tell us are there areas, perhaps locally, that just will never flood that we haven't been able to pick up based on the fact that we are, say, using the 10 metre contours. So, that local validation is absolutely instrumental in this whole process and we would certainly expect that from councils prior to any adoption.

All right. Can I just take you back to the guideline for a moment, at page 9. That's your guideline, Part 1?-- Yes.

And in the area on the right-hand side of the page towards the bottom there it talks about flood mapping maturity levels?-- Yes.

Do you have any comment about the language that's used in that section of the guideline?-- Yes, I do. The maturity level is actually a very important diagram to illustrate flood mapping across the state. The majority of the state - in fact, more than two-thirds of the state - is at level zero where there is no flood mapping - certainly no visible flood mapping in the planning schemes. Of those schemes that do have flood mapping, we know that only a small portion cover the whole local government area, but this flood maturity level outlines the process which we see a council - or the maturity of this mapping going through. So, step 1 is that each of the sub-basins are mapped, and we've made tremendous progress on that, and so the authority and the State are taking responsibility for that. Step 2 is the confirmation or the verification by the Council. Perhaps the language of "potential to adopt" as equivalent to "probable maximum flood", in hindsight, we would not have that - that wording there. That wording suggests that the line is, in fact, a probable maximum flood. There may be instances in our mapping where that is, in fact, the case, but we can't say that without the evidence of a flood study being undertaken. So, I would prefer to - certainly given that this is a draft document - and through the finalisation and the review of it, that language be tightened up to reflect more appropriate language as outlined in the State Planning Policy.

Yes?-- So, I would expect then that we would be making reference to a natural hazard management area for flood as opposed to the probable maximum flood. And then the next element is, where appropriate, the flood studies get undertaken. We know that there's been a tremendous amount done across the state. We know that there is more being done at the moment and there will be more done in the future. Our expectation is to identify when they get done to make sure that there is a central port that can display and show this mapping for all to see, because the visibility of this information across the state is next to nonexistent.

This, again, makes plain where the QRA mapping sits in the hierarchy of things?-- Absolutely.

It's just one step above the basic absence of data?-- That's exactly right, yes.

And is expected to be added to to be refined over time?-- It is.

And that's why it is an interim measure?-- Correct.

All right. Now, with that in mind, can I take you to the Chinchilla example? It's in your supplementary statement, paragraph 282 or 3, I think it is. We had some evidence about this yesterday with Mr White?-- Yes.

I think you're familiar with the evidence that came in through Mr White yesterday?-- Yes. And I actually gave some evidence on this the last time I was before the Commission.

So, can you just take us through what's, in fact, happened with the Chinchilla example that is referred to?-- Yep. What actually transpired is through the collation of the information or the line for Chinchilla, we relied on five relevant data sets in that particular example. That was the imagery, the flood line derived from the satellite imagery, which we know is a much coarser scale, the floodplain data set, which included the soils information, the 10 metre wide contours and the gauging station data. Now, when the aerial photography became available and following some local verification and validation by some DERM staff of the location of the flooding event, it became evident to us that the actual location of the interim flood line was, in fact - the flooding event occurred outside that interim flood line. I think I've outlined that at paragraph 282 that we had an observed flood line, and I've gone on to actually compare at figure 16 the location of the flood line prior to receiving the actual flood line.

Yes?-- And then I've gone on to show the actual flood line at figure 17 with the initial interim flood line.

Yes?-- And then the revised flood line in figure 18, which we have gone back and reviewed as a result of that refinement process and that information which became available after the event. If anything, it's a classic example of the refinement process that will occur in this data set over the - certainly the months - weeks and months ahead, and years ahead.

Yes. Now, just to state the obvious, the difference between figures 17 and 18 is is that your broken yellow line has been extended out from figure 17-----?-- That's correct.

-----on figure 18 to cover the totality of the blue shaded area from figure 17-----?-- That's correct.

-----to reflect the extent of the inundation in the most recent event?-- That's right. And when that flooding imagery

became available, that was something that we would need to do and I would expect councils, if they have imagery available which shows this - perhaps the State don't have - or local information - this line will be refined over time.

And just for completeness, can we confirm this statement of - we're talking about now paragraphs 280 to - that deals with Chinchilla in particular - was signed by you on 21 October?-- Yes, it was.

And provided to the Commission in due course?-- That's right.

All right. Now, can I ask you this: you've talked in your statements about the approach taken by the QRA in its mapping exercise by mapping the sub-basins without regard to the local government area boundaries?-- That's right.

And you've explained the reason for that. Is there a particular example you can give to show the benefit of mapping that way rather than mapping within a local government boundary area?-- Having been fortunate enough to recently travel the majority of the State and visit 19 councils myself personally and provide those councils with the map books and the data that we've actually collated, it was very clear to me that a number of our councils - particularly our, perhaps, western and northern councils - have a lot to deal with. When we were on our travels, we were providing map books for each of the sub-basins that touched the local government areas. Tablelands, in particular, who I met with last Friday, they have 13 sub-basins which touched their local government area. I think that's the record that we've identified at this point. So, if you could imagine a council where resources are tight having to then start prioritising the delivery of flood studies on a catchment-by-catchment basis and you multiply that by 13, you then start getting yourself to the situation where you just realise that it can never be practically achieved that you would find that a Council like Tablelands would be able to do flood mapping for all of their sub-basins. It is not unusual to find councils with six and eight sub-basins, certainly in coastal areas, and some of the western areas we were finding the average was certainly in that six to eight per Council.

Can you explain to us briefly, if you would, why it would be necessary for a council to commission a flood study for each sub-basin within its area, rather than just a global flood study?-- One of the things that we identified early on as well was that it was very difficult for a Council to undertake a flood study in isolation of other things that might happen in that catchment. So, if you are a Council who was located at the mouth of a basin and there are several sub-basins within there and there are a number of townships, uses that occur in those townships can have a direct impact downstream, and upstream in certain locations, depending on some of the activities that occur. So, a Council doing a flood study in isolation of what else is going on in their catchment I think leads to some problems. Certainly some of the information I've been reading recently about the likes of Brisbane, for

example - flood studies being undertaken by Brisbane and Ipswich and trying to get the correlation between those two councils - that demonstrates what would be happening right across the State, and so understanding flood studies at the catchment base across the State is a strategy which needs to be undertaken so that you can start informing valid land use planning decisions. You can't simply rely on hoping that what happens upstream or downstream isn't going to have an impact on them.

And that's what the QRA mapping does, it maps - provides flood mapping at basic level for all of those subcatchment - sub-basin areas?-- It does. It does identify the council boundaries because we know the jurisdiction the council have responsibilities. It also identifies the current planning scheme. So every map sheet will identify the council boundary, it will identify the current planning scheme it will be regulating, but it will be focusing purely on the - what's happening in that catchment, because that's the important consideration. Flooding does not respect jurisdictional boundaries.

And it's expected, as we have said before, that the particular council will use that mapping and build on it for its local requirements?-- Absolutely. This is the foundation for hopefully what we would see across the State a council refining and improving that quality of mapping over time. As they complete flood studies, as I have shown in the Stanthorpe example and perhaps the Warwick example - it's also attachment to my exhibit - we would expect that to be happening right across the State. So where flood studies are commissioned and undertaken they will then be rolled into this mapping over time. We will see whole of catchment pictures. There will be areas within every catchment, I can guarantee you, that will not have an engineering study done on it because it is not cost effective to do so, and there is no data. In a lot of places across the State we have data - in western parts of the State - of contours which are 10 metre contours. Now, we know that if you were doing a flood study 10 metre contours is not satisfactory for doing a flood study with any degree of accuracy. Certainly as you go west and in the channel country, you could have 10 kilometres between contours. The example - one of my exhibits - Goondiwindi, there is - it is very flat in Goondiwindi, and I don't think there is a change of elevation in Goondiwindi of more than 10 metres for almost that full extent of the image that's one of my attachments. So as further data becomes available, we know that the line will be refined, we know that there will be better information, but you have got to start somewhere. You can't simply say you want a gold plated solution across the entire State because it will never be achievable, it's not cost effective, and we are going into a new era of planning schemes in this State which we need to make sure that we are getting some provisions into them rather than what has happened under the former regime under the Integrated Planning Act.

And the QRA mapping provides for the first time ever consistency of approach in the mapping across the entire State?-- Yes, it does.

And that exercise, so far as the mapping is concerned, you anticipate will be complete by either late this year or early next year?-- Yes, that's correct.

But it's always anticipated that the mapping will be combined with the code - model code provisions to assist the council. You can't have one without the other?-- That's exactly right. They are a tool kit, and we've seen examples across the State

where fantastic mapping does not result in good built urban form. I can take you to examples in Ingham where the council have said to me, "We've spent all this money on mapping. Why have we got this building being built on a mound in the middle of a residential street? Why has this happened?" And the answer is, "Because the provisions of your planning scheme need to be supplemented by some additional provisions." And so they were really the impetus for us driving the model code and testing it with a number of local government areas, and so the two work hand in glove. They must be considered together.

So the tool kit consists of both?-- Correct.

Now, speaking of the councils, you've done a - to some extent a road tour to speak with various council officers from a whole host of councils across the State?-- Yes.

What, generally speaking, has been the feedback?-- The feedback has been terrific. As I outlined earlier, we have been to - by tomorrow we will have been to 34 councils over the last few weeks, and the focus of our council trips has been to meet with councils where we have completed mapping, and we will then move on, as we complete further sub-basins, we will meet with every council. That's our intention and that's our commitment. That has been terrific because a lot of our councils have been saying to us, "This is a God send." They haven't had the money or the capacity or the resource to be able to do anything like this ever, and this actually gives them a baseline where they can start from somewhere. We know that a number of the councils have said to us, "Well, we're doing a flood study at the moment. How is this going to work?" So what we have done is we have shown how the flood study can actually work with the mapping we have done so you don't end up with holes. You can imagine a patchwork quilt of flood studies across the State. It wouldn't be much use if you have got big gaps in between it. Now, you might say that from a development perspective it's not that important, and perhaps in some of those western rural councils where they are low growth and they are perhaps used for grazing, it's not that important, but what happens in those catchments is certainly very important and has had some effect on some towns in terms of operational works, earthmoving, those sorts of things. So they are just as important considerations as perhaps some of the urban centres, and flood studies that traditionally are undertaken will not capture that, and we will still end up with the same situations that we have had for the last decade into the future. So, you know, the mapping that we provide will provide that platform for councils across the State. The feedback has been great. As I mentioned earlier, Central Highlands have resolved yesterday to pick it up, we know there is another one going tomorrow, a couple next week. My expectation is that from what I said earlier about the bushfire mapping where we said that there was a 75 per cent of schemes had full coverage of bushfire mapping in the State, my hope is that over the next few months that we can get what is now less than 20 per cent closer to 75 per cent, because we know that the councils who are now doing their new planning schemes, they won't all be completed next

year, some of them will take another couple of years, is it appropriate to wait till the new planning schemes get done, is it appropriate to wait three or four years until a flood study is completed and then roll it into a new scheme? I don't think it is. And so by doing this work at least we provide that interim measure which will hopefully inform a much better future for flood mapping.

Commissioner, that's all I have. Perhaps I should for completeness tender that A3 map book that Mr Nelson referred to. That's the Stanthorpe Warwick one, wasn't it, I think?-- Yes, it is. Dumaresq.

Yes, thank you. Yes, Dumaresq River.

COMMISSIONER: Yes, Exhibit 928.

ADMITTED AND MARKED "EXHIBIT 928"

COMMISSIONER: Mr Callaghan?

MR CALLAGHAN: No, I have nothing. May Mr Nelson be excused?

COMMISSIONER: Yes, thanks, Mr Nelson. You are excused?-- Thank you.

WITNESS EXCUSED

MR CALLAGHAN: I call Stephen Jacoby.

STEPHEN KENNETH JACOBY, ON AFFIRMATION, EXAMINED:

MR CALLAGHAN: Could you tell the Commission your full name and occupation, please?-- Stephen Kenneth Jacoby, cartographer.

Mr Jacoby, you've provided a statement to the Commission, a statement dated the 17th of October 2011; is that correct?-- That's correct.

I'll just get that shown to you. That has already been tendered, but that's a copy of your statement?-- That's correct.

And do you have another copy in front of you there?-- I do.

All right. Can I get you to go to your statement? In paragraph 37, you state that the interim floodplain mapping area is a graphical representation of the floodplain derived through the methodology references in SKJ11, and so if we go to SKJ11, the methodology is explained. I am just wondering if you can help us perhaps by illustrating that. Could you turn perhaps to page 5 of that attachment which talks about the data sets involved, and figure 3 there is of the Dawson River sub-basin overlaid with floodplain data set generated from soil and vegetation information. Can you just elaborate a bit on what's actually depicted in that diagram?-- I can. That is one of the inputs that was used by our staff in compiling the floodplain mapping, but I'd like to stress it's only one of the inputs.

What is? What are we looking at on that diagram that is one of those inputs?-- As it states there, it's a data set showing a combination of alluvial soils and vegetation, vegetation that's consistent with flood plains.

And, I'm sorry, we're looking at colours, not at data?-- They are effectively the same thing.

But can you just tell us what they are?-- The data set has been compiled over many years through a - it's a regional ecosystem data set. It shows a combination of land zones, in this case land zone 1 and land zone 3, which is a combination of geology and soils, and it shows vegetation that's consistent with existence on flood plains.

So when we look at figure 3, what are we looking at that is vegetation consistent with flood plains? How is that depicted in the diagram?-- In the diagram it's shaded as a - as a pale colour on the map.

Is that - within the purple line we can probably discern three different colours. Would that be right?-- Correct. You have the satellite imagery backdrop, you have the streams, the drainage, and you have the shaded area in a pale beige colour.

Yes?-- And that data set, the pale beige colour, represents the soils and vegetation data sets that are consistent with the - with flood plains, the existence of flood plains.

I should have said, with the streams there is probably four different colours in there. There is the pale beige which is soil and vegetation?-- Correct.

Then the yellowish colour, is that just soil?-- I think there's only one colour that I can see there, which is the pale beige colour.

All right. Sorry, all right, that's the beige. All right. There's a lighter green and a darker green?-- That I believe is the backdrop, is the satellite imagery.

The backdrop being the darker or the lighter?-- It's - it's a - it's a satellite imagery which is showing - which is showing basically a photo of the landscape as taken from space, over which is - it's overlaid - is the drainage pattern, together with the key data set that you're I think honing in on which is the vegetation and soils layer.

I am not honing in on anything at the moment. I am just trying to understand the diagram.

COMMISSIONER: What sort of vegetation is consistent with a floodplain? What are you looking for?-- We're looking for vegetation that can withstand existence in floodwaters, and in many cases we've knocked out vegetation that doesn't cope or exist with flooding, and this data set is particularly used in agriculture to determine location of vegetation and particularly the soils that have flood limitation, so different crops can withstand flooding to different levels, and the primary use of the data set is to help in that regard. Now, we've used it in this context to hone in on areas that are consistent with - with floodplains, but, as I stress, it is only one of many data sets that we've used.

Is it one that gives you any clue as to the timeframe you're looking at with the mapping, because presumably if the vegetation exists, can you get any idea of its life, how long it's been there?-- The vegetation, we have both remnant vegetation, which is the current vegetation that you would see if you went into the field now, and then we also have a preclear data set, which is an estimate of the vegetation that existed pre clearing, and that was based on aerial photos that were taken back in the 1960s, and estimates of vegetation that existed before then based on soil types.

But have you any means of establishing how long historically it's been there?-- The - the estimate for the preclear vegetation would be that that was vegetation that was there prior to European settlement, because what we're trying to do is to ascertain vegetation loss in the landscape. So the remnant vegetation is easily surveyed and found, and part of this program where this data set had been used previously had been to try and ascertain the difference between vegetation

that is existing now and what had existed in the past to calculate vegetation loss. Now-----

How does vegetation loss help you to establish whether something is likely to be a floodplain?-- They are separate - they are separate programs, and we have used this data set-----

All right. Well, take it from me, all I am worried about is floodplains. That's the only bit I am worried about. I am just trying to get a handle on whether examination of the vegetation is something in respect of which you can establish any timeframe, in other words, are you just left at saying, well, there's vegetation there consistent with the existence of a floodplain, and some of it we know will have been there pre European settlement, but how long before we have no idea, or how does it work?-- Mmm-hmm. So where we have indications of - of vegetation that can withstand flooding, we have a good indication - we have an indication that that vegetation exists today, that will be remnant vegetation, and that will be indication of vegetation that is on the floodplain. We then have an estimate of the preclear vegetation, and that, too, is vegetation that is on the active - on the active floodplain. So we're reasonably confident that this data set here is consistent with a floodplain, but in terms of its - in terms of its longevity, its life, we could be dealing with data sets that are many hundreds of years old. The geology and the land use is indicating that these floodplains have been around for a long period of time. This is why this is just one indicator data set, and we bring in other data sets to help refine this particular data set.

All right. One data set at a time. Thank you.

MR CALLAGHAN: Well, can I take you to page 10 of SJK11? And can we just work out what we're looking at here? The yellow broken dotted line is the interim floodplain assessment overlay; is that right?-- That's correct.

And is that what you've drawn after having regard to all your data sets?-- That is correct.

Okay. And can we agree that relevantly there are four different colours on this diagram? There is that beige colour you've described?-- Correct.

There is a lighter blue, a darker blue, and then green in various shades?-- Yes.

Okay. Can you tell us what we're looking at with the beige colour? What does that represent?-- That represents a data set that we just discussed previously, which is the soil and vegetation data set that we believe is consistent with existence of floodplains.

And just that data set, soil and vegetation?-- Correct.

Okay. And in response to the Commissioner you acknowledged

that there were some - or you acknowledged that the timeframe that was attached to the vegetation data set could range, I think you said, hundreds of years?-- Vegetation and the soil as a combination is - could have a very long - a very long term.

Okay. How long is very long?-- I think-----

Maximum, probable maximum in terms of relevance?-- I think in the - in geological terms we're talking about something that's very young. I think the quaternary period that the land use - that the land zones are associated with are actually in the period of around 2.6 million years. So the actual land zones that we're talking about are very long run, albeit short term in geological times.

All right. Thank you. I follow. So that's the beige colour. The lighter blue then is-----?-- Lighter blue - the lighter blue I believe is the - is the - so, sorry, the lighter blue is only showing up because it's the intersect between the darker blue and the beige.

Is it easier to start with the darker blue and tell us what that is? That's the-----?-- Indeed.

That's the 2010/11 flood level; is that right?-- That's correct. That's what we have seen in this instance I believe from satellite imagery.

Okay?-- And the lighter blue, as you join the two over, has created - is created by their intersection.

Okay. And the green is everything else?-- Correct, the satellite backdrop.

Okay. Can I ask you then about parts of the diagram? For example, in the top left-hand quadrant of the diagram, and right over to the left-hand margin of the diagram, we can see where the broken line loops around a beige area which is bordered by green on both sides. Do you see that sort of finger of beige that I'm talking about over on the left-hand side there?-- Yes, I do.

Am I right in interpreting that green area surrounding that beige finger as being an area which is not recorded as having been flooded in 2010/11, and is not identified by any of the data sets as having been flood affected at any time?-- It's not identified by the - it's not identified by the soils or vegetation or the 2011 flood event, but it is identified by the contours-----

Right?-- -----which are another data set that we have used here.

I see?-- And the flood interim floodplain assessment overlay in this case is following the lay of the land, it is following the contours.

Okay. And so that this diagram is just a representation of one step in the process, if you like, and other data sets were added to actually determine the line, the broken yellow line?-- That's correct, and I think this is a very good example, because the line was laid down by our cartographic staff making an assessment of all of these inputs, and it would have been incorrect for them to simply follow the 2011 line or the soils and vegetation line without regard to the contours. So those two former data sets I just mentioned provide an indication of the likely extent of a floodplain, but predominantly we've used the contours as they exist today to define the extent of this interim - of this interim line.

And is it the contours that explain the circles that you've drawn on this particular diagram as being areas which it's suggested were flooded or had been flooded at some stage but which you've worked out either were not or could not have been?-- That's correct, so this is the other side of the same-----

Yes?-- -----issue where the contours which we have a high degree of certainty in, we wouldn't have floodwaters running uphill, and so those contours here show as 10 metre contours, we have at least a 30 metre elevation, and we would not have in the smaller circle, we would not have floodwaters running up that ridge, and, similarly, we have a similar situation in the larger oval which indicates soil and vegetation combination which is also running uphill.

But that - the signs suggest that that area in the larger oval circle had been flooded or at least covered by water at some stage?-- In that long-----

In that geological-----?-- Fairly long run period.

Yes?-- Hence why we can't simply rely upon the vegetation and soil data set alone. We have to bring in other data sets. In this case the contours provide a very useful data set to enable us to constrain these other inputs.

COMMISSIONER: Why do you merge vegetation and soil into one data set?-- The lineage of that data set is that we have broken the State up into bio-regions, I think there were about - about 13, and then within each of those regions they have been broken down into primary land zones of which land zone 3 deals with primarily alluvial type soils. That's the predominant type land zone.

So is this just a matter of history, this is how the department has used them in the past?-- How it's been used in the past, and we have taken the statewide data sets that have been used for other programs, and particularly to support the Vegetation Management Act.

All right. Presumably if you were starting from scratch, you could assemble separate data sets for these two things and have a different set of overlays?-- I think these soils data sets have been compiled over - over 30 odd years, and we would

- we wouldn't have been able to compile from scratch-----

Yes?-- -----a data set in the timeframes.

I was talking hypothetically?-- Yes.

Thank you.

MR CALLAGHAN: So is this figure, figure 8, not the final interim floodplain overlay?-- The yellow line is the interim floodplain overlay. It is not final in the sense that it hasn't been checked and validated by local government.

No, but this is the one that has been issued?-- This is the one that's been issued, that's correct.

That's been done - or the factoring in of the contours is something which has been done as a desk top exercise I take it?-- Correct.

I think in your statement at some stage you talked about the discrepancy that we are talking about which I think is to be expected due to the lineage of the data sets. Is that another way of saying what you have just been explaining?-- Yes, that's right.

Can I take you to SKJ15, which is an e-mail sent by you on the 10th of June this year where you expressed some concerns. Do you see that? You are familiar with that document?-- Yes, I am.

One of those concerns being the suitability of this and the other data sets involved to produce the desired outcome at the scales required. What specifically was your concern at that time?-- Primarily around the time frames, which is in the fourth dot point there, we understood from the reconstruction authority that they were seeking to create mapping that could be used as a natural hazard management area mapping to support their guideline and that they were seeking advice from us as to whether that mapping could be created in a very, very short time frame and I was concerned that we were going to be able to compile that mapping in the time frame and at this stage we hadn't done the homework that we subsequently did to pull together a methodology to get us to where we are today. So I had some concerns that we were going to be able to deliver.

You are content with the finished product?-- I am from feedback from our primary client, which is the QRA, but more importantly we are starting to get good validation and feedback from the Local Governments where it was intended and that's the most important component.

Can I ask you what might be a foolish question, but as a cartographer you are obviously familiar with the maps that we are now familiar with that depict a standard, say, Q100 event, that sort of flood map?-- Yes.

Is it possible, or is it practice perhaps is a better question, to produce maps which depict the depth of inundation to be expected at certain areas during an event of said probability?-- I think that would move into an area outside of my expertise and you would be moving into areas where you would be expecting both hydrological and hydraulic engineering to play, at quite a detailed level.

That's probably what I am asking. Is there an interplay between cartography and that level of engineering? Even if you are aware of it as a matter of practice, it may be beyond your particular expertise?-- I think in the course of the work that we have been involved with with the authority and numerous presentations that we have given of this cartographic work to a range of - call it the hydraulic and hydrological engineering fraternity, I can see that there is a sensible

marriage of those two disciplines that can be put to good effect. We have, in the guideline, explained that we think our mapping is best suited to areas where there are no detailed flood studies and they provide - the mapping provides a very useful overview and a stop gap measure, but we have been clear to say that we don't believe it replaces the need for further detailed studies but it could well be used as an indicator for where those studies could usefully occur.

I was probably asking you to move beyond specific consideration of these and I was interested in what you just said about there being room for more - I think you said a marriage between disciplines. Are you aware of any developments in that area?-- We have been thinking about next steps in terms of what could be some of the next products that would come - that would be able to come forward and certainly we think that a cartographic approach in terms of using maps and spacial tools to visually communicate is an obvious area that would benefit the public in what is-----

When you say "we", sorry, who are you talking about?-- So the spacial fraternity, in terms of being able to convey information, and I guess I am jumping back to "a picture's worth a thousand words".

Yes, that's what I am interested in?-- So, the mapping that we have produced to date has been published on the QRA's website. We have had good feedback on that mapping from-----

Like I say, I was asking you to sort of move beyond that, though, into a just a general - and I am interested in your general observation because for someone from the outer spacial fraternity, we are probably interested in what is possible in terms of cartography. This might be completely out of order, but is there - can you conceive, for example, a map which might meaningfully depict the velocity of water in a given channel, during a given event, or is that just something off the radar?-- I think that would be - I don't think I have seen a spacial product that does that. I think the potential is there to be able to develop products like that and to try to tailor them, if you have the supporting data and models.

Sure, this is all hypothetical and it's all a wish list I suppose, but who would we best direct inquiries to in that regard do you think, as to what's possible?-- From my view, I think this is work that we can usefully pick up, as I say, between the spacial fraternity bringing to the table some cartographic skills and leaning on the experience that we have had in the last 10 months, 11 months with our - with the hydrologic engineering fraternity, the engineers who are expert at the detailed flood studies, to see whether we can work together to come up with, hypothetically, spacial products that are more meaningful to the community and maybe better easily consumed.

I am putting you on the spot and it may be something you need to think about, but specifically if you were to suggest a

recommendation as to who should be talking to whom in that regard, should it be DERM with someone else or-----?-- Certainly DERM with someone else but I think it would be something I would take some advice on.

Sure. Okay. Last question. Coming back to the maps and the limitations or otherwise that they might have, did I understand you to say earlier that this illustrated the dangers - sorry, I am back on page 10 of SJK11. Did I understand you to say that it demonstrated the limitations of the science without also taking into account contouring, given that some of the beige area falls outside the broken line because when you factor in the contouring science it shouldn't be there; is that right? It shouldn't be within the line?-- For our purposes we have used the contours to exclude the beige and all of the other data sets. So we have used it to clip that data set out and on the basis that those data sets are running up too steep a gradient and wouldn't be consistent with a floodplain in that particular location.

It's probably self-evident but we have heard mention this morning I think of a place like Goondiwindi, a very flat sort of an area. Clear enough, contouring is going to be of limited assistance in refining the beige area in a place like that; would that be right?-- It goes to the resolution of the contours and the contours that we had to work with were of a very low resolution around the 10 metre level. If we had higher resolution contours we would be able to depend far more strongly on them and to still follow the same technique. I think that the methodology we have tried to pull together is consistent with being able to incorporate high resolution data and to improve and evolve. So I guess the short way of answering the question is if we had better data we would be able to input it into this methodology and to use it to much better effect, particularly in those flat areas where 10 metre contours simply don't provide the resolution of data that we would like to be able to work with.

I am not sure that is what I was after, but that's all I have, thank you.

COMMISSIONER: Does anyone have any questions other than Mr MacSporran?

MR URE: No.

MS MCLEOD: I have a couple of questions, thank you, Commissioner. Mr Jacoby, my name is McLeod and I am here for the Commonwealth. Can I ask you a couple of questions about your paragraphs 19 through to 21 in relation to the use and acquisition of spacial imagery. In paragraph 19 you mention that imagery came from the international charter, Spacial Major Disasters, and is my understanding correct that the charter permits member organisations to request satellite imagery in times of natural disasters from commercial

satellite operators around the world?-- Yes, that's correct.

That imagery is then provided in those circumstances and on a restricted basis essentially to assist the requesting country to deal with its response to the natural disaster it's facing?-- Correct.

You note that a request was made - or an activation of the charter was made on the 3rd of January through Geosciences Australia. Do you understand the process in this case to have involved Emergency Management Australia as well?-- Yes, that's correct. I made the request through to GA.

Yes?-- And we then liaised with EMA.

Australia is not a member of that particular charter, so in this instance the request was made through the United States Geological Survey; is that correct?-- That's correct.

I should indicate to the Commission that the process for the activation of Commonwealth assistance through Emergency Management Australia was described in the statement of Mr Campbell D'Arby that was provided to the Commission in the first round of hearings. That statement was never tendered but it would be useful to have it tendered for completeness on this aspect. I don't have a copy here but we can certainly provide one if need be.

COMMISSIONER: There will probably be a bit of a round-up come Friday of statements to be tendered, so if you want to remember it for then, Ms McLeod, and liaise with the Commission staff.

MS MCLEOD: Does the Commission require a copy to be produced at that time?

COMMISSIONER: I am sure if we have it, we have it.

MS MCLEOD: You say also that this was the first time that the charter had been activated for Australia. That's partially correct if I can suggest that it has been activated - it's the first time it's been activated by Australia but in fact it was activated on Australia's behalf for the Victorian bush fires. Are you aware of that?-- Yes, I do. I think in that case it was activated by the US Forest Service.

Right, and the US Forestry Service was attending to assist the local country authority and made the recommendation to trigger the activation in that case?-- Yes.

Can I invite you to look at paragraph 20 and 21. The images that you obtained were provided by the Canadian Space Agency in this instance for a number of area, including the Emerald, Rockhampton, Bundaberg region. Are you aware of that?-- We had images provided from about 12 different satellite providers and I am sure that - I will take advice but I am sure that provider was one of them.

They later included Brisbane I should add?-- Okay.

In paragraph 20 you note the use of the mapping. You are looking for essentially an image of the flood footprint at a particular time, aren't you?-- That's correct.

In paragraph 21 you note some of the limitations with satellite imagery being affected by cloud. Radar imagery obviously can also be affected by the interference of objects, including tall buildings, tree canopies and things of that nature in obtaining clear radar reflectivity images?-- Yes.

There may be other interferences with radar images of course. Were you aware that Geoscience outside of the charter - triggering of the charter, Geoscience also provided other imagery from publically available satellites outside of the activation of the charter to Queensland?-- Yes, and we worked with GA quite closely during the period of the floods and also during tropical cyclone Yasi as well, so that's correct.

Thank you, Mr Jacoby. I should also note for the Commission's benefit that the reference in paragraph 11 to the aerial imagining that was obtained from the Australian Defence Force is discussed in Air Vice-Marshall Kevin Paul's statement that's already been tendered.

COMMISSIONER: Thank you. Mr MacSporran.

MR MACSPORRAN: Mr Rolls.

MR ROLLS: Thank you, Commissioner. Just one matter,. Mr Jacoby. You mentioned on two occasions, in response to questions by my learned friend about feedback you had received from local authorities, have you received feedback from local authorities in relation to product that you have assisted in producing for the Queensland Reconstruction Authority?-- Yes, we have. The feedback to date is and still coming through, so we have been - myself and my team have been with the QRA on the roadshow that has been ongoing in terms of consultation, explaining both the tool kit and the mapping and we had an opportunity to talk to probably 20 plus councils at this stage, in terms of the mapping and its application, and the feedback - the mapping has been well received and the feedback has been generally very positive from the councils.

When you say well received and very positive, what do you mean by that? How is that conclusion reached?-- Firstly, I think the - I think that we were assisting the councils with an area that they have found particularly challenging which is to create, over their entire area of responsibility, a flood hazard map of any type and once we have run them through the methodology, the process that we have used, the feedback in terms of their understanding of the flood hazard area has been very positive. We haven't got it absolutely right but the

process is one in which we are providing them with a line on the ground that they can work with quite readily to amend and adopt and the feedback that we have had from the councils has been that it is very difficult for them to get to that first - to that first stage of having a hazard area defined and the work that we have done has enabled them to then pick that up and work - we think they will be able to work quite quickly in adding in and adopting existing flood studies and amending the line to achieve of the outcome that the guideline is endeavouring to achieve.

The line on the ground is in effect the floodplain, is that correct?-- We have attempted to map the floodplain using the methodology and techniques that we have been explained earlier.

What do you define as a floodplain for the purpose of this particular map?-- Well, in essence, in the planning tool, in the guideline, in my view it's the model code that is the most important part of the document. The model code provides local governments with the ability to test new assessable development for compatibility to withstand flood, as per SPP 1/03. That model code can only apply to an area and we provide the mapping for that area to which the code can apply. It's very much up to the councils to check that we have included a reasonable hazard area. We have used the technique to start with the floodplain and we are encouraging councils, in areas particularly where they have better data, and many of them do, to adopt that data and we can clip that in, particularly over towns, but the councils and the feedback they have given us is where they have very little information, it's between towns and it's that full sub-basin picture that we are providing them for the first time.

In paragraph 37 you identify that the interim floodplain mapping are is a graphical representation of the floodplain. I was asking you what you defined as being the floodplain for the purposes of graphical representation appearing on the maps that you produced?-- Well, the output is the dotted line on the mapping. That is our representation of the floodplain. The floodplain of course is not a well defined object. It's not something that has a hard or easily defined edge to it. It's certainly not like mapping a coastline, or a river, or a road. It doesn't have an easily defined edge to it and as such, we have used the technique that we have described to come up with our version of the floodplain.

COMMISSIONER: What's the best definition you could give of the floodplain as you were trying to map it?-- We've specifically chosen, in cartographic terms, a yellow line.

I am not worried about lines. What is the geographical feature? How would you describe that, that you are endeavouring to map? What's your idea of a floodplain?-- It's a land form of flat - or it's gently sloping - gently sloping or generally flat areas either side of a river or water course that shows characteristics that we've been able

to determine of flooding and we've input a lot of information about previous floods and we have put those inputs into our definition of the floodplain so that the yellow line contains previous flooding.

Alright, but it's not a time limited thing, it's flooding at any time, in the past essentially?-- It's an area that would be, in our view, prone to flooding.

Currently?-- Currently.

Alright, on the basis of the various data sets?-- Yes.

Thank you.

MR ROLLS: Could I put it this way: Is the summary of those maps - in effect the yellow line is the point up to which you would expect, in times of flood, that the river or stream, when it breaks its banks - would break its banks, that would be the extent. Water would flow over that particular part of the land?-- We would expect a future flood to be contained within that. It may not move to the full extent of that floodplain. If a flood did extend beyond our yellow line, we would, in our process, take that in as new information and we would amend the line to contain that new flooding information.

By your definition, you would extend it beyond the yellow line, it would be in effect extending the floodplain?-- Correct.

So it's the area over which water could be expected to flow in times of flood?-- Correct, and in-----

It mightn't reach the full zenith of the end of the yellow line but it might be somewhere within that yellow line, between the bank of the creek, stream or river and the yellow line?-- Correct. And if I may, the purpose for preparing this mapping has been to test new developments for compatibility to withstand flood. So as a planning overlay, it's there to work with a model code.

I understand it's part of a - what's been referred to as a tool kit and has one particular purpose but there seems to be an interest in these particular maps and what they show. We are talking about the feedback from the council in relation to what is shown on those particular maps. Have you any particular examples from any particular local authorities, specific feedback you have received, in relation to maps that you have produced?-- We have had - we have certainly had councils - one of the first steps they do is to run a correlation between the mapping that we have produced and detailed flood studies that they may have produced in the past and I am aware of that occurring in at least three instances. I think this morning we heard evidence around Warwick and Stanthorpe but also a team was recently in Gympie and the recent Gympie Flood Study also had a strong correlation with the mapping that we had produced as well.

What do you mean by a strong correlation?-- In that the detailed flood study that had been produced correlated very well in terms of the shape of the - in this case a Q100 line with the shape that we had created in the Interim Flood Assessment Overlay.

But that wasn't your intention to produce the Q100 line for Gympie, was it? The township of Gympie, the city of Gympie?-- No, absolutely not. We simply followed the methodology to create our version of the floodplain as best we could. The key point here is that it was by coincidence that it landed so closely to the Q100. The point that I take from it is that the actual line followed the same line that the detailed flood study followed. So if our methodology was poor, we would have seen a very poor correlation between those two lines. It means that we are following the landscape accurately, which for me was an endorsement of the approach that we were using, but I do stress we did not design it to be a Q100. It's just coincidence.

But it was an indirect validation of the work that you had undertaken in respect to the methodology you applied?-- That's correct. It also goes to your other point that there could be a higher flood beyond our line, say, in that instance, a Q200, which would obviously have water beyond our floodplain area.

The fact of the matter is that the Q100 line at Gympie appears to be the area of the floodplain. If there was a larger flood in Gympie, then it would arguably extend beyond the floodplain?-- And we would revisit that mapping and we would extend the floodplain as a consequence.

I have nothing further, thank you, Commissioner.

COMMISSIONER: Mr Callaghan.

MR CALLAGHAN: I will just pick up from what you said, if your methodology was poor, you would expect poor correlation; is that right? Did you just say that?-- I did.

It doesn't follow, though, does it, that the opposite is also true; that if there is poor correlation, that means your methodology was poor, or does it?-- Where our flood line in that area of Gympie - if we hadn't have been following so closely, as I understand it, a 90 or 95 correlation with the detailed flood study, that would lead me to be concerned about the methodology that we have used.

Your answer should be understood to be confined to the context of the Gympie example?-- Correct.

I have nothing further. May Mr Jacoby be excused?

COMMISSIONER: Yes. Thanks, Mr Jacoby, you are excused.

WITNESS EXCUSED

COMMISSIONER: Do we have to start any earlier? We have three witnesses this afternoon.

MR CALLAGHAN: Perhaps 2.15 is a better option.

COMMISSIONER: Alright, 2.15 then.

THE COMMISSION ADJOURNED AT 12.58 P.M. TILL 2.15 P.M.

THE COMMISSION RESUMED AT 2.12 P.M.

COMMISSIONER: Yes, please?

MR CALLAGHAN: I call Oskar Kadletz.

OSKAR KADLETZ, SWORN AND EXAMINED:

MR CALLAGHAN: You're name is Oskar Kadletz?-- Yes.

You are the Abandoned Mines Coordinator at the Department of Employment, Economic Development and Innovation, which we know as DEEDI?-- Yes.

Mr Kadletz, of course you gave evidence on the 22nd of September?-- Yes.

And since that time, the Commission has served you with a further requirement and you've produced a further statement dated 3 November 2011; is that correct?-- Yes, that's right.

I'll show you a copy of that. That's your statement?-- Yes, it is.

Yes, I tender that.

COMMISSIONER: Exhibit 929.

ADMITTED AND MARKED "EXHIBIT 929"

MR CALLAGHAN: Do you have a copy of that with you?-- I do.

Paragraph 6, you say that there are approximately 15,300 abandoned mines in Queensland; is that right?-- That's right.

If we just look at the question of ownership or tenure. DEEDI has legal ownership of abandoned mines if they're on land owned by DEEDI?-- That's right.

But in paragraph 16 you state that an estimated 12,000 of those mines are on privately-owned land; is that right?-- That's right.

That would include private leasehold and freehold?-- That's right.

These mines are the responsibility of the land holder, unless

DEEDI takes charge of them; is that right?-- That's right.

Takes charge of them under the Abandoned Mine Land Program?-- Yeah, ah-----

You're hesitating. Do you want to qualify that proposition?-- I'm hesitating about "takes charge of". On private land, we have addressed issues relating to some abandoned mine sites, mainly health and safety issues. I'm not exactly confident that we would have taken charge of those sites.

I see?-- Because what we do with those is generally we seek the permission of the holder-----

Right?-- -----to carry out works on their behalf on those sites.

So, do you have power to - is that your concern, that you're not confident that you actually-----?-- No, just wanting to make sure you understand the context of what we're working in.

Yeah, and I guess I'm picking up on what you said. You, as a matter of practice, ask permission-----?-- Yes.

-----to come on and do that which has to be done?-- That's right.

But do you have power to go on even if permission is not granted?-- We probably have under section 344 of the MRA, yes.

I might come back to that power later, but the starting point, I suppose, is that you would only take any action if there's a public hazard; is that right?-- That's right.

And is there a definition of public hazard, or is there a threshold, or how would we-----?-- I guess in - not by definition. The way we've worked on these things in the past is by expressions of community concern being brought to us through a number of avenues, either directly to the abandoned mine program or even, at times, through the Minister or one of the other ministers, and we've then gone to check out the sites, make an assessment of the issues there, and also that includes an assessment of the risk to the community from that site.

All right. We'll come back to that question, too, about assessment of risk, but you talk about expressions of community concern. Would the Mount Oxide situation be an example where there had been community concern in that case from the land holder or land holders themselves?-- Yeah, and in that case the land holder's concern was mainly of an environmental nature.

Yes, well, is that a - would that qualify as a public hazard?-- It possibly could, in that the - there was a question raised initially about whether his stock were impacted from the contamination, and there was also a question

of how far downstream the contamination went.

And just to recap, I think it was Exhibit 609 you showed us some photos of Mount Oxide and the nature of the contamination there being the situation where the river was quite startlingly blue; is that right?-- That's right.

There we go?-- Yes.

That's the stream that we're concerned about at Mount Oxide; is that right?-- Yes.

And we talked about the land holders there. That's the Spreadboroughs; is that correct?-- Yes.

I might at this point tender a statement prepared by Verdun Spreadborough.

COMMISSIONER: Exhibit 930.

ADMITTED AND MARKED "EXHIBIT 930"

MR CALLAGHAN: Can I take you, Mr Kadletz, to your statement in respect of Mount Oxide. I think paragraph 81 and onwards is the relevant part. In paragraph 81(b), you allow that it can take years to achieve sufficient understanding for a site before major rehabilitation is undertaken. Do you have a sense of the length of time that it might take to understand the Mount Oxide situation?-- It's likely to take us a number of years yet. That is partly because we've got some fairly complicated ground water and surface water issues to understand better and, as part of that, we will have to undertake investigations which are expensive and not easy to arrange as well, and then we'll have to review the results of those.

Is there a target? Is there a timeframe target?-- Not a solidly defined one, although our target is to carry out preliminary investigations this year. We're in the process of procurement towards that now, and then to carry out more investigations following the wet season next year, and then there will be a third phase following the '11 - sorry, the '12/'13 wet season - a year's time as well.

And so do you see it then as being dependent upon the passage of a couple of wet seasons before you can actually develop the understanding? It's not a question of if there were more resources allocated-----?-- Not entirely, no, because part of what we have to do is do more investigations into the situation now and those investigations require us to understand better what the dry season water conditions are and also what the post wet season water conditions are, and that takes time to collect.

So, it's a good couple of years away at the earliest before you even understand the situation properly; is that right?-- Yeah, our understanding will improve gradually as we go along, as it has between a few years ago and now.

In paragraph 86(h), you say that DEEDI has installed a remote weather system this year. When was that installed?-- I can't recall for sure. It was within the dry season of this year, and we're currently planning to carry out upgrade works over the next month or so. The reason I'm saying "planning" is because we've had a significant amount of rainfall out there in the last couple of weeks, and access to the site is becoming limited.

The wet season is underway?-- It seems so, yes.

You also say that DEEDI - sorry, just to tidy up that question - can you say whether that was installed at least in the first half of this year? Was it pre-June or-----?-- Yes, it was.

Okay. You say also that DEEDI is in the process of installing additional monitoring nodes to measure stream flow and water level in the mine pit. When did that process start?-- The process started, I guess, after we had our expert panel meeting this year where we put this suggestion to the expert panel. They agreed that this was a good thing to do and, since then, we've been working towards implementing it.

Okay. Well, you've illustrated the difficulties involved in obtaining information to understand this one situation. I'd just probably like to explore the difficulties you've experienced in gathering information generally. In paragraph 17, you say there's no individual assessment - that no individual assessment has been done for abandoned mines in Queensland so far as land tenure, in terms of who owns-----?-- Not a detailed one, no.

And, in fact, for that reason you can't say how many mines are on privately owned land?-- We made an estimate, and the numbers you see there are from a study - a risk assessment study we did of all the knowledge we had in 2005. The problem with land tenure is that it changes over time. People buy and sell property.

Yes?-- So, it's only correct at the time you do the study. Six months down the track it's different, and that can be quite hard to keep a track of.

You talk about a risk assessment study. Can I ask you this: with your statement, we received a CD, to which I don't think there's actually any reference in your statement, but it contains a number of documents and someone has helpfully prepared an index for us of the documents which are contained on it. You're aware of the disc in question?-- Yes.

Can you just tell us what it is?-- I presume you're talking about the one that has the 2005 risk assessment on it.

Well, I think so, because you don't - and I'm not being critical - but because it is not referenced in your statement, we've just been trying to work out what the information is and we requested an index, which, as I say, someone has provided, but I was hoping you could tell me in the first instance what is - what does the disc represent? Is that the sum total of information retained referable to abandoned mines or-----?-- Pretty much, yes.

Okay?-- Yes, it is.

There were four CDs, I should say, not just one?-- There were only two to my knowledge.

Two. All right. Well, sometimes these things can-----?-- There was one for Mount Oxide and there was one containing the risk assessment overview information of abandoned mines and some information regarding Mount Morgan.

Sometimes when these things get copied over, the discs multiply?-- Yes.

To get to the functional point, what you've provided us is pretty well the sum total of knowledge relating to abandoned mines in Queensland is it; is that right?-- Not exactly. In terms of an overview of risk assessment, we've done - the information on that disc is pretty much the definitive part. There's information we have on individual sites beyond Mount Morgan and Mount Oxide that we haven't provided.

Right?-- There's quite a bit of information that way.

Okay?-- And some of that information includes individual site risk assessments as well that have been carried out after people have visited sites.

All right. Well, I might show you that spreadsheet that is titled "Workings Risk", I think. Can we get a copy of that up on the screen?-- Yep.

Is this the 2005 study that you're talking about?-- Yes, this spreadsheet basically contains the core of the information we have on abandoned mines.

Can you explain it to us? What's actually - what information is actually contained in it?-- Sure. Do you want me to go through it column by column?

It might be easiest?-- Yes, so, column "A", site number, is an individual site number that's assigned by the Geological Survey of Queensland Database - the mineral occurrence database. Column "B", mine name, is the name that has been recorded for that mine site. That could come from a number of sources. It could be listed within mining tenure records or it could be the name that the mine site is known by commonly within the area. It was the name that the geological survey people would have thought was most appropriate when they carried out the survey. Column "C" is a column - it shows

that this database comes out of - or this data set - the abandoned mines data set - comes out of a far larger data set of geological information. The ones that are labelled "AB" stands for "abandoned", which are the abandoned mines. You'll see that there's some other things in there like "CAM" and "MO", which I would have to refer back to the database key list to tell you what it is. If we go to column "D", that's the occurrence size, because this is couched in terms of mineral occurrence, but for abandoned mines it relates to the size of the mine site. So, "VS" is very small, "S" is small, "L" is large. "WK" underscore "Extent", column "E", is workings extent, and that column gives a brief description of the size and extent of the operations; for example, in row 9, "shallow diggings less than 3 metres deep".

All the figures there would be metres, would they?-- Not necessarily, but I would presume in most cases.

Okay. This is where we might need some help?-- This here relates to the features on the mine site, and if maybe you could put the curser over row 1 on "F", see there it has expanded out the description. That's the surface number, so the number of surface features, and then the next one, "G", is the number of open features. This probably relates to shafts, actually.

Mmm?-- And then "H" is the number of pits, "I" is the number of trenches, "J" is the number of dredging activities, "K" is the number of shafts, "L" is the number of underground workings, "M" is the number of adits, "N" is the number of stopes-----

COMMISSIONER: What's an adit and what's a stope?-- An adit is a horizontal tunnel going into the hillside. A stope is an area underground where a large - a large volume has been taken out to leave a hole behind where basically the mineralised rock has been taken as ore. "O" is the number of inclines - inclines in terms of inclined shafts. Most shafts are vertical, but they can also be at an incline, so this relates to those. "P" relates to declines. I don't know why those two are different. Generally incline and decline are just a matter of which way you're facing. Gully number, number of gullies within the working area. Total underground workings. "S" is total surface workings. "T" is a risk number which has been derived from a set of risks assigned to each one of those features we've just gone through. "U" is a ranking index, I believe. It's been years since I've looked through this in detail, so I'd have to check that to be sure. That column "V" is a risk rating, which is similar to "T", but it's been reworked, and again I would have to look at the information to describe exactly how some of that information is contained in the risk information on that CD. "W" is a risk weighting, which relates to the site. I'm not sure why - I can't - that information about what the weighting - the risk weighting will be defined in the information on that CD. The P-weighting is the population weighting. That is how close to populations the workings were. "Y" is a test column that was used to - during the development of this analysis. "Z" is a risk weight

number, which is, I think, a combination of weightings for risks both to do with population and features on the mine site, but again I'd have to check to be sure. "AA" is a population weight number on the same basis. "AB" is an identifier number. "AC" is an analysis of tenure at the time, which was gathered from the DERM digital cadastral database information that was from that time. So, "FH" is freehold, "SF" I'm not sure of. Surface freehold probably. "LL" is leased land. "SL" is surface lease. "U", down the bottom on row 23 would be "USL", I think. No, it wasn't a "U", it was an "LL".

MR CALLAGHAN: Yeah, that probably - we get the idea, anyway. Then we've got the location, and then column "AE", control-----?-- So, if we go to "AD" then, that is the local government administration area, and then "AE" was an analysis at the time of whether the AMLP had direct control of the site or not.

Okay, can we come back to columns "T" and "V". This is perhaps a reworked version of "T"; is that right?-- Yeah.

What are we talking about? This is some sort of risk assessment, is it? Some sort of-----?-- This is where you're using a combination of an assigned risk per feature and the number of features on a site to make a rough evaluation of the total risk number for the site. So, it's a mathematical process, a desktop process to give you some indication of how risky a site is.

And what sort of risk are we talking about?-- Well, the risks are the risks from being injured through possibly falling down an abandoned shaft, the risks from falling over the edge of an open-cut pit or a trench that's been dug as part of mining, the risk of being injured from an unstable structure that might be residual on a mine site, the risks that people will impact with - people will have the opportunity to come in close contact with shafts. So, a site that is very remote was given a lower risk rating than a site that was close to communities.

Does a higher number in "T" and "V" mean a higher risk or-----?-- No, it's actually a rework of the risk values that we had. The idea was that we applied higher risk values to the individual feature so we could separate out better the numbers that we got from our analysis.

And is risk to the environment one of the things that's incorporated into these figures?-- Yes, I believe it was, but I would have to go and check on that.

Specifically, of course, the respective risk related to flooding?-- It wouldn't have included a direct flooding risk. That sort of risk would have been incorporated as a risk of an impact to the environment.

Yes?-- And I think that - you've got to remember that the main focus of this was health and safety, because that's the

main focus of our program.

Okay. So, I think I understand that the risk to the environment was one of the factors which would have been weighted in the basket of other risks?-- Yes.

And risk posed by flooding was one of the factors which would have been incorporated -----?-- It was aggregated in there amongst those risks, yes.

Risks to the environment?-- Yes.

All right. 2005 I think you said this was collated?-- Yes.

Is that the extent of - I will start that again. We're only seeing the first 23 or so. How many are on there?-- There's 15,300.

So, all the ones that you knew about?-- Yes.

Were given, in effect, a desktop risk assessment?-- Yes.

By performing this exercise?-- That's right. It took quite a bit of time to produce this.

But I thought I heard you just say that you hadn't actually looked at this for a while?-- No, that's right.

Would it be the case that specific mine sites had been the subject of further risk analysis-----?-- Yes, that's right.

-----since 2005?-- Yes.

But there's been no overview of this nature conducted since then?-- No.

I see. So, how does this tie in with - if at all - what you speak about in paragraphs 41 about the database - the MINOCC database forming the basis of a new abandoned mine land program?-- Yes.

Are the two things comparable? Is that the sort of thing-----?-- They are, indeed. If the MINOCC database - the information in there - not the risk information, but the information about the abandoned mine sites and features on it will be transferred into the new abandoned mine database when we build it, and we're hoping to build one using the other as the core, and then as part of the new database we will have a revised risk component which will be similar to the component that we - through this analysis, but as part of the upgrade we're going to be improving the information that we have about individual features. When I say features on a site, I mean each shaft, the ore containing structure, the mine pit, those individual things. We will, in the new database, work towards eventually populating that better through our site inspections, and as we do that we will use a first-pass assessment of the risks and - an automatically assigned risk, if you will - to provide a first-pass risk assessment. As

well as that, though, when people are out in the field, they keep in mind risks, and we do detailed site risk assessments as well. You see, this tool - the tool that we talked about just before - the whole-of-state risk assessment - is an overview tool. It's very good to get a picture of what's going on across the state and geographically where you might have clusters of higher risk than in other areas, and you can then use those for further investigations. Once you get to the site, you really need to start again, basically, to check what you know about the site, is it exactly the same as what the information you had, because some of this information is now 40 years old. What does the site look like now? What are the features on the site? What are the risks associated with those features? And that is where we go from with the new risk assessments following a site visit.

Well, you were present when Mr Laurence gave evidence yesterday, I think?-- David Laurence, yes.

Yes. And you will recall that he opined that physical inspection of a site was essential to risk assessment. You'd agree with that?-- Yes, I'd agree with that.

So, this tool - what is it? Something which might allow you to prioritise the-----?-- That's right.

-----order in which you did site inspections?-- Yes.

But is there a program or a plan to do site inspections of all 12,000-----?-- No, there isn't.

-----or at least-----?-- Not in the near future. Not in the current work plan.

So, whilst I'm not quibbling with the merit of the work that's proposed as a desktop exercise, it would appear to be of limited utility in actually assessing risk. It might, as you say, prioritise the order in which a risk assessment should be done, but it's not going to assist greatly in actually assessing the risks that might be out there?-- Well, it's - this is one of the things that needs to be - decisions need to be made about under the program, I guess. The Abandoned Mine Program as limited funding, and that funding is obtained - the funding for underground works is obtained basically through a cabinet submission, so there's a process there which judges how much money we will get, and the amount of money we have, although for Queensland it is larger than for any other state in Australia, it is still much smaller than the amount of money that will be required to remediate all the sites. So, what we do is we look at using the money we have to the best uses for the issues that we know about and the risk that we have already deemed as high priority. If along the way with our work we find new sites that we deem are risky, well, then, they come into our work program - our current work program - and we reassess priorities within that work program, but we don't, right now, go out looking for new sites, because we've got more on our work program than we have money to fix anyway.

Sure. And, of course, the problem with finding the new sites is, as I think you've identified in evidence, you rely upon, in the first instance, expressions of community concern?-- We generally do. When we go out to an area to do inspections, we - we look at as much in that area as we can, and as our time in the field permits, but - so we do broaden out the field of our knowledge through site inspections beyond the exact nature of our current work programs.

But your budget is such that that's a very limited-----?-- Yes.

----- activity?-- Yes.

And the problem being that you don't know what you don't know is compounded when we consider that so many of these mines must be in remote areas?-- That's right.

And certainly in terms of the effects of flooding, they probably have to be observed or monitored somehow during or soon after the flood; is that a commonsense sort of proposition?-- Yes, it is, but can I - can I add another comment in here?

Please?-- And that is that remoteness in itself is - for us has been added into the mix of risk analysis, in the sense that when we're dealing with basically human - human health and safety risks, the greater the exposure, the greater the likelihood that something bad might happen as a result of those inherent risks on the mine site. You see, a shaft next to a community, or in a community, in the case of Charters Towers or Gympie, for example, and a shaft on a - on a pasture or property that is a hundred k or more from a community can both kill you. It just happens to be whether you're going to go down it or not.

Yes?-- So for us then it's a matter of, well, which one do we address first, and the one we address first is the one in the community, because that's the one that more people are likely to come across, and more people are likely to be exposed to that risk than the one that's very remote.

Quite so, and for that reason, and for reasons we've already explored in relation to the place that flooding occupies in your risk assessment, situations like a hypothetical Mount Oxide somewhere else in Queensland aren't going to loom large on your list of priorities at the moment if they're in a remote area, for example. They won't be prioritised for a risk assessment. That would be-----?-- That's right.

-----a fair comment?-- Yes.

And yet, of course, the environmental damage that something like that might be causing, for all we know, and we can see the pictures of Mount Oxide, is something which could eventually make its way to areas where people do live?-- I'd submit though that we have a process which brings out those issues, and Mount Oxide is a very good example of that. The

fact that we're discussing Mount Oxide, even though it is in a remote area, and the fact that it has been brought to the AMLP's attention through the landholder shows that the process we have of listening to landholders and using that as part of our assessment does bring out those significant sites in remote areas.

If there's a landholder who can draw it to your attention?-- Yeah.

And no-one is challenging the work that you're doing with the resources that you have, but the question, as I say, is one of not knowing what we don't know in terms of it seems like there are thousands of these mines out there?-- There are, yes.

And as your priorities currently dictate, for very sensible reasons, the flood risks or the risks to the environment posed by flooding in these dams - mines isn't going to be high on your priority list once you get your risk assessment as you've suggested you're going to do in accordance with your - the developments that you have described?-- I will answer that in two parts. The first part is for the majority of sites, I think in my list there it says that there's about 120 to 130 medium sized sites, they are the ones that are most likely to have infrastructure relating to processing which includes things like tailing stands or water supply dams or things like that, and these are the sort of structures which might fail, I guess, if they're - if they have - if they're impacted from major flooding-----

Yes?-- -----or something like that. So that sort of cuts down the number of sites that are probably going to be significantly impacted by flooding. The smaller sites don't have those structures. A lot of them are at the tops of catchments, so again the amount of water they see in comparison to places further down the - down the catchment is a lot less, and therefore the impacts from flooding are significantly less. The other thing - third point I guess is that in the context of flooding - and we're talking about abandoned mines - there's - I guess there's degrees of rainfall that sites - sites have, and they see a bit of rainfall every year, and in cases - as the expert said yesterday, acid mine drainage will be produced, you know, when there's mineralised material and it gets wet. The degree of that will depend both on the volume of mineralised material and the volume of water. So again for small sites you've probably got less impact on the whole than you have for the larger sites.

Well, that's probably helpful to know that we're not necessarily talking about a need to prioritise thousands of inspections, but even if it's just over a hundred, we're back to the need for a site inspection to get a meaningful appraisal of the sort of risk that flooding might pose to the environment as a result of inundation at these sites; is that right?-- That's true.

And as currently funded there's no plan for such inspections,

it's not possible within the limited resources that you have at the moment?-- That's right, although if we do go to a site, we will look at that at the same time.

Yes, you will use your resources well-----?-- Yes.

-----with what you've got by taking advantage of trips to other places?-- Yes.

But it would seem that to make it meaningful you would need more resources so that you could at least check out those hundred odd that might be an environmental risk; do you agree with that?-- Yes.

All right. Mr Laurence also spoke about rehabilitation of such sites. Are you familiar with what he had to say about that?-- Yes.

Anything you wish to add or-----?-- Only, I guess, that it is very complex. Each site has - needs to be addressed on an individual basis. It has its own characteristics which are different from any other site, and the rehabilitation doesn't - sorry, there are no cookbook easy answers to rehabilitation. You have to devise a rehabilitation strategy for each site based on the - things like the climate for that site, the availability of material to carry out rehabilitation works, the vegetation regime that is on the site, the amount of disturbance and where - where in the geographical disturbance that - where in the geographical location and the nature - is it on the side of the hill, is it on the valley floor, those sort of things, all need to come together to develop your site rehabilitation strategy.

Well, Mr Laurence, I think, suggested it would be appropriate for a team of stakeholders to get together for risk assessment and then that rehabilitation techniques be canvassed after that. Would you agree with that as a stepped process or-----?-- What we've done is we've - we've involved the stakeholders in the middle of the process, or from the middle of the process onwards. Generally it's been the abandoned mines team, sometimes with other agencies like DERM, carrying out initial site assessments and getting information from sites. And then once we've had a look at it and we've got a rough idea of what is needed, then - then we also ask the stakeholders for their view and get their opinions, and for the major sites like Mount Oxide, Horn Island, we have stakeholder meetings as well.

And in relation to such sites, can I perhaps take you to paragraph 181A of your statement where you talk about attempts at rehabilitation within the resources available? You talk about working towards recognising environmental standards. What standards are those and by whom are they recognised?-- They're the standards that the community recognises and that DERM in some cases applies.

Are they written down anywhere or is it just-----?-- It's not, and the - it might be good to sort of draw a distinction

at this point between what we do and what a mining company does on a mine site. For better or worse, in this case - in the case of the ones I get, for worse, the mining company has left a mess, and the regulation that was applied to that abandoned site either didn't work or wasn't existing because of lower standards in the past, things like that. The point is that the mess exists already. What my team does is work to minimising the impacts from that site, and therefore it's not as if we are taking on directly the troubles that the mining company produced, but we are working as government - using government funds, public funds, to do the best we can to make the situation better.

Yes?-- So from that point of view, instantly asking us to have the current environmental standards that might apply to downstream water quality for a site that we're rehabilitating is not - is not an appropriate context. It might take us years to gradually reduce the downstream impacts and improve the situation.

And your point being, I think, that it would be just impossible for DERM to regulate your conduct with respect to abandoned mines the way that they might regulate an operational mine?-- That's right.

For reasons which are perhaps self-evident, but you need someone there to comply with an environmental authority?-- That's right, and you need the resources. I mean, if we've only got enough money to carry out partial rehabilitation of the site, and we know that partial rehabilitation isn't going to fix all the downstream impacts, it would be a bit unfair to ask us to comply with the standards that would be appropriate if you could fix all the impacts.

Just - it's just not even a question of unfairness, it's just ludicrous, isn't it?-- That's right.

It's not a fair comparison at all?-- That's right.

But, by the same token, if a privately owned mine was discharging materials of the kind we see at Mount Oxide, there'd be a fair bit of regulation brought down upon them, I'd imagine?-- Absolutely.

Yes. And so just while we're on this question about where you sit in relation to things, I'll take you to paragraph 78 of your statement. You say that the general environmental duty under section 320 of the EPA does not apply to DEEDI because it's not DEEDI's activities which are causing the environmental harm?-- Yeah.

In fact, your activities are trying to reduce it?-- That's right.

That's your point?-- Yes, and, as I explained previously, it's - it's not practical for us to immediately snap to a position where we can comply with the standards under the EP Act for environmental impact with the work we do.

No. And paragraph 78(b) you say beyond that consideration there's no power for DERM to regulate activities on abandoned mine sites?-- As far as I know.

Yes. Are you familiar with what's been said on this topic by Mr Brier?-- I've had some broad - broad discussions on this, yes.

Okay. I might tender his statement now.

COMMISSIONER: Exhibit 931.

ADMITTED AND MARKED "EXHIBIT 931"

MR CALLAGHAN: And I might - it might be easiest if I just ask you to have a read - hopefully they will make sense in isolation - paragraphs 46 and 47 and paragraph 50?-- You said 46, 50, and what was the other one?

46, 47 and 50?-- Yeah. Well, with respect to 46, this one we've already talked about a little bit by - in terms of the Act binds all persons, including the State, and places a responsibility on persons carrying out an activity to take all reasonable and practical measures to prevent or minimise environmental harm. As I said, we do that, although we can't directly always meet the current standards for environmental protection because of - because we're working from a case of what was already there to start with. 48-----

47, I think, was the other one?-- Sorry, 47, wide ranging environmental management provisions, statutory response to address environmental issues. Well, what - our operational way to address this is we - we work closely with DERM on our sites, and that is from a point of view of letting them know what we're planning to do, and how we're going to go about it, so that we get their input into it, and so that there isn't the clash hopefully of different agencies having different views which might then bring about this case of one agency trying to change the performance of another agency. In terms of 50, that sort of reinforces this, and again we try to work together so that we have the best outcome that is possible, and I would hope that if DERM feels that work that we're doing doesn't adequately address some of the environmental issues that they would help us to put together a cabinet submission or other submission to help us find the resources to address that issue that they're not happy with.

And, look, I'm not trying to create division here. What we're interested in is the actual structure of the way of-----?-- Yeah.

-----the way things are set up about who is meant to be doing what?-- Yeah.

Chapter 7 referred to in paragraph 50 is - or includes provisions in relation - relating to TEPs and environmental directions and so on. I mean, do you think they actually do apply to what you're doing, or could apply?-- I would hope that we can answer that in a different way through working together operationally-----

And I'm not-----?-- -----rather than waste resources on legal-----

Yes?-- -----legalese to address that issue.

Does it come back to what we were saying before, it's silly to suggest that they could?-- Yeah. It's about practicalities-----

Yes?-- -----to making the most of the resources we have.

All right. And just on the - while we're talking about the legislation that - paragraph 36 of your statement you say that the effective head of power for your operations is the Mineral Resources Act. You are required to obtain authorisation from the Chief Executive. Is that the Director-General of DEEDI?-- Yes, it is. We have some direct authorisation - direct delegations as authorised officers as well.

All right. And, just finally, Mr Laurence yesterday did list the information and data that - or in his report, at least, he listed the information and data that should be collected to make decisions, and they included land ownership, relevant stakeholders, views of persons living downstream, hydrological studies, understanding of waste material, resource evaluation, geotechnical data. First of all, do you agree with those?-- Yes.

Any that you would care to add?-- Not off the top of my head. I mean, generally what we do is we work from broadly those, and then we look at what else is of relevance on a site by site basis.

And what I suppose I am getting at is do you have difficulties in obtaining such information or other information of that kind should we be recommending that you have access to information of that kind, or is there some way that your life can be made easier in terms of obtaining the data?-- Yeah. It's hard to see how, because a lot of the work that we do is by definition operating out of vacuums from other - from other situations. I mean, under the Mining and Quarrying Safety and Health Act, there is a requirement for information on mines to be passed on to the State when mines close. In the past it seems that has not always been successfully done, and one of the challenges we have is trying to find information on what has occurred in mines. For example, what exactly is the extent of underground workings or what do stock piles contain. There are no requirements to record that sort of information currently, and therefore when we come to a site we've got to make a decision about how important it is and how much effort

we're willing to go to to get it.

All right. That's all I have for the moment. Thank you.

COMMISSIONER: Mr Duffy, do you have anything?

MR DUFFY: No questions.

COMMISSIONER: Ms McLeod?

MS McLEOD: No questions, thank you.

COMMISSIONER: Mr Rolls.

MR ROLLS: Thank you, Commissioner. Three points, Mr Kadletz, if I may. Firstly, in relation to the point that you were taken to in respect of Chapter 7 of the Environmental Protection Act, would it be the case that you would say that Chapter 7 strictly doesn't apply to the activities of DEEDI in relation to that - in relation to its work in relation to abandoned mines because what was - what was done was done by an entity other than - done by an entity that created the damage, not DEEDI?-- That's right.

And DEEDI in attempting to repair the work obviously does not intend to exacerbate the environmental damage, but rather minimise it?-- Absolutely.

So Chapter 7 in that regard perhaps you would say would have limited effect, limited impact on the operations of DEEDI, and you would work with the offices of DERM, in any event, attempting to structure an outcome which minimises damage from abandoned mines; is that the case?-- That's right.

The second point, Mr Kadletz, is the - you gave evidence about a rehabilitation strategy in relation to abandoned mines. Do you recall that evidence, the need to develop a rehabilitation strategy?-- Yeah.

Is it the case that Mount Oxide is a case in point, that you're undertaking your investigations over the next couple of wet seasons to ascertain how the aquifers work at that particular site?-- Yes.

And once you have a greater understanding of those aquifers and the other relevant factors of that particular site a rehabilitation strategy can then be devised?-- The rehabilitation strategy will be improved. I mean, we - part of the nature of our work to try to minimise impacts from a mine site as soon as practicable means we work with the information we have to see if we can make a significant impact pretty much straightaway, but there are some things that you cannot resolve until you have this additional information. So then as you get that information your strategy can either be fleshed out or a gap in it that you've identified can be filled in and you can work forward from that.

And so until you work - till you know what you're dealing with, you can't really provide a quick fix for Mount Oxide; is that the case?-- No, that's so.

Is it true to say that you've - that DEEDI have already spent in relation to remedial works at Mount Oxide about $1.8 million?-- That's correct.

And not all of that work was budgeted for that particular project?-- No, it wasn't. We ended up in the last financial year reprioritising I think it was about $540,000 worth of money from other abandoned mine projects, including shaft repair programs and Horn Island to allow us to have additional money to address the Mount Oxide issue.

And you anticipate that in the future considerable expenditure will be incurred in relation to remedial works at Mount Oxide?-- That's correct.

The third point, Mr Kadletz, I take you to paragraph 28 of your statement. Do you have it in front of you?-- Yeah.

The last sentence reads, "Further discussion of Mount Morgan is provided below beginning at paragraph 0." There doesn't appear to be a paragraph 0, but I suggest that should be paragraph 65?-- So this relates to Mount Morgan? 65.

Paragraph 28?-- Yeah.

Page 5?-- Yeah, one of the automatic references gone wrong.

Should it be 65?-- I am just checking.

You will see the start of the Mount Morgan section?-- Yes, that would be right.

Nothing further, thank you, Commissioner.

COMMISSIONER: Thank you. Mr Callaghan.

MR CALLAGHAN: I should tender that spreadsheet. As indicated, it's one document on some discs which contain many. So we might arrange for a separate - we don't actually have the spreadsheet in isolation at the moment so-----

COMMISSIONER: You only want to tender it?

MR CALLAGHAN: I think we only need to tender the spreadsheet rather than-----

COMMISSIONER: Do you want to hold off or tender it now?

MR CALLAGHAN: Well, I tender it now, give it an exhibit number, and we will arrange for a copy to-----

COMMISSIONER: 932.

ADMITTED AND MARKED "EXHIBIT 932"

COMMISSIONER: And Mr Kadletz can be excused?

MR CALLAGHAN: Yes.

COMMISSIONER: Thanks very much, Mr Kadletz. You're excused.

WITNESS EXCUSED

MR CALLAGHAN: I call Andrew Brier.

ANDREW STUART BRIER, ON AFFIRMATION, EXAMINED:

MR CALLAGHAN: Tell the Commission your full name, please?-- Andrew Stuart Brier.

Mr Brier, you are the General Manager of Strategic Implementation, Coal and Coal Seam Gas Operations, within the Regional Service Delivery Division in the Department of Environment and Resource Management; is that correct?-- Yes.

From 10 January of this year you have been involved in the management of flood related issue surrounding coal mines; is that right?-- Yes.

You have provided, first of all, five statements addressing individual mines; that's correct?-- Yes, that's correct.

And two other statements addressing the Moranbah Coal Seam Gas Project and Ensham Mine; is that right?-- Yes.

Those two I think have already been tendered but we had best tender the other five. We might do them individually. Firstly there's a statement referable to the Rolleston Coal Mine, the Hail Creek Coal Mine.

COMMISSIONER: Sorry, are we taking these one at a time?

MR CALLAGHAN: I think so.

COMMISSIONER: Are you actually producing them to Mr Brier?

MR CALLAGHAN: We will.

COMMISSIONER: The first one was Rolleston.

MR CALLAGHAN: Rolleston.

COMMISSIONER: 933.

COMMISSIONER: The next one is?

MR CALLAGHAN: Hail Creek.

COMMISSIONER: 934.

MR CALLAGHAN: Callide Power Station.

COMMISSIONER: 935.

MR CALLAGHAN: Moranbah North Coal Mine.

COMMISSIONER: 936.

MR CALLAGHAN: And Dawson Coal Mine.

COMMISSIONER: 937.

ADMITTED AND MARKED "EXHIBITS 933-937"

MR CALLAGHAN: You have been shown those now?-- I think they are coming. There should be one about abandoned mines as well.

That has already been tendered, Mr Brier, so we do have it, thank you. That's a bit much to flick through. Can you take it from me they are copies of your statements?-- I think that's so, yes.

They have been tendered and have an exhibit number. Also at this stage, Commissioner, may I tender some other statements. A statement from a Glenn Berlinson, G-L-E-N-N, of Exstrata, a statement dated 19 October 2011.

COMMISSIONER: 938.

ADMITTED AND MARKED "EXHIBIT 938"

MR CALLAGHAN: Two statements of Gary Campbell. That's C-A-M-P-B-E-L-L. Of CS Energy, dated 23 September 2011 and. 2 November 2011.

COMMISSIONER: The September statement will be 939 and the November one 940.

ADMITTED AND MARKED "EXHIBIT 939-940"

MR CALLAGHAN: And a third statement of Pier, P-I-E-R, Westerhuis, W-E-S-T-E-R-H-U-I-S, of Ensham, dated 2 November 2001.

COMMISSIONER: 941.

ADMITTED AND MARKED "EXHIBIT 941"

MR CALLAGHAN: Mr Brier, you don't actually have copies of any of your statements with you. That was probably a wise move?-- Yeah, a little bit too heavy to carry in today, yeah.

Yes, I understand. We might get the Mount Oxide statement, referable to Mount Oxide, placed in front of you. The questions in the first instance are fairly general. At paragraph 6 and 55 you deal with DERM's actions when a mine operator attempts to abandon a mine. Is this done as a matter of course in every case?-- Since 2001 when the act enabled us to do that, yes.

Before that, the power wasn't there or-----?-- It didn't sit with the Environmental Protection Agency. Prior to that it actually sat with the Department of Mines and energy.

Obviously things are easier since 2001 when financial assurances have been-----?-- A lot more robust, yes.

If DERM can't successfully get a mine site rehabilitated pursuant to those sorts of actions, then is it the case that it's then referred to DEEDI's abandoned mine land program?-- Yes, that's my understanding.

In terms of the relationship between DERM and DEEDI, paragraph 9 of your statement, you indicate that section 320 of the EPA obliges DEEDI to notify DERM of any serious or material environmental harm that it is aware exists at abandoned mines. Is there a protocol or a set form by which this happens, or is this ad hoc, or how did it work?-- No, there's not necessarily a form. It's an obligation that's upon all people, not just DEEDI quite obviously, and sometimes it's conditioned in an environmental authority for other environmentally relevant activities, but the obligation is to notify, generally via the pollution hotline, or via direct contact with DERM.

The pollution hotline is a designated-----?-- The pollution hotline is generally a designated number for anyone to notify the department that there's been an incident or environmental harm in some way, shape or form.

There is no separate arrangement-----?-- No.

-----for abandoned mines, it's just done in the matter of course?-- Except obviously, you know, the person in DEEDI has knowledge of the relevant people in DERM and it's likely to be a phone call to DERM or an email or something along those lines.

Are there any statistics on that? Do you keep a separate set of-----?-- Not that I am aware of. We would be able to go through our ECOTRACK database and identify different situations but I don't have those to hand.

No, I am not asking you to produce them. I was just interested in the system. For example, do you know of the

form in which if notification was given in respect of Mount Oxide?-- We would be able to find it, yes.

Were you present when Mr Kadletdz was giving evidence?-- I saw some of it but not all of it, I am sorry, no.

Towards the beginning of his testimony we were talking about risk assessment for abandoned mines and the risk assessment framework and he explained the nature of a study done in 2005. Are you aware of any contribution made by DERM to that framework or-----?-- DERM sits on a couple of expert panels for various things to do with abandoned mines. The actual risk management framework itself, I'm not personally aware of any input from DERM but I suspect there was input.

We gather from Mr Kadletdz that there is a specific consideration given to environmental harm as part of the overall risk assessment which considers many other things as well. Do you know whether DERM contributed to that?-- Well, we're obviously involved in it. I mean, as I understand the hierarchy there, the primary purpose of the abandoned mines land program, or abandoned mines rehabilitation program, is to ensure human safety and public safety for a start but then second tier to that is to prevent unnecessary environmental harm and mitigate the impact from abandoned mines. So that's where DERM would have had its input.

You are not aware specifically of what that was?-- No before my time.

Or what form it might have taken. Can I take you to paragraph 41 of your statement. Perhaps just scroll back up a little. Yes, thank you. Just to put that in contact, we are now talking about Mount Morgan and the Mt Morgan abandoned mine during the wet season just passed. There's reference there to a contingency plan. Was that something that was developed by DEEDI, do you know?-- My understanding is it was developed by DEEDI but that DERM had input into that, or the previous EPA as well.

I just missed the last bit of what you said?-- Or the previous EPA, prior to DERM's formation, but my understanding is yes.

Did DERM have to approve it or-----?-- No, I wouldn't say approve but obviously if we disapproved of what was in there, we would have made that known to DEEDI and would have expected it to be changed.

Was this again just a collaborative effort?-- Yes, very much so. Where both trying to achieve the same outcome there, to minimise environmental harm.

Certainly. There is no requirement for you to work together in the way - and I am not suggesting that you did other than work together but-----?-- No requirement but obviously then, if we didn't, and actions were taken by DEEDI in the abandoned

mines program, when releases were done in a way which we thought unnecessarily caused environmental harm, then we would have had concerns about that. Hence why DERM and DEEDI work together collaboratively on it to start with.

Okay. Does the contingency plan sort of work in a similar sort of a fashion to a TEP or-----?-- Similar insofar as it would have proscribed conditions for a release. So saying there must be minimum flow triggers in the Dee River in this instance, there would be maximum volumes or minimum dilution rates which would actually be achieved through that discharge and there would be a trigger to actually stop that discharge as well.

You say in the last sentence on paragraph 41 there that monitoring undertaken following the releases did not indicate any adverse impacts on the environment. What was the nature and extent of the monitoring done at Mt Morgan?-- Yeah, I don't know the specific details off the top of my head but I know there are several sites, monitoring sites that is, across the Mt Morgan site itself and within the Dee River, downstream of that site. They would be taking water quality measurements. So general things like salinity, there would have been probably turbidity taken in some areas, measurements for heavy metal at different times and then those would have been analysed against what we know as background data and what's required to ensure the safety and continued health of the aquatic ecosystems and we would have made a call from there.

Was that all done by DERM?-- My understanding is that monitoring is done by DERM, yes.

Who did you consult or how did you-----?-- I would have - that information has come from the Regional Manager, Environmental Services in Central West, who would be the contact within RSD for that particular mine.

Thank you. Just scroll down a bit to paragraphs 46 and 47. First of all, in paragraph 46 you say that abandoned mine owners are subject to the general environmental duty?-- Yes.

And it follows, as reported in paragraph 47, that there are various statutory measures available to DERM to address the environmental issues in chapter 7 of the EPA?-- Yes.

So DERM can use its powers regarding environmental evaluations?-- Yes, environmental evaluations, TEP's, Environmental Protection Orders, all those instruments.

Have you ever in fact used any of those powers in respect of an abandoned mine?-- No, not to my knowledge.

Not even, for example, in respect of Mount Oxide?-- No, not in respect to Mount Oxide. We're satisfied that the actions DEEDI are undertaking, and have undertaken to take I should say, are reasonable and practical given the circumstances and

obviously, again, because we work collaboratively on that sort of thing, it's not a propose and then see our response. Like, we are obviously working through those solutions together.

That's in respect of Mount Oxide I understand. Has it ever been suggested to any owner of any abandoned mine that DERM might use these powers?-- Not to my knowledge and, again, the abandoned mines by their very nature are owned by DEEDI, so there's really no other owners there.

Well, the ones that DEEDI has taken responsibility for I suppose are, but there are others which are private?-- Many abandoned mines are on private land but it comes down to your definition of "abandoned mine" I guess. To me "abandoned mine" is one where there is no environmental authority for that mine to exist, no-one has tenure over that mine specifically, to operate that mine, and that it hasn't been rehabilitated to a satisfactory state. Therefore, it's in DEEDI's care under the Abandoned Mines Rehabilitation Program. So hence why, when I use the term "abandoned mines", I mean the ones in the program, identified abandoned mines.

Just in paragraph 50 you say there would be no positive environmental outcome in requiring environmental authorities to be held for abandoned mines. Why do you say that?-- An environmental authority is usually an authority given to an entity to conduct an environmentally relevant activity and what an environmental authority does is it actually authorises a certain degree of environmental harm to occur in conducting that activity. So in operating a coal mine, effectively what an environmental authority says is, "Righto, you can cause this much environmental harm and no more." With an abandoned mine as such it's my opinion that while there's no activity going on, which we need to authorise a level of environmental harm, we are actually trying to minimise environmental harm from a situation that already exists. So I don't really think it's appropriate that an environmental authority would be issued in that instance. Like, what environmental harm would we actually want to authorise and condition in that sense?

There is no balancing, is there? With operational mines there is something productive happening?-- Well, that's right. We want them to conduct their activities in a certain way so when they do it, they cause this much harm and no more whereas in the abandoned mines case, we want DEEDI to conduct its activities to minimise the harm that could already occur due to that abandoned mine existing.

Which leads us I suppose to paragraph 66 where you suggest that DERM might consider the use of statutory enforcement tools in future situations if warranted to secure necessary actions to minimise the risk of environmental harm. Are you talking about chapter 7 powers again?-- Yes.

I think you have explained in effect why you wouldn't have used that in relation to Mount Oxide. If that weren't the case, though, for reasons you already explained, which we

understand weren't the case, is that the sort of situation where you would or might-----?-- It would. Obviously we'd hope we'd never get to that situation because of the collaborative approach but if for some reason DEEDI we believed weren't conducting their activities there or doing rehab in a sense that prevented serious environmental harm, we could use those powers, yes.

Or if someone else other than DEEDI was responsible, you could-----?-- We could.

-----intervene?-- Joe Blow down the street in conducting an activity we can use those powers on if they haven't conducted that activity in a way which minimises environmental harm.

To demonstrate the point I suppose, if Mount Oxide wasn't being run by - well, leave aside DEEDI's involvement in. Mount Oxide. If it was just owned by a private individual, clearly DERM's approach would have been different?-- Possibly. Again, if we had been talking to that private individual and that private individual was voluntarily undertaking to do certain activities to minimise the harm of that then, no, we wouldn't. Same situation.

But otherwise you could take action?-- We do have that option, yes.

You would certainly insist on one or the other. Either they do something voluntarily-----?-- Otherwise we'd be negligent, yes.

Did you hear my discussion with Mr Kadletdz about the interpretation of section 320?-- No, sorry, I didn't.

It was paragraph 78 of his statement. Have you had a read of paragraph 78?-- I am just going through it now. Yep.

Do you agree with that interpretation of section 320?-- The interpretation of 320, yes. You know, that does put a clear obligation upon DEEDI to notify us of serious material environmental harm that is caused or could be caused in conducting those rehabilitation activities.

What about the next bit?-- Yeah, I guess it depends the context in which that was intended. Like we have just talked about, obviously the general environmental duties applies and chapter 7 powers apply but in the context of, "Do we issue an environmental authority," because it's an environmentally relative activity? Well, no. And I assume that's the context that's in. We do regulate it. It's regulated differently but it's not the same as we regulate an environmentally relevant activity in that sense.

Are you aware of the evidence given yesterday by Associate Professor Lawrence in his report?-- Yes.

You recall he recommended a committee of persons be involved

in risk assessments and choice of rehabilitation techniques?-- Yes.

What would, could or should DERM add to such a committee?-- Oh, well, obviously we would be able to provide advice on the requirements under the EP Act, what is likely to cause environmental harm and what isn't, and the degree of environmental harm that's likely to be caused by an abandoned mine per se if we have that information.

That is the sort of expertise you could add. Who else do you think should be on such a committee?-- Obviously DEEDI with their knowledge of mines themselves. It's very site specific. I'm an engineer by trade with a bit of ground water experience and, you know, quite obviously some sites it will be necessary to do hydrological studies to determine pathways for contaminants. Other sites where it might just been an abandoned mine shaft, obviously the concern there is there is a hole and someone's going to fall in it, so you might be talking a geotechnical assessment. I would think you would have a basic level of expertise for risk assessments but then in terms of assessing risk on a site by site basis, for those that are identified as potentially having issues, you would call in the expertise that's required. That could be from within government or it could be external.

So the committee would at least want access to some geotechnical hydrological-----?-- If the situation warrants it.

Yes, as needed?-- And, you know, that's my understanding of what's happening at Mount Oxide at the moment where they are looking at contaminant pathways, exactly a demonstration of that in practice.

We turn then to situations at Callide, Rolleston, Hail Creek, Moranbah and so on and the topic of the lead-up to the wet season. It probably goes back to the 2009 Fitzroy model conditions. As a generalisation, would you agree that they seemed to impose stricter discharge regulations than environmental authorities had previously?-- Yes. The discharge conditions under the model conditions in 2009 were significantly different than what existed previously. That would be fair to say.

You are aware of the suggestion in evidence before the Commission to the effect that these restrictions lead to the need for the transitional environmental programs which were applied for during the last wet season, again as a general sort of a proposition?-- If would be a contributing factor. I think the main we had TEP's is it rained a lot.

Fair enough. Is that in essence your response to the suggestions made?-- No, I think - and, look, I understand where mines are coming from. In this it was a change in discharge conditions, so you would expect a transition period. We had a very heavy wet season in 10-11 which compounded that

and also I think it's worth noting that a lot of mines are actually designed to catch water. We'd had very dry times for many, many years before that and mine sites were actually short of water in some instances. So a combination of circumstances I think lead to the need.

Would it be an over-simplification to suggest that you would say that the amendments to the model conditions which have been made this year are the best attempt to remedy or to prevent that situation from happening again?-- Yeah, I would disagree with that. I think it needs to be understood the model conditions in 2009 - and bear with me, a lot of this is from what I've read because I wasn't around at the time. The model conditions in 2009 would have been conservative for a start because they are model conditions, so they are a one size fits all approach for mines and, you know, given the hundreds and thousands of permutations that could occur in relation to rainfall and the difference across sites, by having model conditions, by their very nature they will be conservative compared to a site by site assessment. Additionally, I think back in 2009 there was a lack of data with which to scientifically and with any confidence increase or allow higher discharges whilst still maintaining the requirements to protect aquatic ecosystems. The difference in the model conditions review we have just conducted - which was always later to occur, we just brought it forward six months - is that since the model conditions were brought in in 2009 there's been strict monitoring reforms, there's been requirements to monitor and record receiving environment and background data in water courses. We also have the flood events from 2009 and the data collected in 2010-11 which with to actually consider the signs behind the model conditions. So what the review has done this year is it's actually used that science, used that additional data, and used the great wealth of information we have been able to gain in two years to redesign the conditions and look at the conditions we have to see if we can being more flexible or if we can do something different to achieve the same environmental outcomes. Realistically, what it's done is increase the flexibility for mines to be able to discharge in certain circumstances. They're still model conditions. So in terms of a one size fits all approach, they may well be conservative for some mines, but if mines can demonstrate the science and the necessary information behind that statement, then they may be well able to negotiate a different set of conditions for their EA, but that's the process that's lead us to where we are. We wouldn't have been able to implement the conditions we have in this latest review if we didn't have the information gained over the last two years since the implementation in the first place.

I mightn't have expressed the question clearly, but does it reduce the risk; that it's a continual process of assessing the suitability-----?-- I think so. Yes, it does. A continual process assessing the situations we have and the information we had at the time. Science changes, science improves and we get more data.

Can I ask you about the inspections which might have been done prior to the wet season. How does DERM decide which sites require a pre wet season inspection?-- My understanding of the inspections in 2010, and this definitely happened with the inspections this year, done on a risk assessment as well, primarily that risk assessment is based on our officers in the field and their local knowledge of mine sites. Adding to that, we look at past history, compliance with EA conditions, past performance in wet seasons, whether we know there's any water related issues or not, and then based on that risk assessment we undertake to visit the highest risk - or what we believe to be the highest risk mines in terms of water management.

It's the case that some mines DERM invited mine operators to submit a transitional environmental program before the start of the wet season; is that right?-- Yes.

Hail Creek, Dawson also?-- Most mines, actually, that we visited.

Was that process to empty water storages before the wet season or to just set up the discharge requirements during-----?-- It would vary. It's mainly - firstly, it would be, "Do you think you are going to have trouble in complying with your EA conditions?" So, "Will you have the necessary storage on-site? Would the design storage allowance be available come 1st of November? If you get significant rainfall, will you be able to manage it on-site in accordance with those EA conditions? If not, why not? What are the areas where that may be and if that's the case, do you want to apply for a transitional environmental program which allows you to do certain things outside your EA conditions while you then transition back into compliance?" So it very much would be site specific. Generally speaking, particularly in preparation for this wet season, given the water that's stored in mines, it would be about, "If we do get significant rainfall, can you store is it on-site or do you need to discharge in a different way?"

In that situation, how do you anticipate things like the cumulative impact of releases if various mines on the same river all have a TEP ready to go; the combined effect might be bigger than the sum of its parts?-- That's the key difficulty I think in managing mine discharges in the Fitzroy basin. The Fitzroy basin is a very complex river system. It's not a single river. There's many different sub-bases, many different tributaries. In the 10-11 wet season obviously we had an event which effectively caused high flow events across the board. That may not always be the case. Like, we may end up with a high flow event in the Nagoa, for example, but nothing down in the Mackenzie. So it could vary from site to site. I guess that's why we only went down the TEP process. Without the ability to actually assess what each mine wants to discharge and then consider that requirement in the context of what we know the other mines are doing, it's impossible for us

to give blanket approvals to discharge above and beyond certain levels, such as we set in the model conditions. And I guess each event has the potential to be different as well. So, I mean, it could be different flows in different water courses and therefore different mines may be able to release more water, or less water, than they did in a previous event. Hence again why we have to do that TEP assessment process. It depends on the site, it depends on the water and it depends on the flow in the watercourse. In terms of cumulative impacts, there's a couple of ways we look at it. Very much our TEP's are conditions based. So they are based on being able to discharge water quality up to a certain point, at a certain rate, given a certain flow in the watercourse, in basic terms. We monitor upstream and downstream water quality.

Given that, we set those conditions based on the opportunity or the allowance for other mines in a similar area to also have a window to discharge, but, again, given the fact that, you know, while we can set maximum levels, we can't prescribe exactly how much a mine is putting out - only that they can't go beyond a certain level - we tend to put catchalls in the TEPs as well. If we, at one of our monitoring points, notice water quality is going - or salinity is raising above a certain level, we can actually stop mines from discharging, assess the situation and then bring them back online with certain conditions as required.

What you're describing sounds, to the layperson at least, like an elegant fusion of art and science?-- It is.

Is there any other way of doing it, or is there anything that could be made easier?-- If I could snap my fingers and make it work in an easier way, I honestly would.

Tell us?-- I would have less grey hair and probably more of it.

But do you have a wish list? Is there something that-----?-- There's been talk about the Hunter Valley. They have a salinity trading scheme down there, and we're actually co-funding a study with the Queensland Resources Council into assessing the feasibility of a salinity trading scheme and how that may apply to the Fitzroy Basin. Obviously there are some different complexities in the Fitzroy Basin compared to that, but that's one other method that's being used around the place. A lot of the other methods rely on an extremely detailed analysis in real time of what's happening and then adjusting mines based on certain volumes in the river, certain salinity readings, and so on and so forth.

Almost like a flood operation centre as the situation is unfolding?-- Yes, but if you can then imagine that flood operation centre across nine different subcatchments with 53 different tributaries all flowing at different background levels with 52 mines as variables, it could be putting in different quality of water at different rates along the way, you know, you start to get a picture of how complex it is, hence why the conditions base that we've got. It is labour intensive and it does take some skilled people in that space, but that's why we do the individual assessments, that's why we condition the TEPs the way we do.

All right. Well, on the basis of the way you just described it, it would seem like the concept of having a central control over the situation is just fanciful, is that-----?-- I wouldn't say it's fanciful, I would like to say we exercise a fair degree of control. It's not iron-clad in so far as saying that, "Yes, you can discharge 1.3 megalitres now and stop, and then you come in here and throw your 1.2 in." It is conditions based, but it is a continual feedback process, and because of the level of monitoring we do, the level of monitoring that's required of the mines and the regular reporting that's required, it allows us to keep the finger on

the pulse and adjust things as required through that process.

All right. Can I move on to the question of information that DERM might pass on to operators from the Bureau of Meteorology, because there's - from the information we've received, there's suggestions, for example, in the material just tendered, I think in relation to Rolleston for Mr Burlinson and Ensham, Mr Westerhuis. They received no formal communication of Bureau forecasts, whilst Callide suggested they received information from DEEDI, but not from DERM. Are you aware of those suggestions?-- I'm aware of the suggestions. I'm unaware of what communication did occur prior to the '10/'11 wet season.

Well, perhaps just tell us, is there a DERM policy about providing operators with BOM information?-- Not as such. Obviously given the concerns and suggestions, we have been providing that information this year. Look, in the past, I really can't comment, but I do imagine that mine sites, given the investment they have in infrastructure and the effects that weather and water would have on their operations would probably want to check the weather forecast themselves now then as well.

All right. We're aware that there have been some developments in the whole system, but the TEP system will no doubt continue to be relevant, so I just want to address the topic of delay in the TEPs. The Environmental Protection Act sets out a maximum period of 20 days for DERM to make a decision about a TEP?-- Yes.

Do you agree with that?-- 20 business days, yes.

Was any different sort of timeframe expected of DERM staff in the wet season just passed?-- Oh, very much so. We were trying to turn it around as quick as we possibly could given the situation. Some were returned around in 24 hours, two days, depending on what was being asked and the level of information that was provided. Others took closer to the statutory period, depending on what it was.

You're aware of some suggestions that - at least a suggestion, I should say - from Mr Ritchie, I think, of Rio Tinto, that DERM usually took the full 20 days. Might that just reflect the nature of the ones they were applying for?-- To some degree, and I think generally in a TEP that there was no urgency attached to or no strict timeline, we probably would try and take the statutory 20 days, because we try and prioritise, obviously, based on the ones that are more urgent.

Well, I was going to ask about that and how you prioritise. I mean-----?-- Based on - well, during the wet season - I'll give you an example - during the wet season - as a result of the '10/'11 wet season, we processed 100 TEPs - so, 100 applications or amendments for TEPs. You know, generally speaking, you expect a handful a year, but we did 100. A lot of that was done over the Christmas/New Year period, and through January and February. During that period we obviously

could approve very quickly ones which were obviously at low risk of causing environmental harm. So, a discharge of X into a major water course that was flowing gangbusters, could do it fairly quickly. The ones that take more time and require more information in a higher assessment are ones where there's a discharge of higher salinity water into lower flows, so such as ephemeral tributaries which may flow into a major water course, which effectively just flash flood in a lot of instances and then could be dry. We know certain salinity - salinity above certain levels can have effect on aquatic ecosystems and environmental values, therefore we are normally after a dilution of flow. So in order to assess one where they're after trying to discharge that higher salinity water into low or zero flow, we would have to look at the environmental values that may be in that water course. We'd have to look at the ways they were trying to discharge the water to minimise sedimentation-----

COMMISSIONER: Slow down, Mr Brier.

WITNESS: You would have to look at the environmental values in the water course itself, so what is it is likely to be affected by the discharge of that highly saline water, and mines, in applying for a TEP, and us assessing a TEP, need to demonstrate that they can manage those environmental values or manage the discharge, so there is no unacceptable impact on the environmental values that exist. So, they take a higher level of assessment and a higher level of understanding. Now, in that, we prioritise, based on information for mine sites themselves. Some mine sites when we talked to them said, "No, this one is not as urgent. This one here is the one we want you to work on.", or, "No, we'll be okay for another three weeks, and then we actually want to start going down to that pit.", so we would shelve them and work on the higher priority ones where we knew, for example, the mine site was undergoing no production at all, had buried machinery and, you know, was in - say, for example, there may have been a risk of flooding in an underground mine. We would prioritise the assessment of that application first. But the level of assessment required is very much a reflection of the level of information and detail provided by a mining company and the level of risk associated with what they want to do.

MR CALLAGHAN: And in terms of that process of prioritisation, I accept the events of last summer were probably unprecedented. Was that something that you just had to develop - the process of prioritisation? Was that something that one person took control of, or-----?-- No, it was something that was managed very well, actually, by environmental services in central west with input from central staff in Brisbane. They did a very good job of gauging what was coming in the door and managing their output with that, but, yes, I think it is fair to say that that prioritisation process was built as a requirement of the wet season at the time.

Did it expose, or draw to your attention, at least, methods by which the whole TEP process might be improved?-- Oh, without

doubt. A few different ways. The way we took applications in, the way we keep records associated with them, the level of monitoring data we had at our fingertips to enable us to do that assessment. So, I think it was probably an education for both us and the mining companies themselves. We had very differing quality of applications. Some mine sites just nailed it, had all the information lined up. Others didn't quite understand what was required, and others just simply didn't have the data through no fault of their own. So, it was a good process in terms of mine sites now being aware of requirements in that regard, but from a DERM perspective, obviously that's probably the most intensive run we've ever had with authorising discharges and assessing TEPs. It allows us to test a few processes. We've obviously made some refinements and some improvements in the way we communicate between different areas, the level of control and co-ordination we have across the lot. So, yes, I'd say we all learned something.

Is there any area of improvement which occurs to you which might not yet have been implemented which might require the cooperation of another agency or-----?-- I hope not. None that spring to mind. Look, the big thing which came out of that is communication, and the need to ensure communication between us and the mine sites, the need to ensure communication internally amongst ourselves, and also the need for mine sites to ensure they have relevant co-ordination and communication between the site and Head Office, and I think that was probably the big learning.

How do you ensure that that learning is not lost?-- Well, we've spent a lot of time talking to mines in the meantime. We've had many, many meetings with mine sites and mine site senior management to discuss these issues-----

But will that learning-----?-- We've-----

I'm sorry to interrupt, but will that learning pass as the people who occupy those positions and have had this experience move on?-- I hope not.

How can we ensure that it does doesn't?-- To be cynical, monkey see, monkey do, in some aspect. This is the way we do business now. A new staff member coming on is trained in that way to do business. We've improved their guidelines for assessing TEPs. We've put in different structures internally. My position, for example - at the time I was down there as Director, LNG Enforcement Unit, basically giving a hand with mine site management during the wet season. As a result of the wet season we created the coal and coal seam gas operations unit inside RSD. So, there's my position. With an overarching view, we've added a Director, Mine Operations and a Director, CSG. So, yes, I think in order to ensure that the learnings continue, one, they're burned into everyone's brain, quite obviously-----

Well, they are at the moment?-- Two, we've taken structural changes to make sure our coordination and communication is

managed in a better way. Three, we've improved and written down our internal procedures and guidelines relevant to that exercise.

You mentioned training. Is that something that's been formalised?-- Yes, we've done - and again, this tends to be internal workshops, so getting, you know, someone from Brisbane or even myself, for example, to describe what we saw as a whole and how we want to coordinate things in a certain way. We've done specific training in terms of the model conditions and how to assess that, specific training in terms of the new TEP guideline and any amendments to the EP Act. So, there's been a significant amount of-----

Long-term, might there be benefit in a joint training exercise involving DERM and the companies?-- Oh, without doubt. In fact, we actually did that upon the finalisation of the Fitzroy model conditions. We actually conducted a workshop with industry and with our own staff-----

This is back in '09?-- No, no, now.

The most recent-----?-- So, it would have been September, I think - late August or early September.

All right?-- We had a workshop where we ran through the model conditions, how to determine flow triggers, the information that was required to justify that, and that was for both industry and our own staff and it went extremely well.

That wasn't dealing specifically with the flood situation, that's just dealing with-----?-- Well, it's the same thing. In terms of an assessment of TEPs, for example-----

Yes?-- -----the information required to justify change in the model conditions or an EA amendment is similar information to what we'd require to authorise a discharge with different conditions. So, the processes are very similar, the methods of recording the data are the same, the information we need to be caught and tracked is the same. So, they're very applicable across the board.

Can I ask you, though, about the approach taken by individual DERM officers towards making decisions about TEPs? There is a procedural guide to be used by DERM officers when making such decisions; is that correct?-- Yes. It was updated after the floods, actually.

Right. And it sets out the criteria that have to be taken into account under all relevant acts and regulations?-- Yeah, it's basically a simplified version of the relevant parts of the Environmental Protection Act.

Yes, the one that we have now is the updated one to June 2011. It's been changed since the last wet season, has it?-- Yes.

When was it first created?-- I'm not sure. I couldn't answer that.

There was something like it in place-----?-- Yes, to my knowledge there was a procedural guide for TEPs, yes.

All right. We might be able to - I think it is annexure MFB 03-27 to Michael Birchley's statement, which I think is Exhibit 747?-- No, that's the Emergency Direction Procedural Guide up before me at the moment.

It's not the document I had in mind. I might show you a hard copy while that's-----?-- Thank you.

This is the procedural guide that we're talking about?-- Yes.

And this is the one that's in place now; is that right?-- Yes.

Can I take you to page 9 of 14? I'll keep going. There's a heading: "Satisfaction that the draft TEP meets the requirements of the act". It states that the officer must decide whether they are satisfied the draft TEP adequately addresses all of the relevant matters. That's on the screen now. How is that done?-- Generally through an assessment report, which effectively is a checklist that there's a variety of things it needs to be assessed against.

Do we get some clue about those on page 7 and 8 - a list of the standard criteria - at the bottom of page 7 and over on to page 8?-- Yes.

List of questions?-- Yep.

The first one being: "Has the decision effectively integrated long and short-term economic, environmental, social and equity considerations?" How does a DERM officer address that question?-- Yeah, and again it is very difficult in an assessment process. There's a lot of standard criteria which apply to all management decisions. In terms of this, I would say the reason we issued a TEP in relation to mine discharges was because we knew there were X severe economic consequences - or potentially economic consequences to mine sites by keeping the water in the pits.

That's probably an easy one to understand, as is environmental. I mean, that's the trade-off that we understand, I suppose?-- To some degree, yes.

Yes. What about social and equity considerations? Can you give me an example of those?-- Social considerations, I think, would be, you know, what are the impacts of this release on the downstream environment, for example.

Is that different from environmental?-- Yeah, it can be. So, I mean, if it's going to cut off access to someone's property, for example, while that doesn't necessarily cause environmental harm, that does have social implications for that land holder. So, those sorts of considerations. The equity on probably - yeah, I couldn't give you an example of

how to actually apply that, but, again, it will depend on a site-by-site situation. Obviously some of these conditions or some of these criteria will apply to some sites, and some simply won't be applicable.

Can I ask what - who are the people making the decisions according to these - or having regard to these criteria? What sort of level of DERM employee are we talking about?-- Generally we'd be having an AO5/PO3 level working on these things. But then in the case of the decisions themselves, they're generally run past an AO8 level manager or above.

Okay. I'm just wondering how they are equipped, for example, to engage with a question such as the second bullet point on page 8: "Does the decision have due regard to the global dimensions of environmental impacts and policies?"?-- It varies. I think, as with any organisation, our skill level varies across staff.

I'm not really addressing the skill level of individual staff members, you understand, I'm sort of querying the resources-----?-- Oh, okay, you mean as a whole-----

Yeah?-- -----should we be making those calls?

Yeah?-- I think - that's what the EP Act is, I guess.

Yes?-- And in terms of weighing the benefits to the environment, like you said yourself, it tends to be a science and an art in some areas. What we tend to do in that regard is we have individual experts in certain areas. We have some very skilled staff that sit in department. Obviously we have procedures in place. In terms of doing an assessment where we need to consider, you know, something outside - an individual officer's or junior officer's skill level - we have procedures in place whereby that can be elevated. A good example of that would be the scientific assessments - you know, what are the potential implications on an aquatic ecosystem from the release of 4,500 EC water into Kallangur Creek. Obviously an AO5 up in central west isn't going to know the answer to that, so we send that through to environmental resource science and they do a scientific assessment. So we have to move the expertise where it is required.

And I can understand that DERM might well have some expertise in that environmental sort of science. What about the fourth bullet point, though, "The need to maintain and enhance international competitiveness." It's not something we conventionally associate with DERM expertise, but as you point out-----?-- No.

-----if you're going to address the statute, you have to take it into account?-- Yes, and I mean, has the need to maintain and enhance international competitiveness been considered in addressing a TEP application. In that context, I think, given the floods, our consideration of that was, well, obviously these mines need to get back up and operating, therefore the very fact that we would want to negotiate a TEP and allow this

water to be released was, yes, that's a tick, therefore we should be issuing a TEP if we can while still managing the impacts on the environment. So, they're not necessarily criteria that are going to be different across each site. Some of them will be the same.

Sure?-- But it does depend.

Yeah, and I was just interested to learn what - or how the employees that you've described were equipped or resourced to address these sorts of fairly weighty considerations?-- Yes, and it does vary. I mean, it comes with experience with what they've actually had to do in the past. We undertake training with them obviously, but the key thing is to have those procedures and access to skilled staff available and the procedures in place to make sure that occurs.

What about the advice from outside the Department on something-----?-- We've sought that in making different environmental management decisions, yes. Particularly with EA applications where there might be some specific engineering requirements around dams, for example, we may seek a consultant's opinion.

Is that an ad hoc sort of a thing or-----?-- As required, yes, and, again, because of the nature of these things is that they can be very different site to site. It's obviously an assessment we make site to site, but if we were lacking expertise in a general area - let's say noise, as an example - if we lacked expertise in noise and we had to assess a multitude of EAs in relation to noise, we might have a standing offer arrangement with a consultant that we can access for information when required.

Can I move to a slightly different topic, and that is the question of verbal permission? At paragraph 19 of your statement, referable to Dawson, you note that a Mark Evans, Acting Regional Manager gave verbal advice to the central and north mine permitting discharge. Is this sort of procedure something which is - or something which occurs regularly, or-----?-- Not regularly, and I think probably a reflection of the urgency of some of these situations and the volume we were dealing with. There were certainly some TEPs which I personally said - and rang mine sites and said, "Look, we're going to issue that TEP, and are satisfied for you to start discharging in accordance with that TEP now."

Is there any policy, though, as to when a verbal permission might be given or, again, is that just an as-needs-----?-- No, in general, a verbal permission for a TEP is something we wouldn't do. I don't think you will find it in the act. But given the actual situation and the practicalities involved, we made that call. Mines can either decide to, you know, take us up on that verbal offer or not, but, quite obviously, if we've given a verbal instruction for a mine to do something and they do it, we're hardly likely to go and chase them for compliance action afterwards.

Are you aware of instances where mines complained about being unable to comply with reporting and monitoring requirements - they've found them too onerous due to the circumstances of the flooding?-- Yes, there were several cases where monitoring sites couldn't be accessed due to flooding or wet weather issues.

And again we'll probably see that suggested in some of the materials. Do you have an overall response to those suggestions?-- I think they're valid. You know, we do put fairly strict monitoring requirements on TEPs, in general, and EAs, for that matter, and the EA requires you to do daily monitoring. If you can't do daily monitoring, in theory you're in breach of the EA, but obviously there's mitigating circumstances if there's a great wall of water in the way. I do think, however, there were some valid concerns industry had. We talked through those as part of the latest Fitzroy model conditions review, and actually made some changes to the monitoring requirements, the frequency of monitoring and what was needed to be monitored as a result of that feedback.

You're aware that some mines that were granted TEPs haven't been able to completely dewater their mine pits?-- Yes.

Does that suggest anything about the effectiveness of the TEP process, site management or both or neither?-- Neither, I think. The simple fact is that we issue TEPs to authorise a discharge above and beyond an environmental authority where we can be satisfied that impacts on the environment can be adequately managed, so there are no unacceptable impacts on the environment or aquatic ecosystems. That simply means in some circumstances that mines were not able to discharge some of their water because it was too saline or there wasn't enough in terms of a receiving flow. That was always going to be the case. We allowed the maximum we could allow while ensuring the environment was protected. Unacceptable harm didn't occur, but that meant they couldn't get it all out.

We move then to the topic of emergency directions. I don't know if you're aware of the comment made by Mr Glen Burlinson of Xstrata Coal that it would be useful for DERM to clarify the circumstances in which it would be willing to grant an emergency direction. There's a procedural guide?-- For emergency directions?

For emergency directions?-- Yes.

That's a public document?-- Yes, as I'm aware.

And do you have a comment on the suggestion that there's a need to clarify it, or do you say that the guide is sufficient for the purpose?-- Oh, no, I think it stems - there was some discussion at the time of the floods when we were issuing TEPs whether we should be issuing an emergency direction instead of a TEP, given the circumstances, and-----

Can I just ask how many if - how many emergency directions were given in the wet season just passed?-- Two that I'm

aware of in relation to coal mines, both to Moranbah North. I guess it's worth having a look at that. An emergency direction, generally speaking - and you can find the definition under section 468 of the TEP act - if that was possible to break up, that would be great - but if you look at it, there basically has to be an emergency, there has to be, I think, no reasonable or practical alternative to issuing that direction, and then that direction can have conditions placed upon it. The emergency directions we did issue to Moranbah North at the time were basically as a result of Anglo getting in contact with us and saying, "Look, we're on the dam. It's going over the spillway, but we're in danger of it going over the crest of this dam shortly." Quite obviously - and as I know Oskar discussed before - and Arrow this morning - but if you get a dam that actually overtops over the crest, you're likely to get severe erosion and you could end up with catastrophic dam failure. In that case, the consequences of not putting the water out are likely to be worse than putting the water out over the side to reduce the risk. So, we gave an emergency direction to actually reduce that level of risk, because it was the lesser of two evils. It would cause less environmental damage than taking no action.

And once given was there monitoring of the water quality?-- Yes, my understanding there was in that instance.

And who did that, DERM or Anglo American?-- Anglo American would have done their own monitoring, and then we would have also done our cumulative monitoring at our gauging sites through the Fitzroy.

And the monitoring that they do, they provide it to you?-- Yes. It's also worth mentioning that in those cases the emergency direction was given for a finite time period, I think it was about five or six days, to reduce the immediate risk, and then Anglo applied for a TEP to further manage their water on site in relation to that dam.

Have there been any changes to the emergency directions procedure as a result of the experience?-- No, not that I'm aware, no.

And, finally, I think, can I take you to paragraph 63 and 64 of your statement relating to the Ensham Mine? You state at paragraph 64, I think, that DERM does not believe that discharges from mine sites during the 2010/11 wet season have contributed significantly to the elevated electrical conductivity of the Fitzroy River system, and that there's no - paragraph 69 I think you say there's no evidence of adverse environmental effect from mine water discharges, I think similar statements in other statements-----?-- Yes.

-----that you've made. What - what's the basis for these? What studies have been conducted upon which you've found these conclusions?-- Basically a - I'll call it a mathematical analysis of what actually went in there, but a scientific analysis of what we authorised, the reporting the companies have done to us in terms of the volumes issued, the hydrographical data we have in terms of the flows in the watercourse, and, of course, the salinity data we have from our own monitoring in those instances. That tells us what inputs were actually put into the system by the mining industry, what we were actually observing as the total situation in the Fitzroy, and a simple matter of maths then to do the difference. I think we've also done some studies and there has been presentations to the council up at Rockhampton recently about the current situation in the Fitzroy. The largest flow ever in that system, roughly 38 million megalitres of water, went down. The last time we had anything close was back in about 1915. So a massive, massive water flow. We've had studies that had scientists out there and were observing that it's filled up groundwater systems, aquifer alluvial systems next to rivers, and we're now getting that groundwater ingress flowing into the Fitzroy itself, and it's an elevated salinity level. We're observing that. There hasn't been any mines actually discharging saline water since about June, and yet the Fitzroy is highly saline at this point in time.

What about any issues - are there issues other than salinity?-- There are. There can be heavy metals.

Yes?-- Uranium in some instances, borons, fluorons, a few of those other ones in certain circumstances, particularly CSG. So there are other trace elements that are of concern, and we actually require monitoring for that as well, but generally, in terms of what we can allow in terms of a release, salinity is the restricting factor, although there have been a couple of cases specific to sites which might have acid mine drainage or other contaminant issues where there may be some other limiting ion in that.

Well, this might be - questions about other environmental effects, I'm not sure whether that goes beyond the writ of your brief, but has there been other monitoring targeted at assessing whether any other contaminants have increased as a result of-----?-- Done simultaneously with the salinity. We take a suite of samples and we require companies to take a suite of samples and get them tested in a NATA laboratory. One of the things on the back of the 2008/2009 floods was that the conditions around that level of monitoring for other ions or contaminants was actually increased, and some more rigour put around it, including the requirement for NATA certification.

All right. So your statement in paragraph 69 I appreciate probably wasn't directed towards this question, but on the question of environmental harm generally, whether as a result of noncompliant release or compliant release, is there a state of learning on that from DERM's perspective? Did the floods of the last wet season increase the levels of any contaminant or anything undesirable in the water so far as you're aware?-- Well, obviously they did, because we've got mine sites releasing water. I mean, so there are contaminants going into the system, through runoff, across the mine site and then into a watercourse which wouldn't otherwise be there if the mine site didn't exist, but the level of those contaminants from the monitoring that we've got shows that there wasn't any environmental concerns as a result of that. The noncompliant releases during the '10/11 period were generally things like a release from an unauthorised discharge point. So a dam may have been overflowing but the water was still within quality limits. Where there were excessive salinity, it was on the margin. We didn't have any major noncompliances across that period, and of course the way we actually condition the TEPs having that catchall in there that we do our own monitoring and can stop mines from discharging mean that we're actually taking into account any noncompliant discharges as well. So we don't just do the maths, we actually physically go out and measure this thing, and if we see salinity is rising for whatever reason we can actually put the brakes on the discharges, and that accounts for the noncompliant releases as well.

And I suppose in some ways the very volume of the flood had an effect on percentage of salinity?-- Very much, but, I mean, the very volume of the flood was why we could authorise mines to release more water than their environmental authorities as well.

That's all I have for the moment, thank you.

COMMISSIONER: Mr Duffy?

MR DUFFY: No questions.

COMMISSIONER: Ms McLeod?

MS McLEOD: No questions, thank you.

COMMISSIONER: Mr MacSporran.

MR MacSPORRAN: Thank you, Commissioner. Mr Brier, just one matter. In terms of the evidence you gave about the use of the emergency direction power, you said there were two such directions issued, both to the Moranbah North Mine, and you told us the circumstances involved in both of those where there were clear reasons why it was an emergency and had to be done quickly to avert a safety issue. During the course of the floods and in the immediate aftermath of the floods, were there other reasons advanced by some in the industry for the use of emergency direction powers as against the TEP provisions?-- Yes, there were. There was considerable level of discussion around the fact that what we were experiencing was an emergency, therefore, we should direct mines to do certain discharges, albeit with certain conditions, rather than the TEP process. It's an interesting one to look at. As I mentioned before, to make a decision, in terms of an emergency direction, because making that decision will result in a better outcome than not making the decision, is very black and white. In order to make an emergency decision where there isn't an imminent risk of human safety, to human health, there isn't an imminent environmental risk, what is the emergency you're actually issuing that direction upon? It's been argued that there was an economic emergency, the mine sites were inundated and therefore needed to get that water out in order to come back to operation. And, look, I've no doubt that's what needed to occur, the water needed to come out in order to get back into operation. For authorised officers under the EP Act to make a determination if there was an economic emergency I think is probably a bit of a stretch, and the thing I've explained to people in the past, which really needs to be understood, in that situation nothing is imminent, like there not taking action is the better result for the environment, taking action to release is a good result for both, because we're actually conditioning the release to ensure the protection of the environment, while allowing mines to discharge as much water as possible within those constraints. Quite honestly, if I was to have to assess or our staff were to assess an emergency direction for a release in that circumstance, it would be a very similar process to what's required to actually issue a TEP. We can condition emergency directions. We would be - we would be at fault really if we didn't condition that emergency direction to ensure the safety of the environment in that circumstance. So

we would require the same level of information from the mine site, we would require the same level of assessment, and we would have to undergo the same process to consider the environmental impacts from making that decision because the alternative is better. So realistically whether we used an emergency direction, and I don't believe an emergency direction was appropriate given the circumstances, but say we did, it would have been almost identical in terms of the assessment process we would have had to have gone through and in terms of the conditions we would have placed on the discharge.

And I suppose most significantly perhaps the time taken to process the application?-- By the same reasons, very dependent upon the level of information and the quality of information supplied and the risk involved when making that decision.

All right. Now, what about the - was there a view in the industry that one thing that DERM wasn't prepared to allow, which would have been of great benefit, was to allow the mines to release large amounts of water in high flow circumstances across the board to, in effect, empty the mine?-- Yep. Again, I mean, I would argue that what we did through the TEP process was allow mines to discharge a higher flow given the circumstances, but, no, not a blanket approval to throw everything over. Again, without knowing what the quality of the water is that has to go into the system, without knowing what mines are discharging, without knowing the volumes they would discharge, the rate at which they can discharge, and the location that that discharge would be occurring, it would be almost impossible for us to determine what the impacts would be on the environment, what the impacts would be on downstream water users, not just from an environmental perspective, I mean, even access to landholders' properties, for example, and also town water supplies. If we had extremely high volumes of water being discharged, to the point where it may have been, you know, a larger percentage of the existing flows, that could fill a weir up with salty water, then remain there through a dry season. We could not make that assessment in good conscience without knowing that level of information, and, as I was explaining earlier in regards to the TEPs, in regards to EA conditions, in regards to the model conditions, it's very, very dependent upon a mine's location in the catchment, where they are in relation to a major watercourse, what the quality of water they have on site is, and how they can release that water, hence the site by site assessment.

Again, if you were to go down that path, and allow those sort of releases, from what you say, the assessment process would be complex and take time?-- We would still be assessing site by site, and we would still be making the call as to what could be released in order to ensure the risks to the environment were adequately managed.

So, again, very similar to a TEP, which was the one that was - the process that was selected in most cases?-- Regardless of the tool, that site by site assessment and the same level of

information is required. Interestingly, when we look at the water quality data, through the wet season, with what we discharged, what we had as natural background flows, and what we saw in 2008/09, I think we got it pretty right. There were some elevated levels compared to background flows of salinity, but not high enough to be of concern, nowhere near what happened in 2008/09, and actually significantly less than we are currently experiencing at the moment due to groundwater ingress where we are getting complaints from the community. So I actually think that site by site process worked. Historically when you look at it there was roughly - and these are rough figures - 200 gigalitres of water discharged by mines over the '10/11 wet season. About 50 to 60 gigalitres of that was under authorisation from an environmental authority. So everything over and above was what we authorised through the TEP process given the circumstances that were there, given the high flows that were available.

Now, finally, would you say that the - your relationship, that is the department's relationship, with the mines generally in the lead-up to the next wet season, which is almost upon us, is a good working relationship?-- I would actually. I think - I mentioned communication being the key before. I really think we have improved their communication as a whole. I think there's been a good collaborative approach to the Fitzroy model conditions, and it was a fairly robust discussion. I mean, the mines put forward ideas, we adopted some, we said, no, we couldn't do others. I actually think there has been a very good collaborative approach heading into this wet season.

That's all I have, thank you, Commissioner.

COMMISSIONER: Mr Callaghan?

MR CALLAGHAN: Nothing further. May Mr Brier be excused?

COMMISSIONER: Yes, thanks, Mr Brier. You're excused.

WITNESS EXCUSED

COMMISSIONER: What about your last witness?

MR CALLAGHAN: Just excuse me for a moment, Commissioner. He is waiting for the call.

COMMISSIONER: Can you do him within how long?

MR CALLAGHAN: I think we can - well, MacSporran tells me he doesn't require him. He was really only being called in case that was necessary. So that would seem to-----

COMMISSIONER: All right.

MR CALLAGHAN: -----settle it.

COMMISSIONER: All right. We'll adjourn.

MR CALLAGHAN: 10 o'clock.

THE COMMISSION ADJOURNED AT 4.29 P.M. TILL 10.00 A.M. THE FOLLOWING DAY