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**TRANSCRIPT OF PROCEEDINGS**

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O/N H-910727

**MR B. WALKER SC, Royal Commissioner**

**IN THE MATTER OF THE MURRAY-DARLING BASIN ROYAL COMMISSION**

**ADELAIDE**

**9.58 AM, WEDNESDAY, 27 JUNE 2018**

**Continued from 18.6.18**

**DAY 2**

**MR R. BEASLEY SC, Senior Counsel Assisting, appears with MR S. O'FLAHERTY,  
Junior Counsel Assisting**

MR BEASLEY: We're ready to commence any time you are, Commissioner. I mean, it's not quite 10 o'clock, but - - -

5 THE COMMISSIONER: Very well. I don't think it will do any harm to start before 10. Before you start, Mr Beasley, this being the commencement of another round of hearings and sitting, as I do, where I am, I wish to acknowledge that this land that we meet on is the traditional land of the Kaurna people, and we respect their spiritual relationship with this country. Acknowledge them as the custodians of the Adelaide regime and it is their cultural and heritage beliefs that are still as important to them today, living. We also pay respects to the cultural authority of other  
10 Aboriginal people visiting or attending from other parts of South Australia or the country today. Mr Beasley.

MR BEASLEY: Commissioner, the witness this morning is Dr Matthew Colloff  
15 who is a former research scientist with the CSIRO. Just before I call him to give evidence, can I just let you know that there are a number of CSIRO scientific reports relating to the Basin Plan and work done by the Murray-Darling Basin Authority, some of which I referred to in my opening statement, and to the extent that I referred to CSIRO reports in my opening statement, they have been tendered. Those reports  
20 were authored by a team of scientists, and the Commission staff have contacted, I think, various team leaders with the view to them giving evidence before you to discuss aspects of those reports and aspects of the work of the Basin Authority.

Since that has been done, at least, the employees – sorry, a couple of the employees  
25 who have been contacted who are still employed by the CSIRO have notified the Commission, notified Ms Masters that they are not prepared to give evidence until the High Court proceedings are finalised. We have an email from a scientist there called Sebastien Lamontage or Lamontagne – apologise if I've mispronounced that –  
30 L-a-m-o-n-t-a-g-n-e, and another email from an employee of CSIRO called Carmine Pollino, P-o-l-l-i-n-o, and both of those emails are in identical form, which tells me that they may have been drafted either for them or on advice given to them. But the response we have to our invitation to those people to give evidence has been along these lines:

35 *I've consulted with CSIRO and consider it important to await the outcome of the High Court's decision. It is possible that the High Court makes a wide range of comments in relation to the Royal Commission and its operations which will be relevant for CSIRO and its staff to consider. CSIRO and its staff  
40 wish to remain respectful of the High Court and the legal process and to allow it the benefit of issuing its decisions before taking further steps in relation to this matter. I'm happy to resume any further communications regarding the Royal Commission once the High Court has issued its decision.*

45 There is a third employee of – there is a former employee of the CSIRO who we've also – the Commission staff have also attempted to contact to give evidence who indicated that he was discussing with CSIRO what his response should be, and

indicated he was currently unable to participate, and there are a number of employees that we have not heard back from. The only comments I wish to make about that are these: (1) it is disappointing that people either employed or formerly employed by our national science body are unwilling, whether it's an unwillingness of their own  
5 or have been directed to be unwilling, to come and, at an invitation, give evidence before you about matters that are purely science related and relate to reports that they have had some authorship on or relate to reports in relation to which they have expressed opinions on the Basin Authority's work.

10 It's disappointing because it doesn't seem to me, having looked at the Act creating the CSIRO, that it's particularly consistent with some of the purposes for which the CSIRO was created, including giving advice in relation to matters of scientific debate and controversy. Having said that, I would add that I find it difficult to understand  
15 how the failure of a witness to accept an invitation to voluntarily come here and give evidence on their scientific reports has anything to do with respecting the High Court. Without making any detailed comments about the High Court proceedings, they relate only to matters concerning your powers to compel witnesses or documents. They have nothing to do with people that would voluntarily come and give evidence. So while the stance taken by these people or the stance they've been  
20 directed to take is not disrespectful for them to the High Court, it's certainly not respectful for the High Court and, in my submission, is irrelevant to the High Court.

Finally, in opening statements, both you and I issued an invitation to employees, past and present, of the Basin Authority or the Commonwealth that they were welcome to  
25 come here and give evidence relevant to the Terms of Reference or responsive to other evidence called before the Commission, and that the staff of the Commission would facilitate that evidence and assist with statements if necessary, etcetera. I make that same invitation to current and past employees of the CSIRO. That's all I need to say about that matter, Commissioner.

30

THE COMMISSIONER: Thank you.

MR BEASLEY: So I call Dr Colloff who is in the box here, and you will need to  
35 take an oath or an affirmation, Dr Colloff.

35

DR COLLOFF: Yes.

40 <MATTHEW JOHN COLLOFF, AFFIRMED [10.05 am]

<EXAMINATION-IN-CHIEF BY MR BEASLEY

45 MR BEASLEY: Dr Colloff, could you give the Commission your address.

DR COLLOFF: Yes, it's Fenner School of Environment and Society, Australian National University of Canberra.

MR BEASLEY: And you're an honorary senior lecturer at that school?

5 DR COLLOFF: That's correct.

MR BEASLEY: Can you tell us your qualifications.

10 DR COLLOFF: I have a PhD, and I have 35 years as a professional research scientist.

MR BEASLEY: And until August 2016, you were employed as a research scientist at the CSIRO?

15 DR COLLOFF: Yes.

MR BEASLEY: And for how many years did you work for the CSIRO, approximately?

20 DR COLLOFF: 22 years.

MR BEASLEY: And you've provided the Commission with a signed statement dated 21 June 2018?

25 DR COLLOFF: That's correct.

MR BEASLEY: Can I take you to paragraph 13 of that statement?

30 DR COLLOFF: Yes, you can.

MR BEASLEY: Should the date in the first line, December 2010, read December 2011?

35 DR COLLOFF: Yes, that's correct.

MR BEASLEY: And would I – this statement relates, in general, to work you did on a report for the CSIRO for the MDBA which we can call the Multiple Benefits Project Report.

40 DR COLLOFF: That's right.

MR BEASLEY: Would I be right in suggesting that that – the work you did in relation to that report commenced in about April 2011 and concluded some time in –

45 sorry, yes, April 2011 - - -

DR COLLOFF: April, yes.

MR BEASLEY: - - - and concluded some time in early 2012?

DR COLLOFF: That's right.

5 MR BEASLEY: Yes. All right. And subject to that correction in paragraph 13, you affirm that this statement is true and correct?

DR COLLOFF: Yes.

10 MR BEASLEY: All right. That statement will be tendered, Commissioner. Your current work – and I'm raising this now because I want to circle back to it, and I want someone to remind me, even if it's you. Your current work is in relation to climate change and human adaptation.

15 DR COLLOFF: That's right.

MR BEASLEY: And that's what you are doing at the ANU at the moment.

DR COLLOFF: Yes.

20 MR BEASLEY: Okay. We'll come back to that. Do you have a copy of the final Benefits Report of 28 March 2012?

DR COLLOFF: Yes, I do.

25 MR BEASLEY: Can I ask you to go to that report. So that official title of this report is 'Assessment of the Ecological and Economic Benefits of Environmental Water in the Murray-Darling Basin, the Final Report to the Murray-Darling Authority from the CSIRO, Multiple Benefits of the Basin Plan Project' dated 28  
30 March 2012.

DR COLLOFF: Yes.

35 MR BEASLEY: Just in paragraph – sorry, page (i) under the heading Acknowledgements - - -

DR COLLOFF: Yes.

40 MR BEASLEY: - - - there's a mention of some of the people involved in the project. The report itself was funded by the Basin Authority. Tony Webster chaired the steering committee. He was obviously someone at the MDBA.

DR COLLOFF: Yes.

45 MR BEASLEY: Do you know what position he - - -

DR COLLOFF: Yes, he was the – from memory, General Manager, social and economic research.

5 MR BEASLEY: Right. And there's a mention of a Carol Couch, C-o-u-c-h, from the CSIRO.

DR COLLOFF: Yes.

10 MR BEASLEY: Can you tell the Commissioner her position in CSIRO?

DR COLLOFF: Yes, she – she was the program leader responsible for a program called Environment and Contaminants in the Water for a Healthy Country, a Research Flagship.

15 MR BEASLEY: And this project, I assume, fell within that area.

DR COLLOFF: It did.

MR BEASLEY: Jody - - -

20 DR COLLOFF: Swirepik.

MR BEASLEY: - - - Swirepik, S-w-i-r-e-p-i-k, she was, at this stage of this report in 2011, at the Basin Authority. I think she is now the Commonwealth Environmental Water Holder.

25 DR COLLOFF: That's correct.

MR BEASLEY: What was her position at the MDBA at the time?

30 DR COLLOFF: I believe it was – I think her title was something like Executive Director, Natural Resource Management.

MR BEASLEY: All right. Thank you. If you go over the page to (ii), it lists the contributors to this particular report. It says:

35 *Project director Ian Prosser.*

Was he someone from the CSIRO?

40 DR COLLOFF: Yes, Ian Prosser was the Flagship Science Director who had overall or overarching control of – of this project.

MR BEASLEY: All right. And then it's got project leader Neville Crossmann.

45 DR COLLOFF: Yes.

MR BEASLEY: Is that entirely accurate or did Carol Couch have some role in relation to that?

5 DR COLLOFF: No, it's not entirely accurate. Neville Crossmann was in charge of the day-to-day science, but Carol Couch took charge of most of the operation matters, particularly in relation to CSIRO's relationship with MDBA.

MR BEASLEY: Right.

10 DR COLLOFF: Neville had, primarily, contact with the MDBA by Tony Webster.

MR BEASLEY: Thank you. Then you will see Task 2, Environmental Benefits of Flow, and then it has your name underlined.

15 DR COLLOFF: Yes.

MR BEASLEY: What does the underlining signify?

DR COLLOFF: That means I was the leader of that particular task.

20 MR BEASLEY: Right. And that – I take it that means that Carmine Pollino and the other people mentioned there were members of your team?

DR COLLOFF: That's right.

25 MR BEASLEY: It also mentioned – and – sorry, and they were all CSIRO staff members?

DR COLLOFF: They were all CSIRO staff, yes.

30 MR BEASLEY: But then it mentioned Rebecca Lester and Simon Benga from Deakin and Flinders University. Would I be right in assuming that they were subcontracted to be part of the team?

35 DR COLLOFF: Essentially, yes, yes.

MR BEASLEY: And Rebecca Lester was – is an expert in relation to the Coorong; is that right?

40 DR COLLOFF: That's right, yes.

MR BEASLEY: Is she still at Deakin University?

DR COLLOFF: I believe so, yes.

45 MR BEASLEY: And you and your team had responsibility for drafting chapter 3 of this report?

DR COLLOFF: Yes.

MR BEASLEY: Dealing with, unsurprisingly, given the task, the environmental  
5 benefits of flow of a 2,800 gigalitre plan in terms of 2,800 gigalitres reduction from a  
baseline diversion - - -

DR COLLOFF: That's right.

MR BEASLEY: In other words, 2,800 gigalitres from the environment.

10 DR COLLOFF: Yes.

MR BEASLEY: Can I ask you this – and I'm going to come back to the detail of  
this, but in general terms, firstly, you and the team wrote the draft of chapter 3?

15 DR COLLOFF: That's correct.

MR BEASLEY: Did that drafting responsibility mainly fall to you or was it a  
shared - - -

20 DR COLLOFF: I was responsible for the introduction and the background. I  
collated information on sections on vegetation, fish and water birds and the Coorong  
from the other members of the team, and did any appropriate editing required.

25 MR BEASLEY: And that was – the heart of the chapter is about whether a 2,800-  
gigalitre plan – let's just call it that, rather than a longer title. The 28 gigalitre –  
2,800 gigalitre - - -

DR COLLOFF: 2,800, yes.

30 MR BEASLEY: - - - plan meets certain flow targets for species of vegetation. - - -

DR COLLOFF: Yes.

35 MR BEASLEY: - - - feed native fish, water birds.

DR COLLOFF: That's correct, yes.

MR BEASLEY: All right. As I said, I will come to the detail of this later, but your  
40 draft of chapter 3 was subject to some alterations in the final version of the report.

DR COLLOFF: Yes.

MR BEASLEY: Some of those changes, you considered to be significant.

45 DR COLLOFF: Yes.

MR BEASLEY: Can I just, so we clarify the exact objectives for the report, if you go to page 6 of the final report, where it happily has the heading Objective of this Report.

5 DR COLLOFF: Yes.

MR BEASLEY: It indicates that:

10 *The objectives of this report is to identify and quantify the ecological and ecosystem services benefits that are likely to arise from recovering 2,800 gicalitres a year of water from the environment in the Basin and, where possible, to elicit the monetary value of those benefits.*

15 Now, the first part of that sentence was, in the main, your responsibility. The monetary value of the benefits, other people worked on.

DR COLLOFF: Yes, that's correct.

20 MR BEASLEY: Yes.

25 *Steps used to meet these objectives are as follows: estimate the response of ecosystem and components of water quality for changes in flow expected of 2,800 gicalitres a year of water recovered for the environment as modelled by the MDBA, chapters 3 and 4.*

You are responsible for chapter 3.

DR COLLOFF: Yes.

30 MR BEASLEY: :

*Calculating incremental changes in the supply of ecosystem services under the 2,800 scenario relative to baseline scenario.*

35 Partly your responsibility in chapter 3.

DR COLLOFF: Yes.

40 MR BEASLEY:

*Elicit the monetary value –*  
etcetera, etcetera, not your responsibility.

45 DR COLLOFF: Not my responsibility.

MR BEASLEY: All right. And, again, I'm going to come back to the detail of this in a moment, but, in general terms, your draft of chapter 3 contains some figures in relation to whether flow targets had been met in both percentage terms and with symbolic references.

5 DR COLLOFF: That's right.

MR BEASLEY: And those symbols were given the shorthand or nickname "traffic lights"?

10 DR COLLOFF: That's right.

MR BEASLEY: And, in general terms, they indicated whether, on a 2,800 gegalitre scenario, the flows indicated as needed or necessary by the MDBA were either met at 15 2,800 gegalitres, not met, but better than the base line, or no better than the baseline.

DR COLLOFF: Yes.

MR BEASLEY: And many of those tables – in fact, it may be every one of those 20 tables that had traffic light signals in your draft was removed from the final version of the report.

DR COLLOFF: That's correct.

25 MR BEASLEY: And those tables that you drafted related to how – it related to the flow targets specifically in relation to species of vegetation, for example, river red gum or Black Box - - -

DR COLLOFF: Yes.

30 MR BEASLEY: - - - Lignum.

DR COLLOFF: Yes.

35 MR BEASLEY: - - - and then in relation to native fish and water birds.

DR COLLOFF: Yes.

MR BEASLEY: All right. Those tables or figures in the draft report that were 40 removed, were removed with your knowledge.

DR COLLOFF: Yes, they were.

MR BEASLEY: And at the request of the Basin Authority.

45 DR COLLOFF: That's correct.

- MR BEASLEY: All right. I'm going to come back to the detail of this again also, but there are also changes made to the narrative of the text of the draft report as against the final report.
- 5 DR COLLOFF: Yes.
- MR BEASLEY: And those changes were also, in your view, significant.
- DR COLLOFF: Yes.
- 10 MR BEASLEY: And they relate to both the opinions you expressed or the team expressed, or that are expressed in chapter 3, but also yours and the team's interpretation of the CSIRO results.
- 15 DR COLLOFF: Yes.
- MR BEASLEY: Those changes to the text, from the draft to the final version of the report, were not made by you.
- 20 DR COLLOFF: No.
- MR BEASLEY: Do you have any recollection of those changes being made, any specific recollection?
- 25 DR COLLOFF: Yes. My recollection is that at least one draft of the report would have gone to the MDBA for their comments. That draft would have come back with a series of track changes, and when it came back, it would have come to Carol Couch who would have forwarded it to the operations team who were responsible for producing the final report. I was aware of changes being made to the body of the
- 30 text. I was aware of some specific examples, but unaware of others because, by that stage, we were at around about February/March 2012. The project was coming to an end. We had gone through many iterations, many drafts, and I wanted the project to finish and move onto something else.
- 35 MR BEASLEY: The changes to the text of the report for which you were unaware until the report was published in a final form, do you endorse those changes?
- DR COLLOFF: No.
- 40 MR BEASLEY: No. We will come back to that and cover it in some detail, but – during the course of your work on this multiple benefits project, the MDBA published a report setting out its determination of environmentally sustainable level of take.
- 45 DR COLLOFF: Yes.

MR BEASLEY: And that was a report dated November 2011, and I think it's a report that you saw prior to the finalisation of the Multiple Benefits Project Report.

DR COLLOFF: Yes.

5

MR BEASLEY: And there are aspects of that environmentally sustainable level of take that were subject of discussion between you and people from the Basin Authority.

10 DR COLLOFF: That's right.

MR BEASLEY: And you had many meetings with the Basin Authority during the course of your work on the Multiple Benefits Project Report.

15 DR COLLOFF: Yes.

MR BEASLEY: And you made notes of those meetings.

DR COLLOFF: I did.

20

MR BEASLEY: And you've provided us with a copy of those handwritten notes.

DR COLLOFF: Yes.

25 MR BEASLEY: Can I say those notes are recorded in a diary.

DR COLLOFF: Yes.

30 MR BEASLEY: But the notes are made on dates not reflected by the actual diary date.

DR COLLOFF: Yes, that's simply - - -

MR BEASLEY: You've used it more as a notebook than a diary.

35

DR COLLOFF: Yes, I simply used the diary as a notebook, yes.

40 MR BEASLEY: And whilst we can't take the date printed in the diary as the date of the meeting, you have made a handwritten note of when each meeting occurred in terms of its date.

DR COLLOFF: That's correct.

45 MR BEASLEY: All right. I'm going to tender those notes and a transcript of them, Commissioner. I will do that shortly, but for the purposes of asking any question that I ask you, please feel free to refer to your notes to refresh your memory.

DR COLLOFF: Yes.

MR BEASLEY: I'm also going to take you to some specific pages as well.

5 DR COLLOFF: Sure.

MR BEASLEY: All right. But first of all, I want to take you to the MDBA's ESLT report.

10 DR COLLOFF: Yes.

MR BEASLEY: Commissioner, this has been tendered and it has been given a number. It's exhibit RCE, which I understand refers to Royal Commission Exhibit, number 6. I'm not sure if you have a copy of that. It would certainly assist if you

15 did.

THE COMMISSIONER: No, I'm familiar with it.

MR BEASLEY: Yes. So, in broad terms, this is the report where the Basin

20 Authority determined that the environmentally sustainable level of take should be a return to the environment of 2,750 gigalitres.

DR COLLOFF: Yes, 2,800, I think, in this report.

25 MR BEASLEY: I think they – I will take you to it, but I think - - -

DR COLLOFF: Yes. Yes.

MR BEASLEY: - - - it was – the figure of 2,800 was certainly mentioned, but I

30 think even within this report, it had been changed down, to 2,750.

DR COLLOFF: Yes. Okay. Fair enough.

MR BEASLEY: Just take my word for that.

35 DR COLLOFF: Yes, sure.

MR BEASLEY: And as we discussed, you read this report at about the time of

40 publication - - -

DR COLLOFF: Yes.

MR BEASLEY: - - - and had some discussions. You had some discussions about

45 those discussions may have been on topics that are addressed in the report, but your discussions with MDBA people may have taken place prior to the publication of the report?

DR COLLOFF: Yes, very much so.

MR BEASLEY: Yes. Yes. Okay. In terms of the environmentally sustainable level of take, that's, as you are aware, a defined term in the Water Act.

5 DR COLLOFF: Yes.

MR BEASLEY: I'm certainly not going to ask you to engage in a process of statutory construction.

10 DR COLLOFF: Thank you.

MR BEASLEY: But I know that you're familiar with the way that term is defined.

15 DR COLLOFF: Yes.

MR BEASLEY: Being a level of take for a water resource means the level at which water can be taken from the water resource which, if exceeded, would compromise, key environmental assets - - -

20 DR COLLOFF: Yes.

MR BEASLEY: - - - key ecosystem functions, productive base and key environmental outcomes.

25 DR COLLOFF: Yes.

MR BEASLEY: Some of the terms like environmental asset and environmental outcome are further defined.

30 DR COLLOFF: Yes.

MR BEASLEY: But your expertise as a scientist gives you your own view about some of those terms.

35 DR COLLOFF: Yes, particularly productive base.

MR BEASLEY: Particularly productive base, and I'm going to come to that, but in terms of how the MDBA approached its task in determining an environmentally sustainable level of take, that was a subject of discussion from time to time during your meetings with MDBA people for the Multiple Benefits Project. The way they approached how to determine ESLT was the subject of discussions you had with them?

40 DR COLLOFF: Yes, it was.

45

MR BEASLEY: All right. Can I ask you to go to page 16 and 17 of the ESLT report? You have a copy of that?

DR COLLOFF: I do.

5

MR BEASLEY: Yes. So this sets out the Basin Authority's framework for determining an ESLT, and that was a matter that you had discussions with people at the Basin Authority?

10 DR COLLOFF: Yes, it was.

MR BEASLEY: Can you tell us who?

DR COLLOFF: Yes, I had a meeting on 27 April with Ian Burns.

15

MR BEASLEY: Who was he?

DR COLLOFF: Ian Burns was the director responsible for the ESLT activity in the Murray-Darling Basin Authority.

20

MR BEASLEY: All right. Can we just have a look at page 16 to begin with?

DR COLLOFF: Yes.

25 MR BEASLEY: The framework as determined by the Basin Authority, you will see there's six criterion.

DR COLLOFF: Yes.

30 MR BEASLEY: The first is:

*To establish comprehensive set of local environmental objectives and ecological targets –*

35 etcetera, which seems to relate to solely environmental matters. Then (2):

*Incorporates the assessment of the social and economic benefits and costs to changes in water use.*

40 Was that topic the subject of discussions you had with Mr Burns or anyone else at the Basin Authority?

DR COLLOFF: Yes, it was.

45 MR BEASLEY: Did you get an explanation as to how social and economic benefits were incorporated into the assessment of the ESLT to ultimately reflect a figure of 2,750 gigalitres?

DR COLLOFF: Yes, I did.

MR BEASLEY: And what was that explanation?

5 DR COLLOFF: That explanation was that they had essentially two modelling approaches: (1) the final outcome of the model was to reach a determined sustainable diversion limit – sustainable diversion limit, and then they - - -

MR BEASLEY: What does that mean?

10 DR COLLOFF: Well, that basically means starting with a sustainable diversion limit and - - -

MR BEASLEY: So starting with a figure?

15 DR COLLOFF: Yes, and then looking at the environmental outcomes that you get for that. That was what they called the push model.

MR BEASLEY: Right.

20 DR COLLOFF: Then they had another model which was the pull model. It started with the environmental outcome that they wanted to reach. They looked at the sustainable diversion limit and the ESLT that was required to – to get to that target.

25 MR BEASLEY: All right.

DR COLLOFF: And they iterated between each of those environment versus – environmental outcome versus the SDL in order to get to a particular figure – river valley by river valley.

30 MR BEASLEY: How, though – within the context of either the push or pull methodology, how were social and economic outcomes incorporated into the assessment?

35 DR COLLOFF: In my notes, I drew a version of the figure 2.1 on page 17 of the ESLT report.

MR BEASLEY: Yes.

40 DR COLLOFF: And my version of the model says that they – first of all - - -

MR BEASLEY: What page of your notes is that?

DR COLLOFF: Sorry, this is on page 42 of my notes.

45 MR BEASLEY: Yes. All right.

DR COLLOFF: And that model says that, first of all, they selected the environmental water events in each year - - -

MR BEASLEY: Can I just stop you before you keep reading that.

5 DR COLLOFF: Sure.

MR BEASLEY: This is a meeting that took place on 19 May 2011?

10 DR COLLOFF: That's right, yes.

MR BEASLEY: And if you go right back to page 35.

DR COLLOFF: Yes.

15 MR BEASLEY: You have written 19 May, I think.

DR COLLOFF: 19 – 19, 5 - - -

20 MR BEASLEY: It starts with MDBA-CSIRO.

DR COLLOFF: That's correct, yes.

MR BEASLEY: And that's a reference to a meeting on that date.

25 DR COLLOFF: Yes.

MR BEASLEY: And then you've noted the people that were present at the meeting.

30 DR COLLOFF: That's right.

MR BEASLEY: Sorry, I interrupted you. You were on page 42.

DR COLLOFF: No, that's all right. So, first steps:

35 *Select the environmental water events in each year. Generate the environmental flow demand time series. Model those time series. Assess the results against environmental targets, reduction in diversions –*

40 *that's irrigation diversions –*

*and third party impacts.*

MR BEASLEY: Yes. What did you understand was meant by third party impacts?

45 DR COLLOFF: Reduction – well, third party impact - - -

MR BEASLEY: And reduction in diversion. Sorry.

DR COLLOFF: Okay. Reduction in diversions means taking into account the effect on irrigation water diversions, and third party impacts is essentially issues like effects of flooding on private land and private property.

MR BEASLEY: Right. Was any more-detailed explanation given to you, though, about how social and economic benefits were incorporated into the assessment and had a volumetric impact on what was determined as the ESLT?

DR COLLOFF: I did inquire as to how they had iterated between the assessment of environmental outcomes and – in their push/pull models, what assumptions that they would make - - -

MR BEASLEY: For example - - -

DR COLLOFF: Yes.

MR BEASLEY: I draw your attention – you took us to the table at page 17. I’m sorry to interrupt, but - - -

DR COLLOFF: Yes. Yes.

MR BEASLEY: - - - you’re raising the word “iterate”.

DR COLLOFF: Yes.

MR BEASLEY: There’s a box on the right-hand side of that page between step 6 and step 4

DR COLLOFF: Yes. Yes.

MR BEASLEY: - - - that says:

*Iterate if required to meet environmental and socio-economic objectives.*

Was it explained to you what the iteration for socio-economic objectives was or how that was done?

DR COLLOFF: It certainly wasn’t explained to us how it was done and we certainly asked for clarification, which was not forthcoming.

MR BEASLEY: Right. What was - - -

THE COMMISSIONER: Has it been published anywhere?

DR COLLOFF: No, not to my knowledge. This was a matter that was raised in the review of the SLT report by Bill Young in, I think – in the report in 2012, where it said that the underpinning logic - - -

5 MR BEASLEY: This is the CSIRO report of 2012?

DR COLLOFF: Yes.

MR BEASLEY: Yes.

10

THE COMMISSIONER: The – I think it was words to the effect that the underpinning logic required a level of judgment that could not be replicated, and it criticised the methodology for not having been explicit to allow somebody independently to – to repeat that modelling and to get that - - -

15

MR BEASLEY: Can I just - - -

THE COMMISSIONER: Just to unpick a bit of that.

20 MR BEASLEY: Yes.

DR COLLOFF: Yes.

25 THE COMMISSIONER: You've talked about replication and you've talked about explicit statements of method. These are fundamental values in the scientific method, are they not?

DR COLLOFF: Absolutely, yes. If you wanted - - -

30 THE COMMISSIONER: And to ask a scientist to review something where replication is impossible because method has not been revealed is gobbledegook, isn't it?

DR COLLOFF: Yes. It's not science. If - - -

35

THE COMMISSIONER: But it threatens, does it not - - -

DR COLLOFF: If – if your science isn't reputable, then it doesn't really count.

40 THE COMMISSIONER: It's not science.

DR COLLOFF: It's not science.

45 THE COMMISSIONER: And it may be lending the cover of apparent science, or worse, CSIRO review, to something which has never been science.

DR COLLOFF: I agree.

THE COMMISSIONER: Well, now, I'm interested in what lawyers would call incommensurables. How do you measure or combine in one calculation that which is necessary to achieve environmental objectives and what might be assigned as a value with respect to what are called socio-economic objectives? To put it another way, if there is a process of trade-off intended by the Water Act and the Basin Plan, the question arises as to how one would, in effect, say, "I need to recover a certain volume at a minimum to avoid compromising environmental objectives, but I will recover less than that because to recover that much would deprive irrigators of an essential input for their industry."

10 DR COLLOFF: Yes.

THE COMMISSIONER: Yes. We can use words to describe that process. What I am interested from you is, first of all, was there any attempt to explain how you could say such-and-such amount is necessary for the environment, but ought to be reduced by further amount in order to reflect socio-economic objectives?

DR COLLOFF: No. That – that wasn't made clear. The issue of trade-offs – it was very clear to me from their push and pull models - - -

20 THE COMMISSIONER: Could you just explain what the metaphor of push-and-pull is, as you understand it.

DR COLLOFF: I - - -

25 MR BEASLEY: Can I assist. If you go to page 18 of the ESLT report.

DR COLLOFF: Yes.

30 MR BEASLEY: I think there's the MDBA's - - -

DR COLLOFF: Yes. That's right.

MR BEASLEY: - - - where it says:

35 *Environment water requirements can be modelled using two fundamental approaches.*

I think they're push and pull.

40 DR COLLOFF: Yes.

MR BEASLEY: Am I right?

45 DR COLLOFF: Yes. I think - - -

MR BEASLEY: Yes, 1 and 2. Yes.

DR COLLOFF: I think that's what they're referring to there.

MR BEASLEY: Yes.

5 DR COLLOFF: So estimating the environmental flow outcomes that can be achieved from a specific reduction in diversions. I – I believe that's what they refer to as the pull model.

MR BEASLEY: It's not as explicit as your notes.

10

DR COLLOFF: No.

MR BEASLEY: It's a different version, I think.

15 DR COLLOFF: No. No. And then estimating the reduction in diversions required to achieve the specified environmental water requirements. These are basically trade-offs. So in one you're trading off environment against irrigation water use, and the other you're trading off essentially the – the – well, it's essentially the same thing in reverse, but you can have a point of trade-off.

20

THE COMMISSIONER: Well, that's what I'm trying to explore. Using page 18, I think, as Mr Beasley has suggested, we might understand number 1 as push. Is that right?

25 DR COLLOFF: Yes.

THE COMMISSIONER: I don't know. I'm - - -

DR COLLOFF: I – I – I - - -

30

MR BEASLEY: That's how I understand it.

DR COLLOFF: Yes, I think so. Yes. Yes. Yes. Okay. All right.

35 THE COMMISSIONER: Right. Well, perhaps I will just use numbers 1 and 2. Now, number 1 is - - -

DR COLLOFF: Yes.

40 THE COMMISSIONER: This is one of the two fundamental approaches to environmental water requirements, but I want to emphasise it's an approach to environmental water requirements.

DR COLLOFF: Yes. That's right.

45

THE COMMISSIONER: The first is to estimate the environmental flow outcomes that can be achieved from a specified reduction in diversions. Do you see that?

DR COLLOFF: Yes. Yes.

THE COMMISSIONER: Now, the environmental flow outcomes may be taken, may they not, as a proxy for environmental water requirements?

5 DR COLLOFF: Yes, essentially.

THE COMMISSIONER: Yes, so that they will be expressed in environmentally valued measures. Is that right?

10 DR COLLOFF: Yes. What it – what it basically means is a set of ecological targets that have got particular requirements for particular volumes of water - - -

THE COMMISSIONER: Yes.

15 DR COLLOFF: - - - which are then delivered to those environmental assets and the benefits - - -

THE COMMISSIONER: See how you go with that amount of water.

20 DR COLLOFF: Yes. Yes.

THE COMMISSIONER: But see how you go means “see how you go in ecological terms” - - -

25 DR COLLOFF: Yes, it does.

THE COMMISSIONER: - - - in achieving targets which are known before you do this exercise. Is that right?

30 DR COLLOFF: Yes.

THE COMMISSIONER: Well, now, the specified reduction in diversions, which is the given in method number 1: that’s where you might build in a decision not to take more than a certain amount from irrigators. Is that right?

35 DR COLLOFF: That’s right.

THE COMMISSIONER: By “irrigators”, please, I mean all consumptive use - - -

40 DR COLLOFF: All consumptive use.

THE COMMISSIONER: - - - which is principally irrigation.

45 DR COLLOFF: That’s right.

THE COMMISSIONER: Well, now, there would be no compromise of environmental outcomes by that method if, knowing your ecological targets before you perform the exercise, you observe that at a specified reduction in diversions, for example, the targets aren't met.

5 DR COLLOFF: The targets aren't met.

THE COMMISSIONER: And if they aren't met, then it means that specified reduction will have to increase. Doesn't that follow?

10 DR COLLOFF: Yes. Yes.

THE COMMISSIONER: In other words, it's not a method which is biased towards compromising environmental outcomes so long as you are honest – scientifically honest about stating your targets in advance and measuring whether they would be met.

15 DR COLLOFF: Yes.

20 THE COMMISSIONER: Now, nothing here is precise, is it?

DR COLLOFF: No, it's not.

THE COMMISSIONER: It's all about projection and estimate and debatable modelling. Is that correct?

25 DR COLLOFF: Yes. That's right.

THE COMMISSIONER: From which it follows that something in the nature of what's called a risk assessment can be performed concerning your process. Isn't that right?

30 DR COLLOFF: You could, yes.

35 THE COMMISSIONER: And in familiar fashion, that risk assessment might assign on a probabilistic basis, high, medium or low values to the uncertainty attended with which the results are attended.

DR COLLOFF: You could – yes, you could certainly do that.

40 THE COMMISSIONER: That's a very familiar policy tool, isn't it?

DR COLLOFF: Yes.

45 THE COMMISSIONER: And in an area where the science is a matter of estimate, judgment and debatable modelling, it's a very important way in which to present such science to policy makers, is it not?

DR COLLOFF: Yes, indeed.

5 THE COMMISSIONER: Well, now, the second of the fundamental approaches referred to on page 18 talked about estimating the reduction in diversions required to achieve the specified environmental water requirements. Do you see that?

DR COLLOFF: Mmm.

10 THE COMMISSIONER: The specified environmental water requirements are what I called earlier the targets that you should have beforehand in order, honestly, to undertake the exercise. And they all were had, were they not: the targets?

DR COLLOFF: They were what, sorry?

15 THE COMMISSIONER: They existed when you and the MDBA were involved in this process of producing the CSIRO reviews. There were targets of an environmental kind.

20 DR COLLOFF: There were certainly ecological targets and estimates of the water requirements to meet those targets. Yes.

THE COMMISSIONER: Yes.

25 MR BEASLEY: In terms of flow - - -

DR COLLOFF: In terms of flow.

30 MR BEASLEY: - - - and percentage number of years, etcetera, and amounts of flow - - -

DR COLLOFF: Yes. That's right. Yes. Yes.

MR BEASLEY: - - - whether it's 5000 megs or 35,000 megs, etcetera - - -

35 DR COLLOFF: Sure.

MR BEASLEY: - - - all of which have, in terms of volume flow, different benefits to different species, for example.

40 DR COLLOFF: Yes.

MR BEASLEY: Vegetation, etcetera.

45 THE COMMISSIONER: I'm interested in an earlier comment of yours: that maybe 1 and 2 in these so-called immediate approaches – they're not contradictory with each other, really, are they? You can go to and fro between them eventually to find a figure – one figure.

DR COLLOFF: Yes, you can, but you need to make the nature of your decision-making and your iteration back and forth between water for environment and the water for irrigators transparent. You've got to be clear about that if your work is going to be reproducible and stand up to scrutiny.

5

THE COMMISSIONER: Yes, but the only target that I'm aware of is the ecological or environmental target. Is that correct?

DR COLLOFF: I can't comment on what was going on with the targets for sustainable diversion limits river valley by river valley. That was being negotiated at the time that we were doing this work. So I – I'm not aware of how a consideration of specified reductions in diversions was arrived at by MDBA. They didn't make that clear to us, and my assessment at the time was that it was subject to considerable negotiation and uncertainty. I have an opinion of what was going on.

10  
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THE COMMISSIONER: What is your opinion?

DR COLLOFF: My opinion of what was going on at the time was that the various figures that had been estimated in the Guide to the Basin by around about 4,000 gicalitres required for the environment later on – 3,200 was the figure that also cropped up in the Guide. That figure was not deemed acceptable by irrigators and the number reduced to below 3,000 gicalitres, and eventually 2,800 gicalitres was the figure that was deemed to be the target figure, and what MDBA then did was iterate back a model river valley by river valley to get to that 2,800 target.

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THE COMMISSIONER: Which was then promulgated as 2,750.

DR COLLOFF: And then it came down, yes, 50 gicalitres.

THE COMMISSIONER: Well, now, the 3,200 to which you've just referred, that's a figure to which there was attached one of these risk assessments. Isn't that right?

DR COLLOFF: In regard to the Basin Plan?

THE COMMISSIONER: Yes.

DR COLLOFF: I believe so, yes.

THE COMMISSIONER: And to put it bluntly, there was a high degree of uncertainty, which could be translated as a low prospect of it achieving the environmental outcomes required.

DR COLLOFF: Yes.

MR BEASLEY: I think the figure for low – sorry, high uncertainty of not achieving environmental watering requirements in the Guide was actually 3,863.

40  
45

THE COMMISSIONER: That's correct.

MR BEASLEY: And the one with low uncertainty was 6,983.

5 THE COMMISSIONER: So that 3,200, to put it bluntly, could not satisfy the precautionary principle, could it?

DR COLLOFF: Yes. Sorry.

10 THE COMMISSIONER: You understand my terminology?

DR COLLOFF: Yes, I do. Yes. In relation to whether environmental targets had been met?

15 THE COMMISSIONER: Would be met, yes.

DR COLLOFF: Would be met?

THE COMMISSIONER: Yes.

20

DR COLLOFF: I'm not certain if that's the case. There's a fundamental difference between the Guide to the Basin Plan and what – what is in the multiple benefits report, because the Guide to the Basin Plan did not have detailed ecological modelling associated with it. It was basically an estimate of whether or not environmental water could be got to particular assets based on an end-of-flow assessment. Yes.

25

THE COMMISSIONER: Yes.

30 DR COLLOFF: So it was - - -

THE COMMISSIONER: Dominated by an end-of-flow approach.

DR COLLOFF: Yes. That's right. Yes, rather than assets approach.

35

THE COMMISSIONER: So after the Guide there was then work which concentrated on what I will call particular sites and environmental needs. Is that correct?

40 DR COLLOFF: Yes. Yes.

THE COMMISSIONER: Which could be described as a more fine-grained approach to the same desire, which is to find out how much water, including when and how it would be delivered, would be necessary in order to achieve environmental outcomes. Is that right?

45

DR COLLOFF: Yes. That's right.

THE COMMISSIONER: So that's what might be called the targets?

5 DR COLLOFF: Yes. So what – the reason that we're involved in doing the work that we did was because we had the capability to convert those environmental flow targets into an ecological outcome. That was a capability that MDBA lacked. So our assessment on whether 2,800 gegalitres was sufficient to meet those targets was based on fine-grained ecological modelling.

10 MR BEASLEY: Can I just finish this discussion. It's not so much a question for the witness, but the witness should feel free to comment. But it has occurred to me during the exchange – it occurred to me last night as well – another difficulty with the approach of suggesting that optimising environmental, social and economic outcomes is a – should be factored into the determination of ESLT is that there, no doubt, will be examples where you take an approach where all are optimised. If you  
15 put some water or mark on site and tourists go to it more often because it's in a better situation, you're probably optimising the environmental and the local economy and what-not. If you give more water to an irrigator, though, and take water off the environment, it's very difficult to see how you are optimising economic, social and environmental outcomes. You clearly can't be. You clearly can't be doing all three,  
20 which relates to what you described, both of you, as the trade-off.

DR COLLOFF: Yes.

25 MR BEASLEY: But having said all of that, in terms of how the trade-off is represented in 2,750, despite you asking, no one gave you an answer.

DR COLLOFF: That's correct.

30 MR BEASLEY: Right. All right.

DR COLLOFF: Yes. And my comment about issue of trade-offs is that looking for trade-offs or synergies between multiple users of a particular resource is the stuff that we do all the time in natural resource management science. It's a fundamental principle. There are synergies to be had between agriculture water use and the  
35 environment, but they are less likely to be realised when you start from a perspective of setting an environmental target that has to be met. It basically straightjackets the approach that you can take.

40 THE COMMISSIONER: But if you do set an environmental target that has to be met, it follows from the very nature of the exercise that certain options will be foreclosed.

DR COLLOFF: Yes. That's right. Yes.

45 MR BEASLEY: To be really specific about this, it was never explained to you, I assume, how incorporating economic benefits has a role to play in desired hydrologic flow for the habitat of native fish, as an example?

DR COLLOFF: No, certainly not.

MR BEASLEY: And the same for various vegetative communities of trees and plants?

5 DR COLLOFF: Yes.

THE COMMISSIONER: Was it ever explained to you whether the exercise could involve the further degradation of an environmental outcome as being acceptable for social or economic reasons?

10 DR COLLOFF: I don't believe so.

THE COMMISSIONER: Did you understand that you and your team were proceeding on the basis that the mandate was to achieve watering – environmental watering that would halt degradation and possibly improve the position?

15 DR COLLOFF: That – that was certainly the intent.

THE COMMISSIONER: Or to use other language you can find in the statute, protect and recover?

20 DR COLLOFF: Yes. That was certainly the intent. What we were looking for – what – what our task was to determine the nature and extent and to try and quantify what those ecological benefits were for that volume of water, and our findings were, at best, they were marginal. So - - -

25 THE COMMISSIONER: Yes. I will come to some of the language. Yes.

DR COLLOFF: Yes. Yes. Okay.

30 MR BEASLEY: I just want to take you through a few views about a couple of other aspects of this ESLT report. After it sets out the description of a framework for determining an ESLT - - -

35 DR COLLOFF: Yes.

MR BEASLEY: From page 22, there's a discussion of environmental objectives.

40 DR COLLOFF: Yes.

MR BEASLEY: Page 24 and 25, a discussion of ecological targets.

DR COLLOFF: Yes.

45 MR BEASLEY: And page 25 sets out several criteria that are looked for in relation to achieving ecological targets, like flow regimes, hydrologic connectivity, etcetera.

Then at page 27 there's a discussion about identifying the key assets and the key ecosystem functions, etcetera.

DR COLLOFF: Yes.

5

MR BEASLEY: And you see at the top of page 27 almost a word-for-word – word-for-word what the definition of ESLT is in the Water Act.

DR COLLOFF: Yes. Yes. Yes.

10

MR BEASLEY: And on page 30 there's a discussion about the productive base - - -

DR COLLOFF: Productive base, yes.

15

MR BEASLEY: - - - which the MDBA, in this report, describes as, taken broadly, it equates to ensuring that ecosystem services are supported. Ecosystem services are the benefits that humans obtain from ecosystems, etcetera. I think we would all be comfortable with a definition of – and tell me if I'm wrong of – an ecosystem is a biological community of interacting organisms and their physical environment. Does that sound close enough?

20

DR COLLOFF: Yes. Yes. That's pretty good. Yes.

MR BEASLEY: What's your view about – what's your understanding, as a scientist, about the meaning of “productive base” in this context?

25

DR COLLOFF: Yes. Okay. So – so ecosystem services, as you – as you – as you say, benefits people obtained from nature. So it's essentially a cultural social construct, but what it underpins is essentially the functioning in totality of that ecosystem. So that means, in practical terms, the flow of nutrients and energy and other resources within that particular ecosystem through processes such as photosynthesis, metabolism and decomposition, so stocks and flows of nutrients and resources, and if all of those processes are functioning, then you are effectively maintaining the productive base.

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35

MR BEASLEY: Yes. And criteria that is related to environmental considerations.

DR COLLOFF: Yes.

40

MR BEASLEY: Ecological considerations.

DR COLLOFF: Absolutely.

THE COMMISSIONER: At the risk of being too linguistic, what is the production to which the word productive refers in the expression of productive base?

45

DR COLLOFF: It's – yes, it's referring to growth and reproduction increasing biomass, increasing population size.

5 THE COMMISSIONER: Now, this is certainly of, say, invertebrates and fish and plants.

DR COLLOFF: Invertebrates and fish and plants, yes.

10 THE COMMISSIONER: Is it humans as well?

DR COLLOFF: Does it include humans in this context? I don't believe that the intent in here is to include humans. I think they would be differentiating between ecological production and agricultural production in that context.

15 THE COMMISSIONER: It certainly wouldn't include water for a power station.

DR COLLOFF: No.

20 MR BEASLEY: At page 45 of the ESLT report, a discussion commences about flow delivery constraints.

DR COLLOFF: Yes.

25 MR BEASLEY: And at page 47 and following, there's a series of tables concerning what are said to be the known flow delivery constraints in the southern Basin.

DR COLLOFF: Yes.

30 MR BEASLEY: Was constraints a topic that you had discussions with people at the Basin Authority about?

DR COLLOFF: Absolutely, it was, yes.

35 MR BEASLEY: And in relation to – what was the context of that and what was the content of those discussions?

40 DR COLLOFF: Essentially, the context was that in – trying to understand their modelling, their hydrological modelling and compare it with the hydrological modelling that we did. Where we had slightly different numbers from theirs, in seeking to explain those differences, MDBA tended to invoke the fact that we had not modelled some of the constraints. And the constraints as laid out in table 5.1 "known flow delivery constraints" and we said, "Right. Okay. Well, that's fine. Yes, we accept that. We don't have all that data available. I mean you can give it to us and we can factor it into our models, but we would like you to step us through  
45 some of the assumptions that you make about how those constraints operate."

MR BEASLEY: Right.

DR COLLOFF: That's where things tended to get a little vague.

MR BEASLEY: So you asked – was this Mr Burns or other people?

5 DR COLLOFF: This was – yes, and his team.

MR BEASLEY: Right.

DR COLLOFF: Yes.

10 MR BEASLEY: And so you're asking for specific inputs that they put in their model concerning constraints.

DR COLLOFF: Yes.

15 MR BEASLEY: And how it affected their results concerning whether flow targets were met, and the response from them was?

DR COLLOFF: Well, it didn't result in a satisfactory, clear explanation of what their underlying assumptions about the use of constraints were, and we started to get a sense that the constraints were being used as a means of saying, "Well, a desirable volume of water delivered to a particular floodplain might be 50 gigalitres, but because of constraints, we are only able to deliver 40 gigalitres." So it struck me, certainly, that this was a kind of catch-all means of excusing lower volumes of flow to the environment and might produce - - -

20

25

MR BEASLEY: By excusing lower volumes of flow, do you mean that when your own modelling results show that a flow target was not met to achieve the ecological targets - - -

30

DR COLLOFF: Yes.

MR BEASLEY: - - - but the MDBA had a result where that target, for example, was either better or did meet a target, the response you got was, "We're right because we factored in constraints."

35

DR COLLOFF: That certainly happened, yes.

MR BEASLEY: But when you pressed for information from the Basin Authority as to how - - -

40

DR COLLOFF: Yes.

MR BEASLEY: - - - they had specifically modelled, incorporated into their models issues concerning constraints - - -

45

DR COLLOFF: Yes.

MR BEASLEY: - - - you were not provided with details sufficient for you to either understand or use that information yourself in a manner that would help you?

5 DR COLLOFF: Well, that – that’s right. And just, you know, going through – going through that table 5.1 - - -

MR BEASLEY: Yes.

10 DR COLLOFF: - - - one place that I’ve – I’ve worked on extensively is the Barmah forest, and I looked at - - -

MR BEASLEY: Yes, that’s page 49.

15 DR COLLOFF: That’s page 49, but I looked at the current representation of the key constraints, the Barmah Choke which has - - -

MR BEASLEY: So this is the narrowing of the river?

20 DR COLLOFF: This is the narrowing of the river as it turns south, the north-western edge of Barmah Forest and heads down towards the township of Barmah before – before flowing west.

MR BEASLEY: Yes.

25 DR COLLOFF: And it’s well known that the channel capacity at Barmah Choke is 10,500, 10,600 megalitres of flow per day?

MR BEASLEY: That’s – when you say the capacity, that’s 10,600 would mean it’s right at the top of the bank?

30 DR COLLOFF: Yes, beyond that, it – it’s called the bankfull of volume, and beyond that, flooding of the Barmah Forest occurs.

35 THE COMMISSIONER: Could you explain why we use the word “constraint” to describe the result of the tectonic events that bring about the Barmah Choke. Why is that a constraint? I’m serious

DR COLLOFF: I – I think – I think – yes, I understand your question.

40 THE COMMISSIONER: It sounds to me very tendentious - - -

DR COLLOFF: Yes.

45 THE COMMISSIONER: - - - that somebody is saying, “This is a restriction on something we can do”, where, in fact, it’s just a natural feature.

DR COLLOFF: Yes, I – yes.

THE COMMISSIONER: And until somebody came along with the word “constraint”, it wouldn’t have occurred to anybody to say that the Barmah Choke was a choke, it was simply a result of the movement of the earth - - -

5 DR COLLOFF: Yes. Yes, absolutely.

THE COMMISSIONER: - - - reshaping thereafter by the river from time to time.

DR COLLOFF: Sure.

10 THE COMMISSIONER: Which, from time to time, to use an old English expression, breaks its banks.

DR COLLOFF: Yes.

15 THE COMMISSIONER: Being neither a disastrous nor unnatural event.

DR COLLOFF: Indeed.

20 MR BEASLEY: Been desirable from time to time.

THE COMMISSIONER: Being, in fact, the reason why the Barmah Forest exists.

DR COLLOFF: Is because of that – yes.

25 THE COMMISSIONER: Doesn’t that mean that if you are to protect and recover the Barmah Forest as a key environmental site, there must be the breaking of banks from time to time?

30 DR COLLOFF: Yes, indeed.

THE COMMISSIONER: So why do we call it a constraint?

DR COLLOFF: I believe that that goes back to a set of historical and cultural - - -

35 THE COMMISSIONER: Maybe, but historically and culturally, the damming of the river was called conservation - - -

DR COLLOFF: Yes.

40 THE COMMISSIONER: - - - which would be contrary to a current use of that word, would it not?

DR COLLOFF: Yes, yes. So another metaphor that’s widely used for the Basin by the Authority and others is a “healthy working Basin”.

45 THE COMMISSIONER: Yes.

DR COLLOFF: The assumption being that this is a managed series of river systems. So, in relation to constraint and management of water, it represents, to those managing the river, a constraint in their capacity to get water through that particular part of the system and further down the river.

5

THE COMMISSIONER: As I understand it, constraint also applies at this much less grand level - - -

DR COLLOFF: Yes.

10

THE COMMISSIONER: - - - if on what is properly called a floodplain, a road or culvert is installed at an elevation and entered in, in such a way that it would, from time to time, be inundated and damaged.

15

DR COLLOFF: Yes.

THE COMMISSIONER: Then that then becomes a constraint on contemplating such inundation; is that right?

20

DR COLLOFF: Yes.

THE COMMISSIONER: Why is that?

DR COLLOFF: I think, again, it relates to the concept of management. And if – if that culvert were removed and, instead, a road went through a periodically inundated offtake from the river, a ford, if you like, then that effectively would create an opportunity for volume of water to flow onto the floodplain.

25

THE COMMISSIONER: Well, now, when you were being instructed by the MDBA in the difference between your intellectual resources and theirs concerning the modelling for constraints - - -

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DR COLLOFF: Yes.

35

THE COMMISSIONER: - - - what, if any, effort was made critically to examine which of these constraints truly were fixed, invariable, not able to be removed?

DR COLLOFF: Are you asking me whether we had that discussion with MDBA?

40

THE COMMISSIONER: Yes.

DR COLLOFF: No, we didn't.

45

THE COMMISSIONER: What is the point of modelling by so-called constraints unless you ask yourself, now, is this not a culvert which the public should simply pay to be shifted?

DR COLLOFF: Look, it beats me.

THE COMMISSIONER: Did anyone ever explain why you would treat all of these constraints as matters preventing water over a certain flow?

5

DR COLLOFF: No, they didn't, and this was the reason that I became suspicious about how these constraints were being used.

THE COMMISSIONER: Can I, at the moment, ask you to just suppress your suspicions?

10

DR COLLOFF: Yes, of course. Yes.

THE COMMISSIONER: I'm trying to get your recollections of the intellectual interchange.

15

DR COLLOFF: Yes, of course. Yes. Yes.

THE COMMISSIONER: Which, as I understand it, was the intended method of dealing between you and the MDBA representatives?

20

DR COLLOFF: Yes. Yes. Yes.

THE COMMISSIONER: It was meant to be intellectual.

25

DR COLLOFF: Yes.

THE COMMISSIONER: Doing the best you can, can you describe what position or positions were presented by the MDBA representatives concerning the treatment of constraints as either fixed matters that could not be examined or matters that required to be considered for possible removal?

30

DR COLLOFF: Yes. My assessment of that situation was that they – they treated all constraints as not up for discussion. That they were – as far as we were concerned, that was knowledge that they had, it was their business, and that we shouldn't question their judgment on that. That was the overriding impression I got from discussions about that.

35

MR BEASLEY: So does that mean you - - -

40

DR COLLOFF: Since – since we weren't making any progress on getting clarity about it, and when this report came out and I went through some of these impacts on site-specific flow indicators and was puzzled about some of the underpinning logic – yes, look, this was an area that was never resolved, to my satisfaction.

45

MR BEASLEY: So you weren't given any of the parameters that the MDBA used in their modelling in relation to constraints?

DR COLLOFF: The first – the first real underpinning – understanding of parameters and logic I – I got on constraints is when this report was published.

5 MR BEASLEY: Yes. All right. So – yes. All right. So – and I think you wanted to – you were referring to page 49 on the Barmah Choke in relation to explaining your concerns.

DR COLLOFF: Yes. Yes. So I – I look at that and I say:

10 *We adopted a flow threshold – MDBA has adopted a flow threshold of 40,000 megs a day during key periods to enable environmental flows to enter Barmah-Millewa Forest as well provide environmental water for downstream sites.*

15 And I thought, well, hang on a minute, what is the nature of the constraint given that significantly higher volumes of water than 40,000 megs a day regularly flow through the Barmah Choke and have done in various high flow events? How are you using that figure? What is – what's the underpinning logic? It just didn't make sense to me.

20 THE COMMISSIONER: So how do you read threshold there?

DR COLLOFF: Just threshold volume. I – I don't - - -

25 THE COMMISSIONER: It's not the same as maximum, though, is it?

DR COLLOFF: No, it's not a maximum.

30 THE COMMISSIONER: So what does that mean? They've adopted, what, a minimum of 40,000 megalitres a day during key periods? That is what it means, isn't it?

DR COLLOFF: Well, they're not – they're not saying minimum.

35 THE COMMISSIONER: Aren't they – did - - -

DR COLLOFF: I don't understand what they mean by flow threshold.

THE COMMISSIONER: I see.

40 DR COLLOFF: It's not clear.

THE COMMISSIONER: That's not a term of art?

DR COLLOFF: What?

45 THE COMMISSIONER: Is it a term of art? A technical term?

DR COLLOFF: Threshold is – they’ve clearly - - -

THE COMMISSIONER: A flow threshold?

5 DR COLLOFF: They’re attempting to use it as a technical term, but a threshold of what? A maximum of threshold of water that can go through?

THE COMMISSIONER: That’s what I’m asking you.

10 DR COLLOFF: That’s the implication.

THE COMMISSIONER: And you’re not sure.

DR COLLOFF: I’m not sure based on the fact that significantly higher volumes  
15 regularly go through the choke as a – as a result of high flow events.

THE COMMISSIONER: I was inclined to read that sentence in, on page 49 of this table as meaning that they’ve adopted as part of their modelling for the plan during key periods, which, no doubt, the model would reveal - - -  
20

DR COLLOFF: Yes, yes.

THE COMMISSIONER: - - - which I presume to be mimicking pre-development conditions. At least 40,000 mega litres a day, that is, reaching 40,000 megalitres a  
25 day, during those key periods, so as to enable the forest to be watered.

DR COLLOFF: Yes.

THE COMMISSIONER: Is that how you read it?  
30

DR COLLOFF: That’s one way of reading it. How you sequence the flow requirements for a decent flood at Barmah-Millewa, you can do in any – all sorts of ways, but it’s just not clear to me how they are invoking the concept of constraint  
- - -  
35

THE COMMISSIONER: Quite.

DR COLLOFF: - - - in relation to that particular flow threshold. What do they mean by that volume?  
40

THE COMMISSIONER: Well, if threshold meant what it ordinarily means, it’s not much of a constraint because - - -

DR COLLOFF: Exactly.  
45

THE COMMISSIONER: - - - it constrains you to achieve a minimum.

- DR COLLOFF: Yes. Yes, that's one way you could look at it, yes. And so I had similar issues with a number of other representations of key constraints throughout that table.
- 5 THE COMMISSIONER: Now, do I have the very next one which is the Lower Darling system?
- DR COLLOFF: Yes.
- 10 THE COMMISSIONER: There, it appears to be that their modelling so as to keep specific – site-specific flow indicators below 9,300 megalitres a day.
- DR COLLOFF: Yes.
- 15 THE COMMISSIONER: And that's because of what are called river management constraints?
- DR COLLOFF: Yes.
- 20 THE COMMISSIONER: Were you given any understanding by the MDBA personnel as to what they were?
- DR COLLOFF: None whatsoever.
- 25 THE COMMISSIONER: On the other hand, on that table, there's a reference to flows above 20,000 megalitres a day at weir 32, flooding private property including houses in Menindee.
- DR COLLOFF: Yes.
- 30 THE COMMISSIONER: So I – given the apparent use of the word – usage of the word “constraint”, I can understand 20,000 megalitres a day being a constraint.
- DR COLLOFF: A constraint, yes.
- 35 THE COMMISSIONER: I'm afraid I don't understand from those words what the – what is meant by “channel capacity of 9,300 megalitres a day”, unless it simply means the capacity without any breaking of banks; is that right?
- 40 DR COLLOFF: The short answer is I don't know what that “9,300 megs a day” signifies.
- THE COMMISSIONER: The next sentence, I wonder if you could help me, it says it's a rule intended to prevent what's called increased water loss. Do you see that?
- 45 DR COLLOFF: In the – in the right-hand column?

- THE COMMISSIONER: Left-hand column.
- DR COLLOFF: Left-hand column.
- 5 THE COMMISSIONER: Second sentence, Lower Darling system.
- DR COLLOFF:
- 10 *Constraint by an operating rule that limits the maximum flow at weir –*
- Yes. Yes. Yes.
- THE COMMISSIONER: Right. The rule is - - -
- 15 DR COLLOFF: I .....
- THE COMMISSIONER: - - - intended to prevent increased water loss. Do you see that?
- 20 DR COLLOFF: Yes. Yes. Yes.
- THE COMMISSIONER: Now, this concept of “water loss” means what? Loss to what?
- 25 DR COLLOFF: So, basically, they’re saying loss from the Lower Darling system because water is flowing down the - - -
- THE COMMISSIONER: Something called the Great Darling Anabranh.
- 30 DR COLLOFF: Yes, that’s right, which is - - -
- THE COMMISSIONER: Which exists because, from time to time, water goes down.
- 35 DR COLLOFF: Exactly.
- THE COMMISSIONER: So what does it mean to say the water is lost because it goes down the Great Darling Anabranh?
- 40 DR COLLOFF: Well, it’s not really a loss in absolute terms. It’s not a loss in - - -
- THE COMMISSIONER: It’s actually a repetition of what has been happening for eons; is that right?
- 45 DR COLLOFF: Yes, that’s right.

THE COMMISSIONER: Now, does that mean that this constraint has been expressed as being a constraint that is not environmental in its provenance but, rather, reflects a policy, the Great Darling Anabranh should not get water that could be going down the main channel to the Murray.

5

DR COLLOFF: If – if there is an operating rule that would relate to river operations, river operations are primarily for delivery of water for irrigation, but also environmental flows. So my – my best guess is that it – it is deemed undesirable by the river operators, Murray-Darling Basin River Operations Division, that flows go

10 down the Great Darling Anabranh.

THE COMMISSIONER: Now, do operating rules, then, themselves prevent an environmentally sustainable level of take being set scientifically?

15 DR COLLOFF: Well, your question is, essentially, asking a similar question of do constraints prevent environmental – yes.

THE COMMISSIONER: Well, particularly if operating rules are said to - - -

20 DR COLLOFF: And so, yes, if they are constraints they are operating rules and they're – regarded as synonymous. And, certainly, as it was explained to us, that there are constraints on the volumes of water that can be delivered to meet particular environmental targets. And those constraints relate to issues like impacts on third parties, flooding of private property and so on and so forth.

25 THE COMMISSIONER: I suppose I'm wondering how one can protect and recover the ecosystem without floodplains being flooded from time-to-time.

DR COLLOFF: In order to protect and recover, you have to flood floodplains.

30 That's the whole basis of using water as a means of restoring flow dependent ecosystems.

THE COMMISSIONER: Did the MDBA ever explain how you could recover and protect the ecosystems while refraining from flooding floodplains?

35 DR COLLOFF: No. I don't believe that they ever suggested that they refrain from flooding floodplains. What I sense that they were grappling with was how to trade-off water requirements for the environment against water required for agricultural production. And using the constraints approach as a means of explaining away lower

40 target volumes than may have been required to get the best environmental benefits.

THE COMMISSIONER: SDL stands for sustainable diversion limit.

DR COLLOFF: Sustainable diversion. Yes.

45 THE COMMISSIONER: And it's made up of concepts including the environmentally sustainable level of take.

DR COLLOFF: Yes.

THE COMMISSIONER: That's one of the integers in the algorithm, isn't it?

5 DR COLLOFF: Yes, yes. Essentially. Yes, yes, yes.

THE COMMISSIONER: You and I have used the term trade-off. Did the MDBA personnel ever explain to you, during these exchanges, how the ESLT and the resultant SDL could ever result in an altered value for the ESLT by reason of an effect on irrigation?  
10

DR COLLOFF: No.

THE COMMISSIONER: If all the farms, say, in the Lower Darling were to go out of business as irrigation businesses, less water would be needed socially in that area for irrigation.  
15

DR COLLOFF: Yes.

THE COMMISSIONER: But that would not have any effect on what science would produce beforehand as the target for recovery and protection of the ecosystem. That would be unaffected by whether those citrus growers were in business or not, would it not? The ecosystem would still be the same.  
20

25 DR COLLOFF: Yes.

THE COMMISSIONER: For which it follows if citrus growers wanted more water, again, the ecosystem would still need the same?

30 DR COLLOFF: Yes.

THE COMMISSIONER: So there would be a trade-off in either direction because they are incommensurables. They are different. They're not measuring the same thing.  
35

DR COLLOFF: You could look at it that way. That's certainly not the way that the MDBA were looking at it.

THE COMMISSIONER: Well, did they ever explain how the environmental target would alter depending upon the demand from time-to-time by irrigators.  
40

DR COLLOFF: No, they didn't.

THE COMMISSIONER: Because, I confess to you, I don't understand how that could be so, certainly as a matter of environmental science.  
45

DR COLLOFF: Yes. No. Your point is well made.

THE COMMISSIONER: Well, I'm not trying to make a point.

DR COLLOFF: No, no.

5 THE COMMISSIONER: I'm just trying to find out what happened historically because, you see, the MDBA has only published so much about its work.

DR COLLOFF: Yes.

10 THE COMMISSIONER: And I'm proceeding on the basis of what it has published.

DR COLLOFF: Yes.

THE COMMISSIONER: Which does not contain explanations of these matters.

15 DR COLLOFF: No, it doesn't.

THE COMMISSIONER: For which I will, no doubt, make such comment as seems appropriate.

20 DR COLLOFF: Yes, yes. Look, I have to confess, I'm at a loss to understand what their logic is.

THE COMMISSIONER: Thank you.

25 MR BEASLEY: Just concluding with this report - - -

DR COLLOFF: Yes.

30 MR BEASLEY: - - - following the section on constraints, commencing at page 55 is the section of report dealing with environmental assessments.

DR COLLOFF: Yes.

35 MR BEASLEY: Most importantly, when we get to page 66 is what, from the heading of 6.2.2 purports to be how social and economic considerations have been factored into the determination of the ESLT. But do you agree, reading the bottom of page 66 and over to 67, it doesn't really inform the reader any further than the parts of the report I took you to on pages 16 and 17?

40 DR COLLOFF: Yes.

MR BEASLEY: It's simply replication of that material without explaining how, in the various iterations and the various model runs, the MDBA had performed. It does not explain how social and economic considerations in any specific way ended up being reflected on either 2,800 gegalitres or 2,750.

45

DR COLLOFF: Yes.

MR BEASLEY: And no further explanation was given to you, despite pressing for it?

5 DR COLLOFF: No.

MR BEASLEY: Over the page, at page 69 - - -

10 DR COLLOFF: Yes. Right.

MR BEASLEY: - - - is where the second last paragraph, where the MDBA says that, on the basis of their assessments, they've selected Basin-wide reductions and reversions of the 2,800 gicalitres.

15 DR COLLOFF: Yes.

MR BEASLEY: Which is presumably why the CSIRO was engaged to analyse the 2,800 gicalitre plan.

20 DR COLLOFF: Mmm.

MR BEASLEY: All right. At the very back of this report - - -

25 DR COLLOFF: Yes.

MR BEASLEY: - - - commencing at page 203 – sorry, 202. But we can use 203, an example, is the tables reflecting the conclusions made by the MDBA. In other words, it sets out what are, looking at 203 for the board of rivers region, it sets out what the site-specific ecological targets are.

30 DR COLLOFF: Yes.

MR BEASLEY: And then the various flow indicators and amounts of flow needed at various amounts of flow and various number of days and various percentages of years that are needed to achieve those ecological targets as far as the modelling is concerned.

35 DR COLLOFF: Yes.

40 MR BEASLEY: And that's repeated for each river valley.

DR COLLOFF: Yes.

45 MR BEASLEY: I think it's important to note, though, back at page 199 – Commissioner, do you have a coloured copy of this. I just want to make sure you've been – yes. This is the ESLT report.

THE COMMISSIONER: One – yes. One – I’ve got - - -

MR BEASLEY: And can you just go – go to any page, like 203, for example.

5 THE COMMISSIONER: Yes.

MR BEASLEY: That may not be the report. Is that the ESLT report?

10 THE COMMISSIONER: Yes.

MR BEASLEY: You’ve got a black and white copy so what I am about to explain is not going to help you. At page 199, there’s a discussion about what is meant by where something is highlighted in blue, something is highlighted in yellow and something is highlighted in brown.

15 DR COLLOFF: Yes.

MR BEASLEY: So anything highlighted in these tables that commence from page 202 onwards, anything that’s in blue, they’re considered deliverable as mostly regulated flows under current operating conditions.

DR COLLOFF: Yes, yes.

MR BEASLEY: Meaning, I assume – is this your understanding, that flows can be delivered from water storages and achieve its targets.

DR COLLOFF: Yes.

MR BEASLEY: Yellow, achievable when delivered in combination with tributary inflows and/or unregulated flow events.

DR COLLOFF: Yes.

MR BEASLEY: Is that an overcomplicated way of saying they’re achievable if it rains?

DR COLLOFF: Yes.

MR BEASLEY: And brown require large unregulated flows and it is likely that these flows cannot currently be influenced by river operators due to their river operating constraints. Is that a complicated way of saying that on the 2,800 gicalitre plan, the targets highlighted in brown will be achievable if there’s a very large flood?

DR COLLOFF: Yes.

45 MR BEASLEY: So they’re achievable in 1956 or 1974 but in other years it may be difficult to achieve them with the 2,800 gicalitre plan?

DR COLLOFF: Yes.

MR BEASLEY: Or they won't be achieved with the 2,800 gigalitre plan. All right. I will leave that report alone.

5 DR COLLOFF: Right.

MR BEASLEY: Prior to the publication of the CSIRO's – Commissioner, I've probably got – it's 11.25. I've probably got another hour. Do you want to take a break now?

10 THE COMMISSIONER: Yes. Could I – or - - -

MR BEASLEY: Because I'm moving on to another report.

15 THE COMMISSIONER: Yes. But – yes. We will take a break in order to move on to another report but, before doing so, I just want to ask a bit more about this one.

MR BEASLEY: Sure.

20 THE COMMISSIONER: Conveniently, what Mr Beasley was asking you about on page 199 raises some questions I wanted to ask of you.

DR COLLOFF: Yes. Okay.

25 THE COMMISSIONER: The colour coding.

DR COLLOFF: Yes.

30 THE COMMISSIONER: The blue, yellow, brown.

DR COLLOFF: Yes.

THE COMMISSIONER: It's a given for this Basin that flows in an unregulated state would be highly variable. Correct?

35 DR COLLOFF: Yes.

THE COMMISSIONER: Not only seasonally but also on a longer time scale than merely the seasons in the one year.

40 DR COLLOFF: Yes.

THE COMMISSIONER: The so-called millennium drought was simply a demonstration of that variability that is still of massive significance environmentally, socially and economically even with a highly regulated system?

45

DR COLLOFF: Absolutely.

THE COMMISSIONER: So that when we talk about flow and environmental flow and projections, it's all against a background that, regulated or unregulated, this is a  
5 system with, in global terms, one of the most variable ranges imaginable.

DR COLLOFF: Yes.

THE COMMISSIONER: So blue, the blue highlights, they're considered  
10 deliverable. That's a bureaucratic way of saying what is projected might be achieved. Is that correct?

DR COLLOFF: Yes.

15 THE COMMISSIONER: As mostly regulated flows under current operating conditions.

DR COLLOFF: Yes.

20 THE COMMISSIONER: Does that mean regardless of drought?

DR COLLOFF: Good question.

MR BEASLEY: Presumably, mostly it's there because if it doesn't rain at all - - -  
25

DR COLLOFF: Well, I - - -

MR BEASLEY: And blue might be - - -

30 DR COLLOFF: For example, during the millennium drought, a number of environmental watering events were suspended.

THE COMMISSIONER: Yes. Quite.

35 DR COLLOFF: And part of the reason that was given, having talked to various river managers and environmental water managers at the time was that it would send the wrong signal to irrigators.

THE COMMISSIONER: Thank you. And, yellow, they are considered achievable  
40 when delivered with tributary inflows and/or unregulated flow events.

DR COLLOFF: Yes, yes.

THE COMMISSIONER: Which I regret is the English for rain.

45 DR COLLOFF: Yes. Basically, what they are saying there is you get a rainfall event in, for example, the upper Ovens catchment - - -

THE COMMISSIONER: It may not all be rain, some might be snow. But it's precipitation.

5 DR COLLOFF: Some of it might be snow. It's precipitation. But it's inflows to a tributary.

THE COMMISSIONER: Yes.

10 DR COLLOFF: For example, on the Victorian alps. It then flows down the Ovens River, into Lake Mulwala and over the Weir on – in Lake Mulwala and the Murray.

THE COMMISSIONER: What I'm asking is that it seems to be the yellow one - - -

15 DR COLLOFF: Yes.

THE COMMISSIONER: - - - that recognises that the variability of our system will affect the achievement in certain seasons of those outcomes. Now, see the next sentence:

20 *They may not be achievable in every year or some circumstances.*

DR COLLOFF: Yes. Absolutely.

THE COMMISSIONER:

25 *And the duration of flows may be limited to the duration of tributary inflows.*

DR COLLOFF: Yes.

30 THE COMMISSIONER: That rather suggests that blue is a pretty safe haven, even given our variability.

DR COLLOFF: Yes.

35 THE COMMISSIONER: Yellow is what we might be called condition normal. That is, we are in Australia, it depends on whether it rains.

DR COLLOFF: Yes.

40 THE COMMISSIONER: And then we come to brown, which require large unregulated flows. Now, that's large major flooding, isn't it?

DR COLLOFF: Yes. Pretty much.

45 THE COMMISSIONER: Well, is it anything else apart from major flooding?

DR COLLOFF: No, it's not. No.

THE COMMISSIONER: Major flooding. Now, major flooding is not condition normal, is it?

DR COLLOFF: No.

5 THE COMMISSIONER: Although, it is part and parcel of these river systems.

DR COLLOFF: Absolutely.

10 THE COMMISSIONER: But the regulation of the system has reduced the number and duration of major flooding, has it not?

DR COLLOFF: It certainly altered the flood regimes very extensively. Yes. But the – you know, the major flood events over the last century or so are here on this

15 chart, bottom left-hand corner.

THE COMMISSIONER: Quite. Yes. And when it says:

20 *It's likely these flows cannot currently be influenced by river operators due to river operating constraints.*

I take it that that means those that are highlighted in brown really won't be achieved except in case of and during major flooding, and we won't be able to achieve those outcomes in the absence of major flooding - - -

25 DR COLLOFF: Yes.

THE COMMISSIONER: - - - by the way in which the system can work.

30 DR COLLOFF: Yes.

THE COMMISSIONER: Is that right?

DR COLLOFF: Yes. That's my interpretation. Yes. Absolutely.

35 THE COMMISSIONER: Thank you. Is that a convenient time?

MR BEASLEY: Yes. It is. Thank you.

40 DR COLLOFF: In relation to that point, if you go to one example of – let's see if I can find one. Yes, if you go to - - -

THE COMMISSIONER: Page?

45 DR COLLOFF: Page 209.

THE COMMISSIONER: Yes.

DR COLLOFF: Murrumbidgee.

THE COMMISSIONER: Yes.

5 DR COLLOFF: It says:

*Provide 63,250 megs a day for three consecutive days between June and November for 12 per cent of years.*

10 So that's one year in eight is required to provide a flow regime which supports key consistent functions, particularly those relating to connectivity - - -

MR BEASLEY: That seems a high percentage for a major flood, doesn't it, one year in eight?

15

DR COLLOFF: Well, it's unrealistic. Yes. In terms of – well it's based on historical - - -

20 MR BEASLEY: Do we have a major flood one in eight years? It might depend on what your time line is. But - - -

DR COLLOFF: Well, look, it also depends on how you calculate the inter-flood frequency.

25 MR BEASLEY: Right. The range of occurrence, for example of droughts is between two and 17 years over the last 150 years. At the end of the drought, you get a flood. The issue here is their figure of 63,250 megs per day. So a one in eight flood of that magnitude is required to provide a flow regime that supports key ecosystem functions. So they arrive at that flow indicator based, essentially, on a  
30 combination of what's published in the literature and expert opinion. So this is their best guess at what those natural flood events are that are going to maintain that particular ecosystem on the Murrumbidgee, based on the historical flow record.

35 THE COMMISSIONER: Well, in relation to that mid-Murrumbidgee floodplain wetlands area of interest - - -

MR BEASLEY: Yes.

40 THE COMMISSIONER: - - - what that colour coding blue, yellow, brown indicates, is that that outcome will be compromised, surely?

DR COLLOFF: It outlines that if you don't – according to their criteria, if you don't get a one in eight natural flood event, then, it would compromise key ecosystem functions. Yes.

45

THE COMMISSIONER: So that the amount for which this is being modelled – this is 28, isn't it, 2,800?

DR COLLOFF: Yes.

5 THE COMMISSIONER: Produces, for that particular outcome, a compromise of the outcome. That is, an endangering of that outcome, bearing in mind what that colour coding suggests.

10 DR COLLOFF: Yes. Look, if you are only going on the basis that you can deliver 26,850 megs a day for 45 days, or 26,850 for five days, so you're basically just covering off on those flows that can be delivered as regulated flows under current operating conditions, and that your yellow and brown are also not being met, then, yes you are ultimately going to wind up in - - -

15 THE COMMISSIONER: So these science specific flow indicators, are we to understand this is what the MDBA says ought to be achieved in order to meet the statutory mandate for the environment?

DR COLLOFF: I believe that's what they're trying to say.

20 THE COMMISSIONER: That's what is asserted.

DR COLLOFF: Yes, yes, yes.

25 THE COMMISSIONER: And so it reflects a longer duration of lower amounts and some short, not necessarily annual, bouts of higher loss.

DR COLLOFF: Yes.

30 THE COMMISSIONER: Which is one's experience of what the ecology, without even being a scientist, would need.

DR COLLOFF: Yes, yes, yes.

35 THE COMMISSIONER: When you see what the science specific ecological targets are, provided against which those variable amounts and durations of flow are assigned, you see they are expressed in terms which could be described as the protection and recovery of the ecosystem.

DR COLLOFF: Yes, yes.

40 THE COMMISSIONER: Thus, for example, providing a flow regime which supports the ecosystem functions.

DR COLLOFF: Yes, yes, yes.

45 THE COMMISSIONER: Particularly those related to connectivity between the river and the floodplain.

DR COLLOFF: Yes.

THE COMMISSIONER: In order to achieve that, you need the one, two, three, four, five, quantified flow levels, durations and frequencies.

5

DR COLLOFF: Yes.

THE COMMISSIONER: Which you see in the right-hand column under science specific flow indicators.

10

DR COLLOFF: Yes.

THE COMMISSIONER: And for this one you could not be satisfied that the modelling has produced a tick in the box. It's a cross in the box, isn't it?

15

DR COLLOFF: Well, look, that was pretty much the issue that we had in terms of  
---

THE COMMISSIONER: Did anyone explain to you why this should get a tick in the box?

20

DR COLLOFF: No.

THE COMMISSIONER: Thank you.

25

MR BEASLEY: Thank you. How long shall we take, Commissioner?

THE COMMISSIONER: 15 minutes.

30

MR BEASLEY: So 10 to 12.

THE COMMISSIONER: Thank you.

35

**ADJOURNED**

**[11.38 am]**

**RESUMED**

**[11.51 pm]**

40

MR BEASLEY: Whenever you're ready, Commissioner.

THE COMMISSIONER: Yes, I am.

45

MR BEASLEY: Dr Colloff, I want to take you to another report. This one, we can cover very briefly.

DR COLLOFF: Yes.

MR BEASLEY: It's a report, an MDBA report entitled 'Hydrologic Modelling to Inform the Proposed Basin Plan: Methods and Results' February 2012.

5 MR BEASLEY: Yes. Yes.

MR BEASLEY: First of all, correct me if I am wrong. Even though this report predates by a month or so, the CSIRO multiple benefits project, by the time you concluded your work on chapter 3 of that report, this report hadn't been published yet?

10 DR COLLOFF: Yes, look, I'm not absolutely precise on timing and publication.

MR BEASLEY: All right. Let me put it another way. You don't have a recollection of reading this report?

15 DR COLLOFF: I certainly hadn't read it before I completed my chapter of the Multiple Benefits Report.

20 MR BEASLEY: All right. I think you've just been handed a copy of the report, Commissioner.

THE COMMISSIONER: Yes, thank you.

25 MR BEASLEY: What I want to take you to is to page 223 of this report, which will be tendered.

DR COLLOFF: Thank you.

30 MR BEASLEY: So at page 223 we get the commencement of a series of tables.

DR COLLOFF: Yes.

35 MR BEASLEY: For the results of the MDBA's analysis of flow indicator achievement, in this case for the Barmah-Millewa Forest under three scenarios. Those are the three scenarios considered in relation to the Multiple Benefits Report too; correct?

40 DR COLLOFF: Yes.

MR BEASLEY: And this table has some similarities, but by no means is it completely identical – in fact, there's some significant omissions, but some similarities with tables in the draft in the Multiple Benefits Report.

45 DR COLLOFF: Yes.

MR BEASLEY: So what we see here, using page 223 and the flow indicator achievement for Barmah-Millewa as an example is, first of all, on the far left-hand side in the first two columns, we have various flow events commencing at 12,500 for various days and for certain durations and at certain times of the year extending  
5 down to, in the second last row, to 60,000 gigalitres. Then it drops down again to 15,000 for a different number of days.

DR COLLOFF: Yes, yes.

10 MR BEASLEY: Then in the column immediately to the right is the target range in terms of percentages for a successful event, and then it has got the percentages that are achieved without development on the baseline. Just pausing on the baseline, the baseline, I'm right, isn't it, is based on the 2009 year?

15 DR COLLOFF: Yes.

MR BEASLEY: And sorry, modelling up to 2009, and then we have the results for an analysis of 2,800 gigalitre plan.

20 DR COLLOFF: Yes.

MR BEASLEY: And in the second last – in the row second last to the right, we have the proportion of years containing a successful environment event for the 2,800 gigalitre plan.

25

DR COLLOFF: Yes.

MR BEASLEY: And if we look at the first row for a 12,500 megalitres for a total duration of 70 days with a minimum of seven consecutive days between June and  
30 November, the result achieved is 83 per cent.

DR COLLOFF: Yes.

MR BEASLEY: The target is 70 to 80 per cent. So that target has been met.

35

DR COLLOFF: Yes.

MR BEASLEY: However, if we drop town to 35,000 megalitres a day for a total duration of 30 days with minimum duration of seven consecutive days between June  
40 and May, the target for high and low uncertainty is 33 to 40 per cent. The target achieved is on the modelling for 2,800 gigs is 30 per cent. So not achieved.

DR COLLOFF: Yes.

45 MR BEASLEY: Also not achieved for the 5,000 megs.

DR COLLOFF: Yes.

MR BEASLEY: 15 per cent whereas the target is 25 to 30 per cent. Also not achieved for 60,000 megs, target 20, 25 per cent. What is achieved for a successful event is 11 per cent.

5 DR COLLOFF: Yes.

MR BEASLEY: And what the MDBA seem to have done, if you look at table 87 now, they are the results on the basis of a 2,400 gicalitre scenario.

10 DR COLLOFF: Yes.

MR BEASLEY: But for the same forest – flow indicator achievement for Barmah-Millewa Forest over the page to table 88 is a 3,200 gicalitre scenario - - -

15 DR COLLOFF: Yes.

MR BEASLEY: - - - for the Barmah-Millewa Forest. Amongst the differences in your draft report, the Multiple Benefits Report, these tables – and you can look at 89 where they move on to dealing with twenty-eight, twenty-four and thirty-two  
20 hundred gicalitre scenarios in this case for the Gunbower Forest, these are results that are entirely site-based for – you know, it might be a Ramsar wetland, etcetera, or another important site.

DR COLLOFF: Yes.  
25

MR BEASLEY: Whereas when we come to them, your tables were specific to, for example, species of vegetation, fish, bird life.

DR COLLOFF: That's right. Yes. Yes, yes.  
30

MR BEASLEY: Okay. So that's all I need – that's what has been done there. That's all I needed to take you to in that report.

DR COLLOFF: Yes.  
35

MR BEASLEY: What I would like you to go to now is your draft of the Multiple Benefits Report.

DR COLLOFF: Yes, that's the one.  
40

MR BEASLEY: Commissioner, I'm not sure what tab you have got this in the material you have. It's tab 4 in the folder I have.

THE COMMISSIONER: I have it. This is the marked-up one.  
45

MR BEASLEY: Marked up one. So you – if we look the – there's a little history of this document on the first page.

DR COLLOFF: Yes.

MR BEASLEY: And the last entry over the page says, if you've got a colour copy, 6 December 2011, is that version V51?

5 DR COLLOFF: Yes, that's right.

MR BEASLEY: Then it has got your name.

10 DR COLLOFF: Yes.

MR BEASLEY: What does that indicate?

DR COLLOFF: That basically indicates that I was the person who last checked the document out for editing.

15 MR BEASLEY: Right. What does share point mean?

DR COLLOFF: The share point is essentially a file on the computer where all the documents were kept, where all the team members had access to.

20 MR BEASLEY: All right. But does that date, 6 December 2011, indicate to you that this is the date of this particular draft?

25 DR COLLOFF: Yes, it does.

MR BEASLEY: And, in terms of your own records and recollection at least, do you think this is the last version of the report?

30 DR COLLOFF: No, it's not the last version. I think that this version, the final version - - -

MR BEASLEY: No, the last version of the report that you had editorial control.

35 DR COLLOFF: No, I was going to say I think the final report was version 55.

MR BEASLEY: Right.

DR COLLOFF: So they were between 51 and 55. There are probably four others.

40 MR BEASLEY: Right.

DR COLLOFF: In - yes.

45 MR BEASLEY: Okay. What I want to take you through now is the differences between this version 51 draft - - -

DR COLLOFF: Yes.

MR BEASLEY: - - - and what's in the final report, and your recollection and knowledge about what was removed or changed and why.

5 DR COLLOFF: Yes.

MR BEASLEY: So if we can turn, please, to page 17 of the draft report.

10 DR COLLOFF: Yes.

MR BEASLEY: That contains a table 3.1 headed 'Summary of Ecological Outcomes' - - -

15 DR COLLOFF: Yes.

MR BEASLEY: - - - expressed as medium percentage, change and range under the 2,800 gigalitre scenario relative to the baseline scenario. Firstly, you are aware this table doesn't exist in the final version of the report.

20 DR COLLOFF: I am aware of that, yes.

MR BEASLEY: And in terms of us understanding the report, there's a column headed Model.

25 DR COLLOFF: Yes.

MR BEASLEY: And then it has got – the first entry for that is, I think, R-I-M - - -

30 DR COLLOFF: RIMFIM.

MR BEASLEY: RIMFIM. What does that mean?

DR COLLOFF: That stands for River Murray Flood Inundation Model.

35 MR BEASLEY: And that's a particular model that was – a CSIRO model.

DR COLLOFF: That's a – yes. That's the CSIRO model which we used as one of the two models for assessing ecological benefits for vegetation.

40 MR BEASLEY: And DSS?

DR COLLOFF: That's Decision Support System.

45 MR BEASLEY: Yes, can you explain that?

- DR COLLOFF: And that is basically a model that gives us an indication of whether the water requirements, as assessed by the ecological parameter called habitat preference were met or not.
- 5 MR BEASLEY: And MFAT.
- DR COLLOFF: That's Murray Flow Assessment Tools, and that again is an assessment of whether the habitat is suitable for four categories of fish.
- 10 MR BEASLEY: Right. And what's reflected here is the overall results, this table, in terms of the modelling that CSIRO has done.
- DR COLLOFF: Yes.
- 15 MR BEASLEY: I just ask you to explain, for example, in the heading Vegetation, there's an entry river red gum inundated.
- DR COLLOFF: Yes.
- 20 MR BEASLEY: And there's a reference to Barmah-Millewa, Gunbower, Hattah Lakes and The Riverland general floodplain.
- DR COLLOFF: Yes.
- 25 MR BEASLEY: And using the R-I-M – RIMFIM, sorry - - -
- DR COLLOFF: RIMFIM. Yes.
- 30 MR BEASLEY: - - - modelling first, for Barmah-Millewa, it has got the median percentage change is 14 per cent. Do we understand that that's where the median average was for the percentage of improvement for – sorry, achievement for a 2,800 gegalitre plan?
- 35 DR COLLOFF: Yes, but not just for Barmah-Millewa. What that figure is – it's a median percentage change against baseline for river red gum as assessed for Barmah-Millewa - - -
- MR BEASLEY: Sorry. Yes, yes. Sorry.
- 40 DR COLLOFF: ..... Hattah Lakes and the Riverland.
- MR BEASLEY: And corresponding for Black Box for all of those forests or icon sites or Ramsar wetlands, etcetera, the figure is – the median figure is 31 per cent.
- 45 DR COLLOFF: Yes. That's right. Yes.
- MR BEASLEY: And lignum – I can't read that. 39 per cent.

- DR COLLOFF: 39. Yes.
- MR BEASLEY: Then under the different modelling, the DSS.
- 5 DR COLLOFF: Yes.
- MR BEASLEY: We have got river red gum habitat preference index. There seems to be a remarkably wide range there between the minimum minus 3 - - -
- 10 DR COLLOFF: Yes. There are. Yes.
- MR BEASLEY: - - - the maximum 133 and the median 65. What does that indicate to you?
- 15 DR COLLOFF: What that indicates is basically the DSS model wasn't that great for vegetation which is why we used two models.
- MR BEASLEY: Not sensitive enough?
- 20 DR COLLOFF: It was simply – yes, that's right.
- THE COMMISSIONER: Can you just explain percentages to me so I can understand the sensitivity question.
- 25 DR COLLOFF: Yes.
- THE COMMISSIONER: What does 14 per cent mean?
- DR COLLOFF: So that's 14 per cent increase in river red gum inundation compared with baseline figure, which was the end of the millennium drought.
- 30 THE COMMISSIONER: So that's a combination of volume of water and duration of water, is it?
- 35 DR COLLOFF: In terms of inundation, yes, it's essentially an integrated measure of volume and duration.
- THE COMMISSIONER: And what's this – what does the range tell me, zero per cent, 14 per cent, 27 per cent?
- 40 DR COLLOFF: Yes, okay. Look, I think that without going back and going through my notes in detail, that refers to the range across those different sites for river red gum. So if you look at all the modelling we did for Barmah, for Gunningbar, for Hattah and the Riverland, the range for red gum inundation is
- 45 between zero per cent increase against baseline at a minimum to a maximum of 27 per cent increase.

- THE COMMISSIONER: So it's not a range in relation to what I will call levels of confidence?
- 5 DR COLLOFF: These – I don't think these are confidence intervals. I - - -
- THE COMMISSIONER: Intervals. So I'm to understand that as meaning that among those indicator sites at 2,800, or at least one of them, there would be no improvement?
- 10 DR COLLOFF: Yes.
- THE COMMISSIONER: And for at least one of them, there would be a 27 per cent improvement in whatever value is being measured.
- 15 DR COLLOFF: Yes. That's right. Look, I – and – and the – the - - -
- THE COMMISSIONER: So 14 per cent median may not, in fact, be true of any one of them?
- 20 DR COLLOFF: That's right. Yes. And – and the – you know, what I was asked to do was come up with a summary table that showed the minimum and maximum ranges – or the minimum and maximum values, rather, for each of those ecological outcomes.
- 25 THE COMMISSIONER: Could I just ask this. When I look at those figures, and even putting to one side your earlier evidence about one model apparently being more robust than another - - -
- 30 DR COLLOFF: Yes.
- THE COMMISSIONER: - - - I would have no way of knowing whether that was telling me that targets were being achieved or not.
- 35 DR COLLOFF: No. That's not the - - -
- MR BEASLEY: We will come to that.
- DR COLLOFF: That's not the purpose of the table. The - - -
- 40 THE COMMISSIONER: Thank you. Right.
- DR COLLOFF: The purpose of the table is to give an overview of the magnitude of change in ecological improvements from 2,800 compared with baseline.
- 45 THE COMMISSIONER: Thank you.
- MR BEASLEY: So where it has got:

*Fish habitat suitability, main channel generalist.*

I assume that's a reference to a certain breeds of fish that are specialising their habitats in the main channels or is it - - -

5

DR COLLOFF: Yes.

MR BEASLEY: Yes.

10 DR COLLOFF: Well, they're – general – yes. They – they tend to live in and spawn in the main channel as opposed to out on the floodplain.

MR BEASLEY: Yes. All right. And this is for the Murray, the Lower Darling, the Murrumbidgee, and the Border Rivers.

15

DR COLLOFF: Yes.

MR BEASLEY: The main channel specialists and very similar figures for main channel spawners: the range for a minimum is nought; medium, 5 per cent; maximum, 10 per cent. The only difference with spawners is maximum 9 per cent. These are results that come out of the model. Correct?

20

DR COLLOFF: Yes.

25 MR BEASLEY: And no model is perfect.

DR COLLOFF: No.

MR BEASLEY: There will be a margin for error.

30

DR COLLOFF: Yes.

MR BEASLEY: Five per cent – even five per cent might be zero, if you factored in a margin for error.

35

DR COLLOFF: Yes. Yes. Yes. Yes. Yes.

MR BEASLEY: All right. That table did not end up making it into the final version.

40

DR COLLOFF: No, it didn't.

MR BEASLEY: I will come to the reasons why, or as far as you understand them. But just dealing with what has been deleted from the report first, in terms of tables, if we go to pages 26 and 27. This commences the discussion about assessment of outcomes for the hydrologic indicator sites for key environmental assets.

45

DR COLLOFF: Yes.

5 MR BEASLEY: Please, just take my word for it that the last paragraph on 26 and the entirety of that section on page 27 has been removed from the final report, principally because the tables that it refers to have been removed.

DR COLLOFF: Yes. Yes.

10 MR BEASLEY: All right. So if we turn to the tables now. The first table I direct you to is at page 30.

DR COLLOFF: Yes.

15 MR BEASLEY: So this is table 3.3: an assessment of meeting flow events for river red gum forest targets at southern and northern Basin hydrologic indicator sites, the key environmental assets under the without-development baseline and 2,800 gigalitre scenarios. The hydrologic indicator sites and the key environmental assets have all been determined by the MDBA. Correct?

20 DR COLLOFF: Yes.

MR BEASLEY: So what we have here – first of all, let’s just explain this symboling, which is, I think, described at the top of page 31.

25 DR COLLOFF: Yes.

MR BEASLEY: Where it has got – do you have a colour copy, Commissioner?

30 THE COMMISSIONER: I do.

MR BEASLEY: Yes.

DR COLLOFF: Yes.

35 MR BEASLEY: So the green diamond.

DR COLLOFF: Yes.

40 MR BEASLEY: Target met.

DR COLLOFF: Target met, yes.

MR BEASLEY: A red circle: it’s not met under a 2,800 gigalitre scenario, but it is an improvement on the baseline.

45

DR COLLOFF: Yes.

MR BEASLEY: And a red dot: it's not met – target not met for 2,800 gigalitre scenario, and it also doesn't improve on the baseline.

DR COLLOFF: Yes. Yes. That's right.

5 MR BEASLEY: So looking at, for example, the results here for river red gum forest targets in the Southern Basin and looking at the results for Barmah-Millewa, for the flow event of 12,500 megalitres for 70 days, under 2,800 gigalitres the target is met.

10 DR COLLOFF: Yes.

MR BEASLEY: Same for 16,000 and same for 25,000.

DR COLLOFF: Yes.

15 MR BEASLEY: But beyond that, the target is either not met or in relation to 50,000 and 60,000 - - -

DR COLLOFF: Yes.

20 MR BEASLEY: - - - it's no improvement on the baseline.

DR COLLOFF: There's no improvement. That's right.

25 THE COMMISSIONER: Can I just ask you about this?

DR COLLOFF: Yes.

THE COMMISSIONER: The measure here is a prediction or projection of the

30 number of years in which a specified event will occur.

DR COLLOFF: Yes.

THE COMMISSIONER: And the event includes, for example, inundation by a

35 certain amount or flow of a certain amount for a certain number of days.

DR COLLOFF: Yes. Yes. Yes. Yes, basically.

THE COMMISSIONER: So the “without development” column is meant to

40 represent a criterion of relevance to the notion of protecting and recovering the ecology. Is that right?

DR COLLOFF: Essentially, “without development” means prior to river regulation and water resource extraction for irrigation.

45 THE COMMISSIONER: So it's relevant to, even if it doesn't exactly stand for - - -

DR COLLOFF: Yes. Yes.

THE COMMISSIONER: - - - where you are aiming if you were trying to protect and restore – or recover the ecosystem.

5 DR COLLOFF: I wouldn't agree entirely with that assessment for the simple reason that it's widely accepted that because the Basin is so modified, that any attempt to restore it to without-development conditions is – is not practical or desirable.

10 THE COMMISSIONER: Let me make it clear. I understand that, but it - - -

DR COLLOFF: Yes. Yes. Of course.

THE COMMISSIONER: But it is of relevance to the notion, yes.

15 DR COLLOFF: Is of relevance, yes. I mean it wasn't our preferred scenario to model.

THE COMMISSIONER: I understand. Understand. And that's why you've got – actually, I see that I've got the colour system – target met is green diamond, isn't it?

20 DR COLLOFF: Yes. Yes. Green diamonds.

THE COMMISSIONER: Although the key calls it red diamond, but anyhow.

25 MR BEASLEY: Yes.

DR COLLOFF: Yes. Right.

30 THE COMMISSIONER: So we've got - - -

DR COLLOFF: Well, that's because it has been – that text has been deleted, I think. Yes. It has changed colour. Yes.

35 THE COMMISSIONER: In any event, so the “without development” column all has green diamonds - - -

DR COLLOFF: Yes.

40 THE COMMISSIONER: - - - not coincidentally, because if the river were in the position it were in without development - - -

DR COLLOFF: Without development, yes.

45 THE COMMISSIONER: - - - not surprisingly, you would achieve the target frequency.

- DR COLLOFF: Yes.
- THE COMMISSIONER: Is that correct?
- 5 DR COLLOFF: Yes, pretty much. Yes. Yes.
- THE COMMISSIONER: That is, the target frequency would be a bit nutty, wouldn't it, to set it as higher than might be imagined without development - - -
- 10 DR COLLOFF: Yes.
- THE COMMISSIONER: - - - unless there was some extraordinary rescue mission going on?
- 15 DR COLLOFF: Yes. That's right. Yes.
- THE COMMISSIONER: So, for example, the highest flow for the Barmah-Millewa Forest is 50,000 megalitres a day for 14 days.
- 20 DR COLLOFF: Yes.
- THE COMMISSIONER: The target of percentage of years, that is, number of frequency by years of that achievement, is 20 per cent.
- 25 DR COLLOFF: Yes. Yes.
- THE COMMISSIONER: And not coincidentally, it's considered that without development, that would be 34 per cent.
- 30 DR COLLOFF: Yes, 34. Yes.
- THE COMMISSIONER: Right. Now, baseline is the state of affairs that the Water Act and the Basin Plan treat as being a state of affairs that requires improvement.
- 35 DR COLLOFF: Yes, and it was the state of affairs - - -
- MR BEASLEY: At the level of extractions at 2009.
- DR COLLOFF: At the end of the millennium drought.
- 40 MR BEASLEY: Yes.
- THE COMMISSIONER: Yes, so that baseline, nonetheless, is still describing – it's the same measure. It's the frequency by years of when that target might be met.
- 45 DR COLLOFF: Yes.

- THE COMMISSIONER: And if things were to stay as they were at baseline, that is, if the diversions stayed as at baseline, it would only be in 15 per cent of the years that you might expect to achieve that - - -
- 5 DR COLLOFF: Yes. Yes. Yes. That's right. Yes. Yes. Yes.
- THE COMMISSIONER: - - - which is considerably less than 34 per cent - - -
- DR COLLOFF: Yes.
- 10 THE COMMISSIONER: - - - and, obviously, materially less than the 20 per cent, which is the target. And the 2,800 scenario - - -
- DR COLLOFF: Two thousand – yes, yes.
- 15 THE COMMISSIONER: - - - would still fall short, but by even more than baseline.
- DR COLLOFF: 12 per cent. Yes. That's right. Yes.
- 20 THE COMMISSIONER: Now, it's true, isn't it, that the baseline takes into account the millennium drought, but only in the same way as all these data points take into account the millennium drought? That is, it's part of the hydrological history.
- DR COLLOFF: Yes. It's part of the hydrological history. If – if you're asking me the difference between 15 per cent and 12 per cent, I think that that is a product of the range of variation in the model.
- 25 THE COMMISSIONER: Quite.
- DR COLLOFF: So - - -
- 30 THE COMMISSIONER: It may even be a modelling artefact, but it is - - -
- DR COLLOFF: Yes, absolutely. Yes.
- 35 THE COMMISSIONER: It is what was being talked about intellectually between CSIRO and MDBA at this point.
- DR COLLOFF: Yes, you bet. Yes. Yes.
- 40 THE COMMISSIONER: It translates in policy terms to that target for the Barmah-Millewa Forest will not be met by 2,800 if “being met” means you won't compromise it?
- 45 DR COLLOFF: That's right. Yes.
- THE COMMISSIONER: Is that correct?

DR COLLOFF: Yes, I think so. Yes.

THE COMMISSIONER: That's really unambiguous, isn't it?

5 DR COLLOFF: It is pretty – yes, yes.

THE COMMISSIONER: I don't like the idea of something being pretty unambiguous. Is it unambiguous or not?

10 DR COLLOFF: No. No. It is unambiguous.

THE COMMISSIONER: Thank you.

DR COLLOFF: No. Absolutely. There's no - - -

15 THE COMMISSIONER: There's no ambiguity?

DR COLLOFF: There's no ambiguity in an absolute term.

20 THE COMMISSIONER: Yes. Thank you. Thank you. I think I understand.

MR BEASLEY: Alright. So - - -

THE COMMISSIONER: Now, could you just tell us, so far as you recall, what you

25 understand to be any reason advanced by anyone from the MDBA for this not to be in the report?

MR BEASLEY: Can we not do that yet? Can I take him to the other figures that have come out first?

30 THE COMMISSIONER: No. No. No. I defer to counsel. Sorry.

DR COLLOFF: Okay. All right. Okay.

35 MR BEASLEY: It's the first time I've done that, but I could get used to it.

THE COMMISSIONER: Yes.

MR BEASLEY: Page 32, table 3.4.

40 DR COLLOFF: Right.

MR BEASLEY: This is a similar table - - -

45 DR COLLOFF: Yes.

MR BEASLEY: - - - but in this case in relation to meeting flow events for river woodland targets.

5 DR COLLOFF: Yes, woodland. Yes.

MR BEASLEY: But exactly the same formatted type table, with exactly the same criteria being analysed.

10 DR COLLOFF: Yes. Yes. Yes.

MR BEASLEY: And, again, that table did not make it into the final report.

DR COLLOFF: That's right.

15 MR BEASLEY: If we turn the page to page 34. We have a similar table in relation to meeting flow events for lignum targets in the southern and northern Basin.

DR COLLOFF: Yes.

20 MR BEASLEY: That table did not make it into the final report.

DR COLLOFF: No.

MR BEASLEY: Table 3.6 was an assessment for meeting flow for Black Box woodland targets in the southern and northern Basin for the hydrologic indicator sites, page 35.

25 DR COLLOFF: Yes.

30 MR BEASLEY: Didn't make it into the final report.

DR COLLOFF: No.

MR BEASLEY: Page 36, table 3.7, Coolibah woodland targets.

35 DR COLLOFF: Yes.

MR BEASLEY: Not in the final report.

40 DR COLLOFF: No.

MR BEASLEY: Table 3.8 for river Cooba targets.

DR COLLOFF: Cooba. Cooba. Yes.

45 MR BEASLEY: Didn't make it into the final report.

DR COLLOFF: No.

MR BEASLEY: And if we go 37. A specimen of proportion of targets met for each vegetative community: that didn't make it into the final report?

5 DR COLLOFF: No.

MR BEASLEY: Right. So if we go right over to page 56, and we now, at 55, commence the discussion about native fish and the table at 321.

10 DR COLLOFF: Yes. Yes.

MR BEASLEY: Assessment of meeting flow rules for fish targets - - -

15 DR COLLOFF: Yes.

MR BEASLEY: - - - at southern Basin hydrologic indicator sites and key environmental assets under the development baseline of 2,800 scenarios: that table also did not make it into the final report.

20 DR COLLOFF: No.

MR BEASLEY: And we can see there, in relation to the 2,800 gigalitre scenario, that very few - - -

25 DR COLLOFF: Yes.

MR BEASLEY: With the exception of the Lower Namoi River, none of the targets are met?

30 DR COLLOFF: Lower Namoi. That's right.

MR BEASLEY: All right. You have a distinct memory of discussions with people at the MDBA about why these tables were taken out. Correct?

35 DR COLLOFF: Yes.

MR BEASLEY: And you've set your recollections out at, I think, paragraphs 23 to 29 of your statement.

40 DR COLLOFF: Yes.

MR BEASLEY: However, you also recorded those discussions in note form.

45 DR COLLOFF: Yes. Yes, I did.

MR BEASLEY: And for the purposes of me asking you to give your best recollection of the discussions you had with people at the MDBA about why they wanted these tables removed, please, feel free to look at your notes - - -

5 DR COLLOFF: Yes. Yes.

MR BEASLEY: And I think they relevantly commence at page 232.

DR COLLOFF: Right. Thank you.

10

MR BEASLEY: I think the first reference is a meeting of 7 December 2011. Tell me if I'm wrong?

DR COLLOFF: Yes. That's – that's the one.

15

MR BEASLEY: And can you tell us what your notes record there?

DR COLLOFF: Yes. So this was a meeting of the Multiple Benefits Project Steering Committee, and there were discussions raised by Tony Webster – or the point was raised by Tony Webster from MDBA that there were material differences between the environmental water requirements, as he put it, and what MDBA had done and what we had done, and then there's – I have a note here that says:

20

25 *There's probably good reason not to include the environmental water requirements, Ian.*

And that was – would have been Ian Burns from MDBA. So we were basically having a discussion whether to include those tables that you referred to earlier. And then we – we really – we were going through scoping the options of what the stuff that they wanted taken out of the report, that we wanted kept in the report, and how we dealt with that.

30

MR BEASLEY: Just pausing there.

35 DR COLLOFF: Yes.

MR BEASLEY: First of all, what is the reference to Ian Prosser? He's MDBA?

DR COLLOFF: No. Ian Prosser was the science director for CSIRO Water for Healthy Country Flagship.

40

MR BEASLEY: Right. It has got:

45 *Differences boil down to interpretation.*

It has got:

*Decided to delete Paul Rustoni hydrological modelling chapter.*

- DR COLLOFF: Yes. Right. Okay. Sorry.
- 5 MR BEASLEY: What does that – what’s that a reference to?
- DR COLLOFF: Sorry. Where’s – yes. That’s a reference to the fact - - -
- MR BEASLEY: I think it’s on page 237.
- 10 DR COLLOFF: 237. Are you sure it’s 237?
- MR BEASLEY: That’s what my note says, but
- 15 DR COLLOFF: So the “Differences boil down to interpretation” is page 232.
- MR BEASLEY: Yes.
- DR COLLOFF: So the following page – where is the reference to deletion of the hydrology chapter?
- 20 MR BEASLEY: Whoever has stapled this together for me is certainly going in the freezer, but - - -
- 25 DR COLLOFF: They might have stapled it wrongly. Yes. Right. But in answer to your question, the – the entire hydrological modelling chapter which originally constituted chapter 1 of the Multiple Benefits Report, was deleted from the final report.
- 30 MR BEASLEY: Why?
- DR COLLOFF: Because MDBA didn’t like the modelling approach that we had used.
- 35 MR BEASLEY: Right.
- DR COLLOFF: And it – or there were points of difference with theirs, and a major issue that they had was that we hadn’t modelled the constraints.
- 40 MR BEASLEY: They’ve engaged the CSIRO to do a report. Correct?
- DR COLLOFF: Yes.
- MR BEASLEY: Is it unusual for the client to say, “We don’t like what your views are, so take that out”?
- 45

DR COLLOFF: It's not unusual when MDBA are a client, in my experience, for them to tell the scientists what result they want.

5 MR BEASLEY: Okay. Right. Dealing specifically with the traffic lights tables that we discussed that were taken out of the report - - -

DR COLLOFF: Yes.

10 MR BEASLEY: - - - what's your recollection of the conversations concerning the MDBA's desire to have those tables removed from the report?

DR COLLOFF: Yes.

15 THE COMMISSIONER: Where do I find a reference to the traffic lights tables in these pages of your notes?

DR COLLOFF: Okay. So if you go to page 239, and there is a - - -

20 THE COMMISSIONER: Hang on. Hang on. Hang on. Just a - - -

MR BEASLEY: Yes, 19 December.

DR COLLOFF: 19 December is Ian Burns.

25 MR BEASLEY:

*Ian Burns, problem with traffic lights.*

30 THE COMMISSIONER: Now, there's a reference there, I take it you are attributing this to Mr Burns:

*Inconsistencies with what they've -*

35 That means MDBA -

*has reported.*

DR COLLOFF: Yes, that's MDBA. Yes. Yes.

40 THE COMMISSIONER: What's that report? Is that the ESLT report?

DR COLLOFF: That's the ESLT report, yes.

45 THE COMMISSIONER: I'm so sorry, I may not understand. The CSIRO exercise was intended to provide something in the nature of commentary upon MDBA work?

DR COLLOFF: No.

THE COMMISSIONER: Is that correct?

DR COLLOFF: No, we were essentially required to – to model what the ecological benefits were for the scenario.

5 THE COMMISSIONER: I’m so sorry. And if - - -

DR COLLOFF: It wasn’t a commentary on - - -

10 THE COMMISSIONER: No.

DR COLLOFF: - - - because at this stage, by 19 December, I’m pretty sure that the ESLT report - - -

15 THE COMMISSIONER: Had been published.

DR COLLOFF: Well it might have just been published, but I’m pretty sure – I – I can’t recall whether I had read it in detail by then, but certainly - - -

20 THE COMMISSIONER: So you would now - - -

DR COLLOFF: We couldn’t have provided a commentary on this report when we started the project back in April.

25 THE COMMISSIONER: Let me start again.

DR COLLOFF: Yes.

THE COMMISSIONER: You were performing work which might produce results

30 which could be compared with earlier work by MDBA, by anybody caring to do so.

DR COLLOFF: Absolutely. Yes. Yes. Yes. Yes. Yes.

THE COMMISSIONER: And - - -

35 MR BEASLEY: Specifically, in relation to the modelling of the 2,800 gegalitre scenario.

DR COLLOFF: Yes, that’s right.

40 THE COMMISSIONER: So I’m lost, I’m sorry.

DR COLLOFF: Yes. Okay.

45 THE COMMISSIONER: And you may need, from your recollection, if you can, to help me here. Why would it be a problem with the traffic lights that they were inconsistent with an earlier report by MDBA? Why is that a problem?

DR COLLOFF: It's a problem if they are claiming that a set of targets are met and those targets are different from ours, and that we're saying that fewer targets are met with the same volume of water.

5 THE COMMISSIONER: So why is that a problem?

DR COLLOFF: It's a problem for them because our data contradicts theirs.

THE COMMISSIONER: Why is that a problem?

10 DR COLLOFF: Well, it shouldn't be in science.

THE COMMISSIONER: That's my question.

15 DR COLLOFF: Absolutely.

THE COMMISSIONER: I thought that it was as serious a scientific offence as you can ever get to suppress data.

20 DR COLLOFF: Yes.

THE COMMISSIONER: Is that right?

DR COLLOFF: Yes, I agree.

25 THE COMMISSIONER: Well, now - - -

MR BEASLEY: Sorry, just to help yourself, if you go back to - I'm sorry that these are stapled together in a way that doesn't reflect the usual method of - - -

30 THE COMMISSIONER: It helps if you stand on your head as you turn it over. Yes.

MR BEASLEY: It does. Yes. I will try that.

35 THE COMMISSIONER: Yes.

MR BEASLEY: But 236, which I think is - - -

40 DR COLLOFF: Yes.

MR BEASLEY: Could be an extension of a 16 December meeting.

THE COMMISSIONER: Yes.

45 MR BEASLEY: I think that might be the first reference, because I can see - - -

DR COLLOFF: Okay. All right.

MR BEASLEY: - - - EWR's ESLT's results.

5 DR COLLOFF: Yes.

MR BEASLEY: - - - it's going to be hard to reconcile environmental water requirements and ESLT outputs.

10 DR COLLOFF: Yes. Yes. Yes. Yes.

MR BEASLEY: Is that someone talking to you?

DR COLLOFF: Yes. Okay. So after the - - -

15 MR BEASLEY: It's just that further down you see:

*Get away from traffic lights.*

20 DR COLLOFF: Okay. So, basically, on 7 December at the Multiple Benefits Steering Committee, this issue of – in short, MDBA raised a series of concerns about our report. And on page 236 when that meeting was over, the CSIRO team would have had a debrief and that would have been myself, Ian Prosser, Nev Crossmann, Carmine Pollino, Carol Couch, and - - -

25 MR BEASLEY: I see. So debrief actually is a reference to CSIRO only?

DR COLLOFF: And that's – yes. Yes.

30 MR BEASLEY: Debrief of a meeting you have had with the Basin Authority.

DR COLLOFF: Yes. Yes. Yes. Yes.

MR BEASLEY: Go on, sorry.

35 DR COLLOFF: So basically the message that we're getting there is they want the traffic lights – they didn't like the traffic lights approach. So hence that reference:

*Get away from - - -*

40 MR BEASLEY: Just pausing there. Why didn't they like the traffic lights? What did they say to you about using symbols? What's wrong with - - -

DR COLLOFF: Okay. So basically - - -

45 MR BEASLEY: I think you've already mentioned because - - -

DR COLLOFF: I think - - -

MR BEASLEY: - - - some of their figures don't represent - - -

5 DR COLLOFF: Don't represent - - -

MR BEASLEY: Some of their results don't represent your results.

DR COLLOFF: No, that's right.

10 MR BEASLEY: But is there anything particularly wrong with using the green diamond, the red dot and a red circle?

DR COLLOFF: I think their concern was that we presented the data in a way that

15 - - -

MR BEASLEY: Was easy to follow.

DR COLLOFF: - - - was easy to follow, yes.

20 MR BEASLEY: Right.

DR COLLOFF: And that was our intent, was for somebody who was - - -

25 MR BEASLEY: So they want someone to work harder to work out whether a target has been met or not; is that a fair - - -

DR COLLOFF: If – if you go – if you go to the hydrological modelling report and you go to the appendix of the hydrological modelling report and you have a pretty

30 detailed understanding of hydrology, then you may, if you're lucky, be able to interpret those appendices.

MR BEASLEY: Right.

35 DR COLLOFF: Whereas, what we'd essentially done was to present that format – that data, our data, in a way in which somebody could look down those columns in the way that – that you've done today and that the Commissioner has done today and see, from the colour coding and the symbols, what was met and what was not met.

40 MR BEASLEY: Right. Just following through then with this discussion regarding traffic lights before I ask you some more questions. At page 239, where it has got:

*19 December, Ian Burns.*

45 DR COLLOFF: Yes.

MR BEASLEY: That's a meeting with him, is it?

DR COLLOFF: Yes, that is.

THE COMMISSIONER: Sorry, which page?

5 MR BEASLEY: 239.

DR COLLOFF: 239.

THE COMMISSIONER: Thank you.

10

MR BEASLEY: 19 December, but it's on the page 28 August. I won't congratulate you on the use of a diary for your notes, Dr Colloff, but, anyway:

*19 December, Ian Burns.*

15

Was there anyone else at the meeting? Or you're unsure? Doesn't record it - - -

DR COLLOFF: I am – I am – look, that – that – I think that might have been Ian and myself. I'm not - - -

20

THE COMMISSIONER: Was Mr Prosser there as well?

DR COLLOFF: On the 19<sup>th</sup>, I – if there was more than one present - - -

25 MR BEASLEY: There's a reference to Prosser on the right-hand column:

*Prosser – result is under current policy.*

DR COLLOFF: Sorry, what – on page 239?

30

MR BEASLEY: That's 240 now.

DR COLLOFF: 240.

35 MR BEASLEY: You have got 239. You have got the heading:

*19 December Ian Burns –*

and it has got "problem". I assume that's problem - - -

40

DR COLLOFF: Yes. Okay.

*Result is under current policy, could be changed.*

45 Yes, that does suggest that Ian Prosser was present, doesn't it? Yes.

MR BEASLEY: Right. So - - -

DR COLLOFF: But I can't recall who was - - -

MR BEASLEY: Going back to your notes, though, at 19 December, in 239, it has got:

5

*Problem with traffic lights – inconsistencies with what they've reported.*

DR COLLOFF: Yes, "they've reported", yes.

10 MR BEASLEY: Is that him speaking to you?

DR COLLOFF: Yes, it is.

MR BEASLEY: So he felt it was a problem - - -

15

DR COLLOFF: Yes.

MR BEASLEY: - - - that there was inconsistencies between their results and your results.

20

DR COLLOFF: Yes.

MR BEASLEY: And that was a reason for taking out the traffic lights?

25 DR COLLOFF: Yes.

MR BEASLEY: Do you recall what your response was to that?

DR COLLOFF: Well, we – we had already had that issue raised in the steering committee meeting on 7 December.

30

MR BEASLEY: Right.

DR COLLOFF: So we were aware that they were unhappy. What we were hoping at that meeting – at least, well, I would have been hoping at that meeting on 19 December was a more detailed assessment of why they wanted us to move the traffic lights reports.

35

MR BEASLEY: Well, underneath what I just read to you - - -

40

DR COLLOFF: Yes.

MR BEASLEY: - - - it seems to say at about 5 pm:

45 *Is not an adequate representation of results.*

Is that Mr Burns?

DR COLLOFF: Yes. Yes, it is.

MR BEASLEY:

5           *Interpretation is not consistent.*

DR COLLOFF: Yes.

MR BEASLEY: Can you recall what further was said to prompt that note?

10

DR COLLOFF: So what he's then said is, for example, if you read, sort of, 6 o'clock:

15           *Edward Wacol, expressed as a target but not done as a demand and, therefore, not modelled.*

So he's basically - - -

MR BEASLEY: What's that mean?

20

DR COLLOFF: What he's basically doing is going through and saying his reasons why he believes that there's some inconsistencies.

MR BEASLEY: Right.

25

DR COLLOFF: And these relate to how MDBA have done their hydrological modelling, made their assessments - - -

MR BEASLEY: Can I just ask you on page 240, just under 11 - - -

30

DR COLLOFF: Yes.

MR BEASLEY: - - - it has got:

35           \*\* *If they got within 10 per cent of what they asked for, then they included it.*

DR COLLOFF: Yes.

MR BEASLEY: What does that mean?

40

DR COLLOFF: Well, that basically says is that if a target fell short by 10 per cent, then they included it as the target having been met.

MR BEASLEY: I see. Right. What was the reasoning for 10 per cent?

45

DR COLLOFF: They would have – they would have invoked an arbitrary error of plus or minus 10 per cent.

MR BEASLEY: I see.

THE COMMISSIONER: Could I just ask about the note there:

5           *That there was to be a modelling report of the statistical analyses coming out in January.*

Do you see that?

10   DR COLLOFF: Sorry, what page are we on, Commissioner?

THE COMMISSIONER: Same page.

DR COLLOFF: 240?

15

THE COMMISSIONER: Yes.

DR COLLOFF: How far down?

20   THE COMMISSIONER: Half past noon.

DR COLLOFF: Noon – okay.

THE COMMISSIONER:

25

*When they failed - - -*

DR COLLOFF: Modelling report – yes.

30   THE COMMISSIONER:

*- - - the events, it's not by much. Modelling report comes out in January.*

35   DR COLLOFF: Yes. Okay. Modelling – yes, that refers to the hydrological modelling report. Yes. Yes.

MR BEASLEY: Which came out in March, in the end.

40   DR COLLOFF: Well, actually - - -

MR BEASLEY:

*They are confident they can deliver on targets that we report as failed.*

45   DR COLLOFF: Yes.

MR BEASLEY: Did they explain the source of their confidence?

DR COLLOFF: No. No, they did not.

MR BEASLEY: Right.

5 DR COLLOFF: Not really.

THE COMMISSIONER: So have you had any further dealings with anyone concerning the process by which failures were – as proposed to be recorded by CSIRO would be overcome by MDBA?

10 DR COLLOFF: No.

THE COMMISSIONER: On page 241 - - -

15 DR COLLOFF: Yes.

MR BEASLEY: Yes.

THE COMMISSIONER: - - - what does the reference to Jody and Rhondda mean?

20 DR COLLOFF: Okay so Jody Swirepik and Rhondda Dickson see the reporting that we've done as undermining the Basin Plan, and that was - - -`

MR BEASLEY: Sorry. I may not have just picked that. Jody is Jody - - -

25 DR COLLOFF: Swirepik.

MR BEASLEY: Swirepik, so she, at the time, is – in the – at the MDBA.

30 DR COLLOFF: In the MDBA.

MR BEASLEY: Rhondda Dickson is the - - -

DR COLLOFF: Chief Executive Officer.

35 MR BEASLEY: - - - Chief Executive Officer, and then it's got:

*What is in the fine print? They see the reporting we've done as undermining the plan.*

40 DR COLLOFF: Yes. So - - -

MR BEASLEY: Who - - -

45 THE COMMISSIONER: This is all the same meeting, isn't it, 19 December?

DR COLLOFF: Yes, yes, this has been reported to us by Ian Burns on 19 December.

MR BEASLEY: I see. That doesn't mean they were necessarily at the meeting?

5 DR COLLOFF: No, they weren't at the meeting.

MR BEASLEY: Right.

10 DR COLLOFF: No, they weren't - - -

THE COMMISSIONER: So what has been reported to you, picking up at the foot of 240 is:

15 *A problem we'll have is about what is in the fine print.*

DR COLLOFF: Yes.

THE COMMISSIONER: Who is "we"?

20 DR COLLOFF: I – yes, I don't – look - - -

MR BEASLEY: When it says, "They see", that's the MDBA sees; correct?

25 DR COLLOFF: I think – I think that "we'll have" is open to interpretation of who "we" refers to. I think what it means is MDBA and CSIRO as a whole will have a problem.

MR BEASLEY: I see. Yes.... will have is about "what is" - - -

30 THE COMMISSIONER: What is the fine print?

DR COLLOFF: I think - - -

35 MR BEASLEY: Is that the results?

DR COLLOFF: This is – this is – I'm writing down a comment that somebody has made. Now, it could have been - - -

40 THE COMMISSIONER: I understand that. What did you understand the fine print to mean?

DR COLLOFF: So what I – what I – what I take to mean the fine print is, is the details of the ecological modelling target by target.

45 MR BEASLEY: Isn't that the point? That the whole - - -

DR COLLOFF: Yes, it is, absolutely.

MR BEASLEY: Right. So - - -

5 THE COMMISSIONER: What did you understand or what were you told was the content of this idea of the CSIRO's reporting undermining the plan?

DR COLLOFF: That was given to us as a blanket statement from Ian Burns, and so he's basically reporting the opinion of Jody Swirepik and Rhondda Dickson to us.  
10 Now - - -

MR BEASLEY: By way of a criticism.

DR COLLOFF: Yes, it's a criticism. It's basically saying, "We don't like your results and we want you to change your report."  
15

THE COMMISSIONER: No doubt Mr Beasley will take you the course he wants, but can I just drop down that – halfway down to page 241 under the heading "Options".  
20

DR COLLOFF: Yes.

MR BEASLEY: That's where I was going, so - - -

25 DR COLLOFF: Yes.

THE COMMISSIONER: "Take it out" is a reference to what?

DR COLLOFF: "Take it out" is a – is a reference to the traffic lights table.  
30

THE COMMISSIONER: And then - - -

DR COLLOFF: It should say "take them out".

35 MR BEASLEY: Take all of them out.

DR COLLOFF: Yes, take them all out. Yes.

THE COMMISSIONER: So get rid of the tables is the same thing, is it?  
40

DR COLLOFF: Yes, yes, yes, that's right.

THE COMMISSIONER: And reference to their report, that's the CSIRO adopting the CSIRO's report that which had earlier been reported by the MDBA?  
45

DR COLLOFF: Yes, basically.

THE COMMISSIONER: What's the use of that?

5 DR COLLOFF: Well, the purpose of that – okay. What they're saying – what it says there is "reference their report". That with can mean referring to the reports in terms of the appendices in the SLT report, for example. Those – the colour-code – the colour-coded sections in blue, yellow and brown could refer to that. But basically, it's – I take that to mean that it's a request to use more of their findings and less of ours. So there is less disagreement between their findings and ours.

10 MR BEASLEY: Where it has got "modify and restructure" - - -

DR COLLOFF: Yes.

15 MR BEASLEY: It's "our stuff", is it? Modify and - - -

DR COLLOFF: "Modify and restructure our stuff and finesse it."

MR BEASLEY: Yes, and then it has got a line "finesse it".

20 DR COLLOFF: Finesse it, yes.

MR BEASLEY: Whose words are they?

25 DR COLLOFF: They're certainly not mine. I wouldn't use the word "finesse it".

MR BEASLEY: What is "finesse it"? Finesse the results?

30 DR COLLOFF: Look, I don't know where that's – look, if I'm taking notes, then somebody is speaking - - -

MR BEASLEY: Yes.

DR COLLOFF: And I suspect it's Ian Burns speaking, rather than - - -

35 MR BEASLEY: Well, let's – you don't want to finesse your results, whatever that means.

DR COLLOFF: No, no, no.

40 MR BEASLEY: Did you – is your recollection now that "finesse it" was some reference to modifying your results and your commentary so that it was consistent with the MDBA's results?

45 DR COLLOFF: Yes. Yes, pretty much.

MR BEASLEY: Option 1 issues:

*If we take it out, then why do we take it out?*

DR COLLOFF: Yes.

5 MR BEASLEY: Is that you asking yourself a question?

DR COLLOFF: Yes, it is. It's basically saying, "What is the rationale? How would we justify - - -"

10 MR BEASLEY: Taking it out.

DR COLLOFF: "- - - taking it out"?

THE COMMISSIONER: I can't read the writing for the next one - - -

15

DR COLLOFF: Yes, if we go to option 2, the issue, I think that says of - - -

MR BEASLEY: "Of our staff".

20 DR COLLOFF: - - - "of our staff". There is - - -

MR BEASLEY: Artificial assessment.

DR COLLOFF:

25

*Artificial assessment of the precision we have. They will only look at green and red dots, cannot have this.*

So that's a reference to the fact that if somebody looks at the traffic lights.

30

THE COMMISSIONER: "They" is the world, is it? The public, is it?

DR COLLOFF: Yes. Yes, anyone. Any reader of the report.

35 THE COMMISSIONER: And "cannot have this".

DR COLLOFF: We cannot have this.

THE COMMISSIONER: Is that your internal comment on that?

40

DR COLLOFF: No, that's not my comment. I wouldn't - - -

THE COMMISSIONER: Whose comment is that, as you recall it?

45 DR COLLOFF: That's coming from the MDBA, yes.

THE COMMISSIONER: So the MDBA appear to be telling you that according to whoever was speaking to the MDBA at the meeting, they didn't wish traffic lights because readers in of the public would look at green and red dots and call on their knowledge of what green and red means in traffic lights - - -

5 DR COLLOFF: Yes.

THE COMMISSIONER: - - - and form a view that would be adverse to 2,800?

10 DR COLLOFF: I believe so.

MR BEASLEY: All right. Going on. So what does it say in 242:

*So we aggregate our tables.*

15 DR COLLOFF: Yes.

MR BEASLEY:

20 *Do it by ecological, e.g., Black Box, wetland ...*

DR COLLOFF: Yes.

MR BEASLEY:

25 *Not by individual targets*

DR COLLOFF: Yes.

30 MR BEASLEY: Is that a request by you to Mr Burns or something else?

DR COLLOFF: I think that is a summary of a discussion about what possible options were. So I don't think it's an instruction. I think it's more a discussion of how to make our results more acceptable to MDBA.

35 MR BEASLEY: All right. Then Ian Burns has their stuff, that's MDBA's stuff - - -

DR COLLOFF: Yes.

40 MR BEASLEY: Ie, their results ready to go for the January stuff.

DR COLLOFF: Yes, for the January – yes, yes, that's the hydrological model.

MR BEASLEY: Which you think means what ultimately became the March

45 hydrological - - -

DR COLLOFF: Yes.

MR BEASLEY: Sorry, February - - -

DR COLLOFF: Yes.

5 MR BEASLEY: - - - hydrological report.

DR COLLOFF: And - - -

MR BEASLEY:

10 *Will send us some examples of how they're reporting, e.g. Gunbower.*

DR COLLOFF: Yes, so that – so the examples that they're reporting - - -

15 MR BEASLEY: Yes.

DR COLLOFF: - - - refer to the hydrological report, the – those tables that we referred to earlier – hang on – flow indicator achievement, for example, table 86 on page 223. So that would be an example of - - -

20 MR BEASLEY: What's the point of sending you there? CSIRO is doing its work on a 2,800 gigalitre plan.

DR COLLOFF: Yes.

25 MR BEASLEY: What's the point of them sending you their results? Or what did you understand it to be?

DR COLLOFF: So what I understood it to be is that they wanted us to report our results in a similar format to what was hydrological report.

30 MR BEASLEY: I see. So, ie, no traffic lights, for a start.

DR COLLOFF: No traffic lights. Yes.

35 MR BEASLEY: Okay. I want to leave the tables alone and go to the changes of the text of the draft.

DR COLLOFF: Yes.

40 THE COMMISSIONER: I'm so sorry.

MR BEASLEY: Yes. Go on.

45 DR COLLOFF: Yes. Sure.

THE COMMISSIONER: Back on page 241 of the diary notes - - -

DR COLLOFF: 241. Yes.

THE COMMISSIONER: - - - as part of this meeting we have been talking about, you've got a note that someone said, or you concluded that targets are the same in our report and theirs. Is that your recollection, that that was a consensus?

5

DR COLLOFF: Yes. So the ecological targets don't differ between the two. Because we - - -

10 THE COMMISSIONER: They're the targets that produce the environmental water requirements. Is that right?

DR COLLOFF: Yes, that's right. Yes.

15 THE COMMISSIONER: Thank you.

MR BEASLEY: I should ask this: when do you recall the final decision being made by whoever made it to take these tables out? First of all, do you recall that and, secondly - - -

20

DR COLLOFF: I think – yes, look, I would place that event as the 7 December at that debrief meeting, after the steering committee, where, you know, basically, Ian Prosser was sent, Carol Crouch and MDBA being pretty clear, they wanted those things taken out.

25

MR BEASLEY: What was your view about whether they should be taken out or not?

DR COLLOFF: Just absolutely they should not be.

30

MR BEASLEY: Did you express that view to - - -

DR COLLOFF: Yes. Of course, I did.

35

MR BEASLEY: First of all, did you express that view to Ian Burns or anyone else?

DR COLLOFF: I was extremely concerned at the way that the whole process of expressing our results was being manipulated and interfered with.

40

MR BEASLEY: What do you recall saying to, for example, Mr Burns or anyone else at the MDBA, about that?

DR COLLOFF: I can't recall exact details.

45

MR BEASLEY: You don't have to do exact words, just to the best of your recollection.

DR COLLOFF: It was seven years ago.

MR BEASLEY: That's understood.

5 DR COLLOFF: I would have said, "Look, you know, it's not acceptable. What you're asking us to do is not acceptable in regards to what I've said."

MR BEASLEY: By saying it is not acceptable, do I take it from that that it wasn't your final decision to take these tables out?

10 DR COLLOFF: Certainly not.

MR BEASLEY: Whose decision was it?

15 DR COLLOFF: It would have been Carol Couch in consultation with Ian Prosser, with input from Jody Swirepik.

MR BEASLEY: Right. And did you have a discussion with any of those people that you recall about these tables being taken out.

20 DR COLLOFF: I had a discussion with Carol Couch.

MR BEASLEY: Did you express your dissatisfaction about them being taken out?

25 DR COLLOFF: Yes, I did.

MR BEASLEY: Do you recall, doing the best you can given the time that has passed, what you said?

30 DR COLLOFF: I would have said that, essentially, that what MDBA were asking us to do, amounted to censorship.

MR BEASLEY: Scientific censorship.

35 DR COLLOFF: Yes.

MR BEASLEY: And what was her response to that, do you recall?

DR COLLOFF: Again, I can't remember the exact wording.

40 MR BEASLEY: All of this is words to the effect.

DR COLLOFF: Yes. It's words to the effect of, "Well, we don't have a choice because if we don't do it, we won't get paid."

45 MR BEASLEY: Won't get paid?

DR COLLOFF: We won't get paid. In other words, that the contract – completion of the contract could be jeopardised in that MDBA might withhold a final payment.

MR BEASLEY: On the basis of you expressing your scientific opinion?

5 DR COLLOFF: Yes. This was a \$1.8 million project in which CSIRO invested \$400,000 - - -

MR BEASLEY: All right.

10 DR COLLOFF: - - - at a time when we were pretty strapped for cash.

MR BEASLEY: And was that, effectively, the end of that conversation?

15 DR COLLOFF: Yes. I mean, I felt I was being given a directive.

MR BEASLEY: Yes. All right. I'm now going to the text, if we may, of the draft - - -

20 DR COLLOFF: Yes.

MR BEASLEY: - - - as against the final version of the report. And if we go to paragraph – sorry – page number 15 to begin with.

25 DR COLLOFF: 15, yes.

MR BEASLEY: When you get there, page 15, the third last bullet point.

DR COLLOFF: Yes.

30 MR BEASLEY: This is under a section called “Key Findings”.

DR COLLOFF: Right.

35 MR BEASLEY:

*High elevations of floodplains are likely to become increasingly vulnerable under the 2,800 scenario - - -*

40 DR COLLOFF: Yes.

MR BEASLEY:

*- - - and their capacity to continue to support river red gum and Black Box communities is compromised.*

45 DR COLLOFF: Yes.

MR BEASLEY: So that was represented, at least at the date of this draft, your interpretation of the CSIRO's results.

DR COLLOFF: Yes.

5 MR BEASLEY: If we go to the final report at page 22 and the second bullet point.

DR COLLOFF: Yes.

10 MR BEASLEY: Rather than saying higher elevations of floodplains are likely to become increasingly vulnerable under the 2,800 gigalitre scenario, etcetera:

*It says higher elevations of River Murray floodplains see little improvement in flood inundation.*

15 DR COLLOFF: Yes.

MR BEASLEY: Now, do you agree with me that there is a real difference between increasing vulnerability and seeing little improvement?

20 DR COLLOFF: Yes, I do.

MR BEASLEY: And do you agree with me that saying "seeing little improvement" at least implies some improvement?

25 DR COLLOFF: Yes.

MR BEASLEY: And saying there's some improvement is completely inconsistent, do you agree, with something become increasingly vulnerable and likely to continue to be compromised?

30 DR COLLOFF: That's correct.

MR BEASLEY: All right. Now, did you make that change?

35 DR COLLOFF: No.

MR BEASLEY: All right. Do you know who did?

40 DR COLLOFF: No, I don't. But I – my assessment - - -

MR BEASLEY: Stop there, if you don't.

DR COLLOFF: Yes, okay.

45 MR BEASLEY: Let me just go a little bit further.

DR COLLOFF: Yes, okay.

MR BEASLEY: I'm looking again at page 22 of the final report, what I read to you.

5 DR COLLOFF: All right. Yes.

MR BEASLEY: I should complete the whole sentence, I've been reminded, because it's important.

10 DR COLLOFF: Yes.

MR BEASLEY:

15 *Nevertheless higher elevations of River Murray floodplains see little improvement in flood inundation under the 2,800 scenario because of constraints to providing large flood discharges.*

DR COLLOFF: Yes.

20 MR BEASLEY: Etcetera.

DR COLLOFF: Yes.

25 MR BEASLEY: There's no mention of constraints in that part of the draft report that I took you to.

DR COLLOFF: No, that's right.

MR BEASLEY: Did you add that in?

30

DR COLLOFF: No, I did not.

MR BEASLEY: Does that help you as to who might have added it in?

35 DR COLLOFF: Yes, it does.

MR BEASLEY: All right.

40 DR COLLOFF: It – because the Murray-Darling Basin Authority had consistently been invoking constraints is a reason for differences between our modelling outputs and theirs, I would have cause to consider that the most likely alteration of that text was made in by Murray Valley Basin Authority.

45 MR BEASLEY: All right. Do you have any recollection of having that change of text discussed with you?

DR COLLOFF: No.

MR BEASLEY: What would have been your reaction, do you think, had it been discussed with you?

DR COLLOFF: I would have insisted on having it put back the way it was.

5 MR BEASLEY: And the reason for that is?

DR COLLOFF: Because the way it was, was factually correct, according to our modelling outputs.

10 MR BEASLEY: That certainly implies that you don't agree with the – what's in the final text of the final report.

DR COLLOFF: I do not agree.

15 MR BEASLEY: That being it's not an accurate representation – sorry, not an accurate reflection in your view of the CSIRO results.

DR COLLOFF: No. If they had - - -

20 MR BEASLEY: Can I take that further.

DR COLLOFF: Yes, sorry. Of course.

25 MR BEASLEY: Can I also suggest to you that it's not only not an accurate reflection, it is a, at best, misleading - - -

DR COLLOFF: Yes.

30 MR BEASLEY: - - - reflection.

DR COLLOFF: Yes.

MR BEASLEY: Do you agree with that?

35 DR COLLOFF: Yes.

MR BEASLEY: Is it, in fact, an untrue reflection, or an inaccurate?

40 DR COLLOFF: It's certainly inaccurate. If they had come back to me and said – if Murray Darling Basin Authority had come back to me and said, “We don't like the word compromise. That word is too strong”, then what I would have done is to say, “Right. We need to have a discussion about another word that captures the meaning of the word compromised”.

45 THE COMMISSIONER: Sorry. Are you recalling that was discussed, or are you doing a “what if”?

- DR COLLOFF: No. I'm saying that if - - -
- MR BEASLEY: This is hypothetical.
- 5 DR COLLOFF: - - - I had – hypothetically, if I had been asked, or I had been told, “We have a problem with the word compromised”.
- THE COMMISSIONER: Had that ever been said to you before, though?
- 10 DR COLLOFF: No, it hadn't. So, as you point out, there's a world of difference between compromised and - - -
- THE COMMISSIONER: Well, there's a world of difference between likely to become increasingly vulnerable on the one hand - - -
- 15 DR COLLOFF: Yes.
- THE COMMISSIONER: - - - and on the other hand, likely to remain vulnerable.
- 20 DR COLLOFF: Yes.
- THE COMMISSIONER: Things are getting worse on the first version; things are about the same on the second.
- 25 DR COLLOFF: Yes, that's right. It's about trajectories of change.
- MR BEASLEY: Well, but in this case, it's the difference between increasingly vulnerable and little improvement.
- 30 DR COLLOFF: Yes.
- THE COMMISSIONER: Quite. So your recollection simply doesn't include anybody discussing with you your views about that change in wording?
- 35 DR COLLOFF: No.
- THE COMMISSIONER: Have you seen anything published or in any way otherwise available to you that would explain that kind of change?
- 40 DR COLLOFF: No, only that drafts were going – were being sent to the MDBA for their editorial input.
- THE COMMISSIONER: Editorial input. You mean rewrite.
- 45 DR COLLOFF: No, because they were the client, they got to see it but they were clearly going through and editing the document. It was then coming back to Carol Couch, but she wasn't necessarily discussing all the details with us.

THE COMMISSIONER: I note the time. Is it convenient if I just ask a couple of general questions? We have got to work out what to do, at 2 o'clock we have got electronic evidence.

5 MR BEASLEY: I need another 20 minutes with the witness. So - - -

THE COMMISSIONER: What's the best way of dealing with it?

MR BEASLEY: I think just – you don't have – do you have a flight?  
10

DR COLLOFF: No, I'm fine. I – my flight is not until late.

MR BEASLEY: I think resume at 2 with the witness, and we will finish the witness by 2.30.  
15

THE COMMISSIONER: But Mr Cosier?

MR BEASLEY: Well, he will just have to be told – is there going to be a difficulty with - - -  
20

THE COMMISSIONER: What we will do is we will resume at 2 unless the arrangements with the electronic evidence or telephone evidence.

MR BEASLEY: Now, someone is whispering to me. Given that Dr Cosier has to give his evidence at least in this respect via Skype, whether it would be best to continue with Dr Colloff in the hearing room back at the office because that's where the Skype will be, rather than packing up. In other words, pack up now and finish Dr Colloff in the hearing room back at the - - -  
25

30 THE COMMISSIONER: After we finished.

MR BEASLEY: - - - office, and then we can go straight to the Skype evidence in the same room. Whereas, if we stay here at 2 o'clock, when I'm finished with Dr Colloff we will then have to pack up and go back to the – it might save time if we go to the - - -  
35

THE COMMISSIONER: There is capacity at the - - -

MR BEASLEY: There's chairs.  
40

THE COMMISSIONER: - - - Commission office for at least everybody who is presently here, if they wanted to, to go back.

MR BEASLEY: Yes, everyone in this room.  
45

THE COMMISSIONER: So long as the Commission staff can make it plain and assist anybody in that regard, that would be good.

MR BEASLEY: Yes.

THE COMMISSIONER: Nonetheless, before we adjourn, can I just ask one question?

5

DR COLLOFF: Yes, of course.

THE COMMISSIONER: I'm struck by the idea of experts consulting with the client in relation to the expression of an expert opinion. Professionally, although from time to time clients have seen drafts of my opinions, it's only ever on the basis that the document will record my opinion.

10

DR COLLOFF: Yes.

THE COMMISSIONER: Not theirs. That's in the legal profession. On the other hand, I note that the final report, that is, the final CSIRO assessment - - -

15

DR COLLOFF: Yes.

THE COMMISSIONER: - - - includes in its opening page the statement that the work contained in the report is a collaboration between CSIRO and MDBA.

20

DR COLLOFF: Yes. That's how it started out.

THE COMMISSIONER: Yes.

25

DR COLLOFF: Yes.

THE COMMISSIONER: Meaning that what is contained in the CSIRO report doesn't necessarily reflect what I call a solely CSIRO view.

30

DR COLLOFF: Yes. Look - - -

THE COMMISSIONER: Is that correct?

35

DR COLLOFF: The - well, yes and no. The - we were required - we needed to collaborate with the SLT team in order to get the environmental targets, get their assessment of the environmental water requirements for those targets. And we did that, initially, through April, May and June in collaboration with that team. We met with them regularly. Around about July, August, September, around about that sort of time, it became clear that our hydrological modelling results were slightly different and that became a cause for concern for MDBA. Around about that time, those regular meetings, essentially, ceased. And I was told that the MDBA, ESLT staff were told not to meet with us anymore. So that sounded to me like somebody senior in MDBA had told them to, effectively, stop collaborating.

40

45

THE COMMISSIONER: Well, on another of the opening pages of the report, under the heading “Acknowledgements” - - -

5 DR COLLOFF: Yes.

THE COMMISSIONER: - - - there is the plain statement that the MDBA provided comments on drafts of the report.

10 DR COLLOFF: Yes, they did.

THE COMMISSIONER: Which makes me wonder why this report is badged as CSIRO rather than CSIRO and MDBA.

15 DR COLLOFF: Yes. Okay. So on the point of – it would be entirely standard practice to give a client a draft report.

THE COMMISSIONER: For what purpose?

20 DR COLLOFF: For any input. Certainly not to edit out results. But it might be to include particular points that maybe we didn’t include, for example. It also gives them the opportunity if they see something like, for example, an error of fact, to correct it.

THE COMMISSIONER: But it would be, surely, proper process for all of that to be recorded explicitly.

25 DR COLLOFF: Well, it has this – it has - - -

THE COMMISSIONER: No. Not the general fact, each such change to a draft.

30 DR COLLOFF: I’m not sure I’m with you. Are you suggesting that every edit should be - - -

THE COMMISSIONER: Every edit where whereby a client says, “I don’t want that in the report”, should be recorded, shouldn’t it? Look, not to put too fine a point on it, the MDBA has held out the CSIRO report as corroborating views it advances.

35 DR COLLOFF: Yes. Absolutely. Yes, yes. That was - - -

40 THE COMMISSIONER: That declines in cogency with each contribution by the MDBA to the content of the document, doesn’t it?

DR COLLOFF: Yes.

45 THE COMMISSIONER: Thank you. Is that a convenient time?

MR BEASLEY: Yes. Thank you, Commissioner. We will resume at 2 o'clock back at the Commission offices.

DR COLLOFF: All right.

5

**ADJOURNED**

**[1.04 pm]**

10 **RESUMED**

**[2.01 pm]**

MR BEASLEY: So we're looking at – still comparing the text of the draft report and final report. Just picking up on what the Commissioner was asking you though

15 - - -

DR COLLOFF: Yes.

DR COLLOFF: - - - just before we – if you go to the final report and inside the – as the Commissioner noted, it's a CSIRO report.

20

DR COLLOFF: Yes.

MR BEASLEY: Inside the first page, you will see that the copyright belongs to the Commonwealth and the CSIRO.

25

DR COLLOFF: Yes.

MR BEASLEY: In the acknowledgement section, it says:

30

*The report is an output of the CSIRO Multiple Benefits of the Basin Plan project.*

DR COLLOFF: Yes.

35

MR BEASLEY: Which you described before.

DR COLLOFF: Yes.

MR BEASLEY: And I took you to page (ii) where it mentions the contributors.

40

DR COLLOFF: Yes.

MR BEASLEY: The contributors are – with the exception of contractors, are CSIRO staff, correct?

45

DR COLLOFF: That's right, yes.

MR BEASLEY: Not people from the MDBA.

DR COLLOFF: No.

5 MR BEASLEY: Despite whatever may have happened in respect of the text and the deletion of tables from the final report – for the final report from the draft.

DR COLLOFF: Yes. Yes.

10 MR BEASLEY: All right. Can I now take you to page 28 of the draft.

DR COLLOFF: Yes.

MR BEASLEY: And tell me when you've got there.

15

DR COLLOFF: Yes.

MR BEASLEY: And there's a heading four-fifths of the way down River Red Gum Forests.

20

DR COLLOFF: Yes.

MR BEASLEY: The text is:

25 *Of the 38 flow requirements defined for river red gum forests for 14 of the hydrological indicator sites, three are met – three of 38 are met for the baseline and 15 of 38 are met under the 2,800 scenario.*

DR COLLOFF: Yes.

30

MR BEASLEY:

*Targets that are not met generally represent those in higher elevations of the mid floodplain.*

35

DR COLLOFF: Yes.

MR BEASLEY: If you go to page 33 of the final report.

40 DR COLLOFF: Yes.

MR BEASLEY: Tell me when you're there.

DR COLLOFF: Yes.

45

MR BEASLEY: I will just wait for the Commissioner. But on page 33, about, again, four-fifths of the way down, there's, in black bold print, river red gum forests.

- DR COLLOFF: Yes.
- MR BEASLEY: That seems as though it's a paragraphing error and that - - -
- 5 DR COLLOFF: Yes, it should be – yes.
- MR BEASLEY: - - - should have been the commencement or the heading for a paragraph.
- 10 DR COLLOFF: It's a sub-heading, yes.
- MR BEASLEY: And instead of what's recorded back in the draft, in relation to 38 flow requirements, it simply says:
- 15 *River red gum forests are characterised in environmental water requirements as having a rich understory made up of - - -*
- DR COLLOFF: Phragmites, yes.
- 20 MR BEASLEY:
- - - phragmites, water couch, kumbungee, rushes, sedges and aquatic species.*
- DR COLLOFF: Yes. Yes. Yes.
- 25 MR BEASLEY: None of the text that I read to you about river red gum and meeting flow requirements at page 28 of the draft has made its way into the final report.
- DR COLLOFF: Yes, I mean, it goes on to say:
- 30 *In the southern Basin river red gum forest - - -*
- MR BEASLEY: No, I'm coming to that.
- 35 DR COLLOFF: Okay. Right.
- MR BEASLEY: I'm coming to that.
- DR COLLOFF: Yes, sorry.
- 40 MR BEASLEY: So – but you're quite right. We'll deal with that now.
- DR COLLOFF: Yes.
- 45 MR BEASLEY: Page 28 of the draft:

*In the southern Basin, 13 of the 22 targets are not met under the 2,800 scenario.*

DR COLLOFF: Yes. Yes.

5

MR BEASLEY:

*Although, nine represented improvement relative to the baseline scenario.*

10 DR COLLOFF: Yes.

MR BEASLEY: If we go to page 35 of the final - - -

DR COLLOFF: Yes. Yes.

15

MR BEASLEY: - - - and on page 35 in the paragraph immediately above 3.5.3 - - -

DR COLLOFF: Yes.

20 MR BEASLEY: - - - in the first line after the first sentence - - -

DR COLLOFF: Yes.

MR BEASLEY: - - - there's a section that simply says:

25

*In the southern Basin, many targets are subject to having delivery constraints.*

DR COLLOFF: Yes.

30 MR BEASLEY: Again, all of your draft concerning how many targets were or were not met has not made its way into the final version of the report.

DR COLLOFF: Yes, that's right.

35 MR BEASLEY: Did you make that edit?

DR COLLOFF: No.

MR BEASLEY: Did you make the edit before that I took you to?

40

DR COLLOFF: No.

MR BEASLEY: Was that edit or – sorry, was that change discussed with you?

45 DR COLLOFF: No.

MR BEASLEY: Had it been discussed with you, what would have been your reaction?

DR COLLOFF: I would have objected to that change.

5 MR BEASLEY: Because?

DR COLLOFF: Because it wasn't accurate.

10 MR BEASLEY: It would also be fair to say, in relation to what's in the draft, the text of the draft that I've read to you compared to the text of the final report, it's hardly comprehensive, is it?

DR COLLOFF: No.

15 MR BEASLEY: Hardly comprehensive in the sense that it doesn't indicate what the actual results are of the CSIRO's work.

DR COLLOFF: That's right, yes. In the absence of the traffic lights table, it's got no - - -

20 MR BEASLEY: It has got the double whammy, hasn't it?

DR COLLOFF: Yes.

25 MR BEASLEY: It doesn't have the text telling you what the results are from the draft to the final version.

DR COLLOFF: Yes.

30 MR BEASLEY: And it also had the tables deleted.

DR COLLOFF: That's right.

35 MR BEASLEY: So no one that reads the final draft would have any idea about what targets are met and what aren't met that are expressly said both in words and in tables in the draft; correct?

DR COLLOFF: Yes. Yes.

40 MR BEASLEY: Page 29 of the draft.

DR COLLOFF: The draft, yes.

45 MR BEASLEY: Again, we're still on river red gum forests.

DR COLLOFF: Yes.

MR BEASLEY: Second paragraph on page 29 of the draft:

*In the northern Basin, six of 12 environmental water requirements for river red gum forest are met.*

5

DR COLLOFF: Yes.

MR BEASLEY: And it goes on:

10 *In the Gwydir Wetlands, three targets represent deterioration from the base line.*

DR COLLOFF: Yes.

15 MR BEASLEY:

*And one target indicates nil or no change.*

DR COLLOFF: Yes.

20

MR BEASLEY:

*This is likely to be an artefact of the hydrological modelling - - -*

25 DR COLLOFF: Yes.

MR BEASLEY:

30 *- - - where less effort has been placed on modelling water demands at this site due to substantial environmental water holdings in this catchment.*

If you go to page 34 of the final report.

DR COLLOFF: Yes.

35

MR BEASLEY: Tell me when you're there.

DR COLLOFF: I'm there.

40 MR BEASLEY: All right. Third paragraph down, you will see the words "in the northern Basin", picking up the words from your draft.

DR COLLOFF: Yes. Yes.

45 MR BEASLEY: Then the change is it then says:

*In the northern Basin, river red gum forest targets are met under the BP2,800 scenario - - -*

5 DR COLLOFF: Yes.

MR BEASLEY:

10 *- - - in the three assets of the Lachlan region, the Macquarie marshes and the Lower Darling river system. Within the Lachlan region, the Great Cumbung Swamp together with its surrounding floodplains put one of the largest strands of red gums within New South Wales. In the Gwydir Wetlands, the majority of targets are met and the MDBA state that they are “confident the total volume of the model reductions is sufficient to meet the high uncertainty frequencies specified for the nine flow indicators”.*

15

DR COLLOFF: Yes. Yes. Yes.

MR BEASLEY: Then it's a citation, MDBA 2012; take my word for it that that's the hydrological report of February 2012.

20

DR COLLOFF: Yes.

MR BEASLEY: Did you make that change?

25

DR COLLOFF: No.

MR BEASLEY: The quotation attributed to the MDBA, did someone discuss that with you - - -

30

DR COLLOFF: No.

MR BEASLEY: - - - and tell you it should be incorporated in the report?

35

DR COLLOFF: Not that I recall.

MR BEASLEY: Do you have any knowledge of how that quote found its way into the report?

40

DR COLLOFF: It would have to have been an edit by MDBA because I hadn't seen the hydrological report until our Multiple Benefits Report was pretty much finalised.

MR BEASLEY: All right. Can I ask you this then - - -

45

DR COLLOFF: I certainly hadn't read it.

MR BEASLEY: - - - did anyone at the MDBA tell you or discuss with you what their confidence that's expressed in that sentence was based on?

DR COLLOFF: No.

MR BEASLEY: The data, any opinions, any analysis?

5 DR COLLOFF: No.

MR BEASLEY: Never discussed with you?

DR COLLOFF: No.

10 MR BEASLEY: Given that, what would have been your reaction to that being included in this report, had it been run by you before the final version?

DR COLLOFF: I would have said that goes – that flies in the face of the modelling that we had done, and I would – I would want to know why MDBA were confident that the total volumes were sufficient to meet those high uncertainty frequencies. What is the basis for their assumption?

15 MR BEASLEY: You would have wanted an explanation for the confidence.

20 DR COLLOFF: Yes, yes, absolutely.

MR BEASLEY: From a scientific perspective; correct?

25 DR COLLOFF: Yes.

MR BEASLEY: Page 90 of the draft, there's a section that commences to deal with, and does deal with, the Coorong.

30 DR COLLOFF: Yes.

MR BEASLEY: Was this primarily the work of – is it Dr Lester?

DR COLLOFF: Yes, it was.

35 MR BEASLEY: So she had responsibility for this part of the draft.

DR COLLOFF: Yes.

40 MR BEASLEY: And she had been, I think you said, contracted by the CSIRO to do the work as part of your team, specifically, on the Coorong.

DR COLLOFF: That's right, yes.

45 MR BEASLEY: And her work is reflected in the draft, at least in pages 90 right through to, I think – be right through to 103, I think.

DR COLLOFF: Yes, that's right.

MR BEASLEY: Yes. So that – yes. All right. If you go to page 80 of the final report which is the commencement of discussion of the Coorong in the final report  
5 ---

DR COLLOFF: Yes.

MR BEASLEY: --- we are going to have to ask Dr Lester about this.  
10

DR COLLOFF: Yes.

MR BEASLEY: But without going through word for word, have you checked and satisfied yourself that this doesn't seem to represent much of what's in the draft at  
15 all?

DR COLLOFF: No, it doesn't. No. No.

MR BEASLEY: All right. Specifically, can I take you to – do you have any idea  
20 how that happened?

DR COLLOFF: Not really.

MR BEASLEY: Have you ever had a discussion with Dr Lester about it?  
25

DR COLLOFF: No, I haven't.

MR BEASLEY: All right. And does it surprise you?

DR COLLOFF: With ---  
30

MR BEASLEY: I'll rephrase that. I'll rephrase that.

DR COLLOFF: Yes. Yes.  
35

MR BEASLEY: The first time you – no, I will rephrase that again. Were you aware of the substantial change to this section before publication of the multiple benefits report and endorse it?

DR COLLOFF: I – I was aware of the changes that had been made, yes, when I saw  
40 the final version of the report.

MR BEASLEY: No, before it was published.

DR COLLOFF: Before it was published, was I aware that changes had been made?  
45

MR BEASLEY: Yes.

DR COLLOFF: Yes, I was aware that changes were – were made.

MR BEASLEY: To this Coorong section?

5 DR COLLOFF: Yes.

MR BEASLEY: Were they discussed with you in - - -

DR COLLOFF: No.

10 MR BEASLEY: Right. And – all right. Can I take you to page 103 of the draft. This is still dealing with the Coorong.

DR COLLOFF: Yes.

15 MR BEASLEY: And on 103, in the paragraph before – the last paragraph above section 3 point - - -

DR COLLOFF: Yes.

20 MR BEASLEY: Sorry, 3.9.

DR COLLOFF: Yes.

25 MR BEASLEY: There’s – likewise, the ecosystem states model provides a simulation of the types of ecological conditions, etcetera. Talks about the limitations.

DR COLLOFF: Yes.

30 MR BEASLEY: Then in the paragraph below:

*In conclusion under the 2,800 scenario, substantial improvements were seen relative to the baseline scenario for the Coorong Lower Lakes and Murray Mouth both in terms of the frequency with which environmental water requirements were met and based on the hydro dynamics, ecosystem states and mudflat analysis of the Coorong. The effects of the worst dry conditions within the model run still have the potential to cause ecological damage to the region, however, and the 2,800 scenario does not mimic all of the positive effects under the without-development scenario, particularly with respect to very high flow conditions. The inability of the 2,800 scenario to achieve the benefits of the without-development scenario is also reflected in its inability to meet all environmental water requirement targets, particularly under very dry conditions.*

45 DR COLLOFF: Yes.

MR BEASLEY: Take my word for it, you can go back to page 88 of the final report  
- - -

5 DR COLLOFF: Yes.

MR BEASLEY: - - - and you will see that that entire paragraph, which I started  
reading “in conclusion” has been deleted.

10 DR COLLOFF: Yes.

MR BEASLEY: Or doesn’t – sorry, does not appear - - -

DR COLLOFF: Does not appear.

15 MR BEASLEY: - - - in the final version of the report.

DR COLLOFF: Yes.

MR BEASLEY: Was that something that you were aware of prior to the publication  
20 of the report?

DR COLLOFF: No.

MR BEASLEY: Would it be better to ask Dr Lester her views than yours on that, or  
25 do you have a view about what you would have said had you been asked to endorse  
the removal of that paragraph?

DR COLLOFF: I can’t recall precisely whether Dr Lester was consulted about any  
30 changes or not, or whether she had submitted - - -

MR BEASLEY: All right. Perhaps you’ve misunderstood my question.

DR COLLOFF: Okay. All right.

35 MR BEASLEY: My question was more should I ask her this question more than  
you - - -

DR COLLOFF: Yes.

40 MR BEASLEY: - - - and I will ask it of you anyway, and you can tell us whether  
you can give a complete answer. As the team leader of this part of the report, what  
would have been your reaction to someone, whether it was someone at the CSIRO or  
MDBA saying that paragraph has got to go?

45 DR COLLOFF: I would have not – I wouldn’t have been happy with that at all.

MR BEASLEY: Because?

DR COLLOFF: Because it doesn't represent the results of the modelling to exclude it. It changes the nature of the report on the Coorong.

5 MR BEASLEY: And, again, to use a word you used earlier, it very much in – I would suggest to you, a form of censorship - - -

DR COLLOFF: Yes.

10 MR BEASLEY: - - - of the results by the CSIRO team.

DR COLLOFF: Absolutely.

15 MR BEASLEY: Yes. All right. Just – there's – I know there's many, but the report can be read. There are other examples of this, Commissioner, but I honestly think that is comprehensive enough.

THE COMMISSIONER: Yes.

20 MR BEASLEY: I'm very conscious of not putting words into your mouth, Dr Colloff, so how would you categorise - - -

DR COLLOFF: Yes.

25 MR BEASLEY: - - - or label from a scientific point of view, first of all, the deletion of the traffic lights tables from your draft to the final draft?

DR COLLOFF: Well, it was censorship.

30 MR BEASLEY: How would you categorise in scientific terms the changes in text from – that I've taken you through from the draft of your report to the final version of the report?

DR COLLOFF: The only - - -

35 MR BEASLEY: Is that more than censorship?

DR COLLOFF: Yes, it is. In combination with the deletion of data, it's deceptive.

40 MR BEASLEY: Thank you. Is that, amongst other things, why in paragraph, I think it's 29 of your statement, a mediator had to be called in to assist with the staff reaction to working on this project?

45 DR COLLOFF: The mediator was called in because, by the end of the project, staff morale was so low as a result of not only a complex and difficult project having to be done in very short order, but also constant interference from MDBA, which led to less than optimal interactions amongst our own project staff.

MR BEASLEY: Less than optimal interactions amongst CSIRO staff, but between each other or with - - -

5 DR COLLOFF: Yes.

MR BEASLEY: Right. And can you - - -

DR COLLOFF: Everyone was under pressure, so they were stressed. So they were behaving badly.

10 MR BEASLEY: Yes. Right. Were the negative impacts of that felt by all members of your team?

DR COLLOFF: Some more than others.

15 MR BEASLEY: Right. Did it go beyond just your team?

DR COLLOFF: Yes, it did.

20 MR BEASLEY: So far as you were aware.

DR COLLOFF: Yes.

MR BEASLEY: So was it all the contributors?

25 DR COLLOFF: All 30-plus staff were affected some way or another.

MR BEASLEY: And was the primary – you’ve mentioned interference. Was that the primary cause of the unhappiness or also – and perhaps interference picks up the changes that the MDBA was seeking to have made to the report.

30 DR COLLOFF: I think - - -

MR BEASLEY: Was that the primary driver?

35 DR COLLOFF: I think it was the significant driver. The other – the other driver that we were concerned about was the fact that senior CSIRO staff – in their interactions with MDBA, we felt that we weren’t being supported by senior CSIRO staff.

40 MR BEASLEY: Right. And in particular - - -

DR COLLOFF: Carol Couch.

45 MR BEASLEY: Right. And that lack of support was manifested in what manner?

DR COLLOFF: It being - - -

MR BEASLEY: Does this relate to the fact that, ultimately, changes were made to the final version of the report that were MDBA input rather than CSIRO input?

5 DR COLLOFF: Yes. So, basically, if MDBA wanted a change made, then we had to go – we were basically told we had to go along with it.

MR BEASLEY: Did you have a discussion with Ms Couch about that?

10 DR COLLOFF: On several occasions, yes.

MR BEASLEY: And can you tell us what – doing the best you can, words to the effect, what you said to her about those matters?

15 DR COLLOFF: Well, I said I wasn't – I wasn't happy and – and that – said she was compromising our independence as a science organisation, and it was misrepresenting the data that we had found.

MR BEASLEY: First of all, was that view that you expressed to her unique to you or was that widespread?

20 DR COLLOFF: Certainly not. It was widespread.

MR BEASLEY: It – was it closer to universal than unique to you?

25 DR COLLOFF: Certainly, within my team, everybody felt the same way.

MR BEASLEY: Right. And what was Ms Couch's response to you saying that?

DR COLLOFF: In brief, it was, well, we don't have a choice.

30 MR BEASLEY: And what did you take that to mean?

DR COLLOFF: That we had to do what we were told.

35 MR BEASLEY: Why?

DR COLLOFF: Because if we didn't do what we were told, there was a risk that we wouldn't get paid for the work that we had done.

40 MR BEASLEY: Right.

DR COLLOFF: Or there was a perception that we wouldn't get paid. We did after all, have a contract.

45 MR BEASLEY: Yes. I was going to say was that based on – did you hear anything about any threats along those lines or - - -

DR COLLOFF: Certainly the project leader, Nev Crossman, told me that – that there had been those sorts of threats made.

MR BEASLEY: By?

5 DR COLLOFF: But I never – but I never - - -

MR BEASLEY: You don't have direct knowledge, I understand that.

10 DR COLLOFF: I – I – I don't – I never heard it. I don't know who made those threats, but that was a view from senior CSIRO staff. So it was said - - -

MR BEASLEY: Right. He recounted words to that effect to you.

15 DR COLLOFF: He – he – yes, he did. Yes.

MR BEASLEY: All right. Whose idea was it to bring in the mediator?

DR COLLOFF: I think that was a consensus view from the project team. They

20 knew that we couldn't just walk away and just go and do other stuff, that we needed some closure on what had been a very dysfunctional project, and so another CSIRO chief, who was well respected and trusted, Dan Walker, was brought in as mediator.

MR BEASLEY: Right. Was he still currently – was he still at the CSIRO or he had

25 been?

DR COLLOFF: Yes. He was at CSIRO.

MR BEASLEY: Right. And what - - -

30 DR COLLOFF: He was the Chief of Sustainable Ecosystems.

MR BEASLEY: All right. So he was given the task of bringing closure to this

35 project.

DR COLLOFF: Yes. Yes.

MR BEASLEY: Can you tell us the details of that. How was that managed?

40 DR COLLOFF: Yes. So the staff were invited to write an account of their experiences, and that's what I did and sent it to the Executive Officer of the flagship, Rose Davis, who was collating that information.

MR BEASLEY: Did other staff members do the same thing?

45 DR COLLOFF: Other staff members did the same thing.

MR BEASLEY: So these are – so it was recorded in writing.

DR COLLOFF: It was recorded in writing. Yes.

5 MR BEASLEY: All right.

DR COLLOFF: And also – also following – or around about the same time a meeting was convened that Dan facilitated.

10 MR BEASLEY: So he had had the benefit of reading people’s written response.

DR COLLOFF: I don’t know if he read that statement beforehand.

MR BEASLEY: Right. Okay.

15 DR COLLOFF: I’m not sure, but it was - - -

MR BEASLEY: It was written before, what, the meeting?

20 DR COLLOFF: Yes. That – yes, absolutely.

MR BEASLEY: So he may or may not have read it. Yes.

DR COLLOFF: Because I wrote mine – I couldn’t attend the meeting or – or I chose not to. I can’t remember which. Maybe I had another appointment or another engagement.

25 MR BEASLEY: Yes.

30 DR COLLOFF: But other staff certainly wrote something down and then attended the meeting that Dan facilitated.

MR BEASLEY: Right. And given you weren’t at the meeting, you only have a second-hand account of it.

35 DR COLLOFF: I’ve only got a second-hand account. Yes.

MR BEASLEY: And in terms of that second-hand account, would I be right in assuming that people gave an oral venting of their feelings consistent with what they

40 - - -

DR COLLOFF: Yes. I think – I think that’s reasonable.

MR BEASLEY: It was an opportunity for them to say what they wanted.

45 DR COLLOFF: Yes, it was, absolutely. That was the whole point. Yes. Yes. Yes.

MR BEASLEY: All right. And the process was concluded at the end of the of that meeting, was it?

DR COLLOFF: Yes, it was.

5 MR BEASLEY: All right.

DR COLLOFF: Can I add that - - -

10 MR BEASLEY: Yes.

DR COLLOFF: - - - I have never in 22 years at CSIRO had to do a process like that at the end of a project.

15 MR BEASLEY: Right. So that was - - -

DR COLLOFF: Unique.

MR BEASLEY: In terms of unique, not only in terms of the project you worked on, but you hadn't heard of it being done for any other project?

20 DR COLLOFF: No.

MR BEASLEY: All right. That leads to what I wanted to ask you about those reports, but I wanted to circle back to a matter in your expert statement and in relation to the work you're currently doing.

25 DR COLLOFF: Yes.

MR BEASLEY: In paragraph 6 of your statement, you say – you tell us that the work you're doing at the CR – sorry, ANU now - - -

30 DR COLLOFF: Yes.

MR BEASLEY: - - - is research on changing the ways that people think and act on adaptation to climate change.

35 DR COLLOFF: Yes.

MR BEASLEY: I'm going to ask you what that work and research involves.

40 DR COLLOFF: Yes.

MR BEASLEY: But before I do that, you're aware, I know, that the Water Act, first of all, as one of the mandates on the Basin Authority exercising any of its functions, has to act on the basis of what's said in the Act to be the best available science.

45

DR COLLOFF: Yes.

MR BEASLEY: You're also, I take it, aware that the Basin Plan, in terms of the setting of a long-term average sustainable diversion limit, does not factor in any  
5 projections for climate change.

DR COLLOFF: That's right.

MR BEASLEY: And you're also aware of the CSIRO's own work in relation to  
10 climate change projections throughout the Basin.

DR COLLOFF: Yes.

MR BEASLEY: And you've been, to use a colloquialism, involved in that space  
15 since the CSIRO did a 2008 report.

DR COLLOFF: Yes. Yes.

MR BEASLEY: And knowledge and research in relation to climate change  
20 projections is part of your current work.

DR COLLOFF: Yes, it is.

MR BEASLEY: Do you consider, ignoring for the purposes of setting a sustainable  
25 diversion limit in the Basin Plan, climate change projections as leaving out part of what is the best available science?

DR COLLOFF: Yes. I do consider that it's leaving out best available science.

MR BEASLEY: Why?  
30

DR COLLOFF: Because for the simple reason the Basin Plan came out in 2012.  
The sustainable yields audit that contained estimates of reductions in inflows to  
Basin rivers came out in 2008. There was four years that provided an opportunity for  
35 the Authority to address the climate change issue.

MR BEASLEY: What is – can you explain to the Commissioner exactly what your  
current work and research involves in relation to how people think and act on  
adaptation to climate change.  
40

DR COLLOFF: Yes. All right. So – so, essentially, the issue around adaptation,  
Commissioner, is around essentially changing or reframing their relationship  
between – if their livelihoods depend on water in some shape or form, trying to  
reframe how they use water, how they're likely to change the way they use water in  
45 the future, and creating new options. For example, for an irrigation community that  
currently uses a particular volume of water to produce cotton, they might start to  
think about adaptation to climate change in terms of using dry land varieties of

cotton that might be – that they could use in a rotation system with other dry land crops, such as sorghum, in a way that in the future, when they start to see reductions in water availability for irrigation, that they’ve already gone the route where they started to – to adapt.

5

MR BEASLEY: I should have – yes.

DR COLLOFF: Much easier to do that than when those changes in water availability occur.

10

MR BEASLEY: I should have precursed this by asking you – I’m right, aren’t I, that if we summarise it in perhaps a very generalised way - - -

DR COLLOFF: Yes.

15

MR BEASLEY: - - - the research of the CSIRO and the research since in relation to climate change projections for the Basin is essentially it’s likely to be hotter and it’s likely to be dryer?

20 DR COLLOFF: It’s likely to be hotter and it’s likely to be dryer. Yes.

MR BEASLEY: All right. Sorry.

DR COLLOFF: Yes. Yes. Yes. Sorry.

25

MR BEASLEY: I – now, I interrupted you giving a complete answer to my - - -

DR COLLOFF: No. No. So – so that’s – that’s one example of a clear impact - - -

30 MR BEASLEY: Are there examples in relation to wetlands or environmental assets that are sought to be protected?

DR COLLOFF: Yes. Okay. Of course. So if you take, for example, a situation that I’ve just given of an irrigation community that has started to shift to a mixed dry land and irrigation cropping system and they have a wetland on their doorstep that is a significant environmental asset and attracts tourism visitation, part of the options for adaptation would be how people in that community balance their livelihoods between income from agriculture and income from tourism. So, in that situation, the climate adaptation approach would – would – would look at how you use water for the environment and for agricultural production in a way that optimises or – sorry, that – that – that – in a way that doesn’t close off options for the future.

40

MR BEASLEY: What’s the – what’s your view in relation to the downside of the Basin Plan not, at least in relation to sustainable diversion limit, incorporating any projections for climate change?

45

- DR COLLOFF: Well, the short answer to that is that if you – the longer you wait to actually think about how you plan for climate change, the risk is that you start closing off options. For example, if you start to think about that transition I described, some cotton producers have already gone down that road. If you compare that with somebody who says, “Well, I can just do business as usual until 2030 or 2025,” and suddenly they’re faced with the fact that their water licence – or the water available to them is substantially reduced, they haven’t had that long lead-in time to do the adaptation. That has gone.
- 5
- 10 MR BEASLEY: But the Basin Plan is subject to a reconciliation purpose in - - -
- DR COLLOFF: Yes.
- MR BEASLEY: Reconciliation in 2024 and - - -
- 15 DR COLLOFF: Yes, it is.
- MR BEASLEY: Is that a reason not to factor in climate change projections in 2012 or now?
- 20 DR COLLOFF: I think you’ve got to go back before 2012 – back to 2007.
- MR BEASLEY: Yes. You answer the question any way you want to answer it.
- 25 DR COLLOFF: Yes. Look, I think it’s a missed opportunity and it stores up trouble for the future.
- MR BEASLEY: For the reasons you’ve expressed.
- 30 DR COLLOFF: Yes. Yes.
- MR BEASLEY: And when you say shutting off options, you mean the door might be shut because the climate change has happened and the options - - -
- 35 DR COLLOFF: Yes. Look, my view is – is that the Basin Plan is a product of the Water Act. The Water Act has basically created this dichotomy between water for production and water for the environment. When you start to factor in climate change to that, that’s – that’s a game-changer, to – to use a colloquialism, because what that then does – what climate change does is it forces you to think about what –
- 40 the totality of the water resource that’s going to be available to you in the future as a community and how you might partition that between water for the environment and water for production in ways that add to the livelihood and wellbeing of that community as a whole.
- 45 MR BEASLEY: Would I be right – sorry. I cut you off; you keep going.

DR COLLOFF: It gets you out of that false dichotomy between water for production and water for environment and allows you to start to reframe it as water for adaptation. And what I mean by that - - -

5 MR BEASLEY: Yes.

DR COLLOFF: What this – the reality of that is – for example, if you’ve got a community that needs 50 gigalitres of irrigation water to survive and you’ve got – you’ve got a red gum swamp that needs 50 gigalitres of water to survive, instead of saying either-or, you start to think, well, under climate change, if we continue to supply 50 gigs of water, which is what that red gum swamp requires to be sustainable, is there a point in the future where we can no longer meet those targets, that that red gum swamp is no longer going to be sustainable? If that’s the case and if you can predict that with a reasonable degree of accuracy, you’ve got to ask the question of whether - - -

MR BEASLEY: You’re wasting water.

DR COLLOFF: - - - you’re wasting water and whether you’ve got to start thinking about a smaller area of swamp that is sustainable because that water that you waste could be used by that community to then transition from irrigation into dry land cropping or other means of agricultural production. That’s the – that’s, in a nutshell, what I do in terms of climate change - - -

25 MR BEASLEY: And the analysis can also work in reverse, I imagine.

DR COLLOFF: Yes. Yes. It - - -

MR BEASLEY: It enables people whose businesses and livelihoods depend on water to make decisions that in that part of Australia are livelihood dependent upon a certain amount of water may not be viable and we need to transition into something else.

DR COLLOFF: That’s right. The important thing about this – the approach that I outlined is that it engages communities in having discussions about what they deem to be plausible scenarios for the future and to have some control and some say about how those futures might be agreed upon and how they then go forward and start to implement that stuff.

MR BEASLEY: And leaving out the detail of what we’ve discussed, one obvious result of leaving out any projections for climate change in the setting of a sustainable diversion limit is that you set a sustainable diversion limit in the absence of data that represents, amongst other things, the best available science - - -

45 DR COLLOFF: Yes. Yes.

MR BEASLEY: - - - and might be an important input into that what that sustainable diversion limit is, not just for the Basin as a whole, but for individual valleys.

5 DR COLLOFF: Yes. Well, that's right. In my published research, I went through the – all the modelling scenarios for every wetland in – every major wetland in the – the Basin and I looked at how changes in inflows were going to change the flood regimes of each of those wetlands. What I found was significant changes in the Southern Basin, inasmuch as the period between floods was much longer, the duration of floods was much smaller, those sorts of – those sorts of changes.  
10 Changes in the Northern Basin were less pronounced, and that's partly due to a different history of – of water resource development in the Northern Basin than the South, but the question that I then asked was to say, with the climate change scenario I used and with those changes in flood regimes, could those targets that exist in the Basin Plan be met? And the answer was no – none of them.

15 MR BEASLEY: Can you – when was that – that's a paper published - - -

DR COLLOFF: That's a paper published in 2016.

20 MR BEASLEY: Right. And what's its title? We can get that off you. Where was it published?

DR COLLOFF: It was published in a journal called Ecological Applications.

25 MR BEASLEY: And I assume the final version of that represents your own work and wasn't edited by the MDBA.

DR COLLOFF: It certainly wasn't. I did.

30 MR BEASLEY: Sorry. I shouldn't have said that – couldn't resist.

THE COMMISSIONER: Is that a publication – present what is still your views?

35 DR COLLOFF: Yes, it is. Yes. Yes.

MR BEASLEY: You can give us the paper later. Yes.

DR COLLOFF: I can – I will send the senior solicitor a copy of – of – of that paper. Yes.

40 THE COMMISSIONER: Thank you.

MR BEASLEY: Thank you. I would be grateful. I don't have any more questions on climate change, unless you do, Commissioner.

45

THE COMMISSIONER: I should have asked this about climate change. The Act, I think, as you've drawn to attention, requires, in various ways, climate change to be taken into account by the Authority.

5 DR COLLOFF: Yes.

THE COMMISSIONER: And in particular, in making the Plan. And one of the most-obvious ways in which it will come to be taken into account is in the requirement that decision-making processes should effectively integrate both long-  
10 term and short-term economic, environmental, social and equitable considerations. The plan is required to identify risks and strategies to manage those risks - - -

DR COLLOFF: Yes.

15 THE COMMISSIONER: - - - and purports to do so in chapter 4, part 2 of the Plan, where the specified risk of climate change is stipulated to be managed by strategies, including the promotion of a risk-based approach to water resource planning and management as well as improving knowledge of the impact on the Basin of – on the Basin water resources of climate change.

20

DR COLLOFF: Yes.

THE COMMISSIONER: Am I correct in this: that I can't find in the ESLT report or, indeed, in the CSIRO report any specific, quantified contribution of climate  
25 change considerations to reaching the ESLT. Is that right?

DR COLLOFF: That's correct.

THE COMMISSIONER: One way to deal with climate change that may occur in  
30 the future would be to have means of adjusting what I'm going to call the allocation of water resources.

DR COLLOFF: Yes.

35 THE COMMISSIONER: But a fundamental question there would be to avoid the kind of possible waste that you raised in your example.

DR COLLOFF: Yes.

40 THE COMMISSIONER: And that would be waste in the sense that if climate had changed so that what was formerly a red gum forest without artificial intervention will just become arid - - -

DR COLLOFF: Dry land, yes.

45

THE COMMISSIONER: Dry land.

DR COLLOFF: Yes.

THE COMMISSIONER: That it may be it would be right to cease watering of that area: is that correct?

5 DR COLLOFF: Yes - - -

THE COMMISSIONER: Just as a hypothetical.

10 DR COLLOFF: Yes, as a hypothetical.

THE COMMISSIONER: But that would involve, would it not, projections of climate change?

15 DR COLLOFF: It would.

THE COMMISSIONER: And some kind of priority allocation?

DR COLLOFF: Yes. It would also - - -

20 THE COMMISSIONER: So - - -

DR COLLOFF: Can I – can I just mention - - -

25 THE COMMISSIONER: Yes.

DR COLLOFF: It would also require – you really have to go back and look at the Water Act and its intent and purpose.

30 THE COMMISSIONER: I’ve tried to do that from time to time.

DR COLLOFF: Yes. Yes. Yes. And, of course, the Water Act doesn’t mention anything about prioritisation, or triage, as it’s widely referred to, but, as you say, you could give consideration to some of those issues under the Act as it stands. I don’t

35 want to try and interpret the Water Act, it’s not my job, but I think that the major concern is - - -

MR BEASLEY: You’re welcome to it.

40 DR COLLOFF: I think – I think – you know, the – the – the concern I have in regard to the issue of climate change is that this issue of how you create options – not just for livelihoods and communities and so on, but how you create options for policy implementation in the future. If a consideration of reduction in the size of wetlands

45 is not part of your consideration, you are locking yourself into a particular set of targets and a particular set of volumes of water that are unlikely to be able to be met in the future, and that’s the real – that’s the real effect of this volumes, assets, targets-type approach. It is not innately adaptive.

THE COMMISSIONER: Yes, and so that the strategy that has been stipulated in 4.03 of the plan to address the identified risk, including climate change, includes improving knowledge of water requirements within the Basin.

5 DR COLLOFF: Yes.

THE COMMISSIONER: Including the impact of climate change on water requirements.

10 DR COLLOFF: Yes.

THE COMMISSIONER: That seems to involve a continuous – that is, constant attention to what is called the best available knowledge as well as consultation with relevant stakeholders to make such adjustments.

15

DR COLLOFF: Yes. Yes. Yes. Yes.

THE COMMISSIONER: And those adjustments may involve, as it were, reducing environmental watering in certain places.

20

DR COLLOFF: Yes. Yes. And - - -

THE COMMISSIONER: And, of course, that may involve reducing the sustainable diversion limit.

25

DR COLLOFF: Yes. The – in 2008 the CSIRO's Sustainable Yields Audit was published. That was the assessment of water resources in the Basin, including assessments of climate change. That work is now 10 years old. It's still the best available information that translates changes in mean surface temperature and rainfall into changes in inflows to river systems. That work is desperately in need of updating in the light of new modelling on global estimates of climate change and also downscaled estimates of regional climate change, and if MDBA/Commonwealth are fair dinkum about this stuff, they would be asking CSIRO to repeat that Sustainable Yields Audit and look at changes in inflows in 2018 and beyond compared with the estimates that they made in 2008.

30

35

THE COMMISSIONER: The plan - - -

DR COLLOFF: This is – this is fundamental data that you need to be able to plan for climate change.

40

THE COMMISSIONER: The Plan seems to be explicit: that the Authority must have regard to the strategies in 4.03 when undertaking its functions.

45 DR COLLOFF: Yes.

THE COMMISSIONER: Now, its functions will include – after it has initially made the Plan, it, of course, involves adjustments of the Plan.

DR COLLOFF: Yes.

5

THE COMMISSIONER: And any adjustments to the Plan, therefore, must be undertaken having regard to strategies including the improvement of knowledge of the implication of climate change.

10 DR COLLOFF: Yes. That's right. Exactly. So I'm saying - - -

THE COMMISSIONER: I may be wrong, but – and if I've missed something, I hope it will be pointed out to me, but in none of the material that has been published with respect to the adjustment and amendment that is optimally called 605 giganlitres  
15 - - -

DR COLLOFF: Yes.

THE COMMISSIONER: - - - although it turns out to be a bit less, I've not seen any  
20 material that appears to take any account of the effect of climate change.

DR COLLOFF: No, I haven't either.

THE COMMISSIONER: So that if they've had regard, as they are required by  
25 4.03(2), to that strategy, it is the kind of regard one pays to something which one then ignores.

DR COLLOFF: I think that's a reasonable assessment. I – I have seen no serious  
30 effort by MDBA to – to - - -

THE COMMISSIONER: Is this a budgetary question? Is there not enough money  
to pay for the science?

DR COLLOFF: Of course – of course that's not the case.

35

MR BEASLEY: Can I just put something on the record because it might assist with  
the discussion you're having with the witness. It's from the CSIRO's – a different  
CSIRO report. It's called The Science Review of Estimation of an Environmentally  
Sustainable Level of Take for the Murray-Darling Basin. It's a report of November  
40 2011. It's RCE9 as an exhibit. At page 19, the authors of this CSIRO report say this  
under a heading Has the Use of Scientific Information been Consistent and  
Defensible? That is, has the use by the MDBA of scientific information been  
consistent and defensible in terms of setting the ESLT? And at the bottom of page  
19 they say:

45

*The modelled historical without development time series has been used as the  
sole basis for setting objectives for key environmental assets and for*

5            *determining likely water availability. Given that scenarios of water availability in the Basin do exist for a range of possible climate futures, it is not clear why an investigation of the risk climate change poses to the environmental objectives of the Basin Plan has not been undertaken. MDBA has –*

I'm over at page 20 now:

10            *MDBA has made a policy choice not to directly address the projected impacts of future climate change on water availability in the determination of SDLs for the proposed Basin Plan. MDBA has determined SDLs using the historical climate and inflow sequences –*

15            That's 1895 to 2009:

20            *...and inflow sequences and has not modelled the consequences of future climate on the ability to meet the hydrologic targets under the proposed SDLs. No view has been given on whether the ecological targets would be changed should the climate change as projected. If climate change impacts do unfold as projected, lower SDLs would be required to maintain the level of environmental protection offered by the currently proposed SDLs. This represents a significant risk in the longer term and a smaller risk in the short term. The panel understands MDBA's policy approach to climate change to be an extension of an underlying policy position of "not requiring a change to water users' rights". The Australian Government's policy position of "bridging the gap" by requiring entitlements means the Basin Plan will not require a change in entitlement reliability. Future climate change is expected to reduce entitlement reliability, both for irrigators and the Commonwealth Environment Water Holder. The policy position on climate change has been explained to the panel by MDBA as "accepting the climate change risk-sharing amongst users, that is, represented, in the current water sharing plans".*

35            Now, obviously, there's an issue about whether that policy properly reflects the statute.

THE COMMISSIONER: Thank you very much.

DR COLLOFF: Thank you, Commissioner.

40            MR BEASLEY: So we've got 10 minutes till Mr Cosier. Thank you.

**<THE WITNESS WITHDREW**

**[2.51 pm]**

45            MR BEASLEY: We might adjourn, Commissioner, to set the Skype up.

THE COMMISSIONER: Adjourn till 3 o'clock?



MR COSIER: That's correct.

MR BEASLEY: And deputy general of Science and Information of the New South Wales Department of Infrastructure, Planning and Natural Resources?

5 MR COSIER: That's correct.

MR BEASLEY: And an environmental policy advisor to Senator Hill when he was the Commonwealth Environment Minister?

10 MR COSIER: That's correct.

MR BEASLEY: And you've provided the Commission with a statement dated 24 June 2018?

15 MR COSIER: Yes, that's correct.

MR BEASLEY: And you affirm that that statement is true and correct?

20 MR COSIER: I do.

MR BEASLEY: And you've got a copy of that statement in front of you.

MR COSIER: Yes, I have.

25 MR BEASLEY: All right. I just want to ask a few questions of clarification in relation to the statement and commencing under the heading under paragraph 5 Process to Reach 2,750 Gigalitres.

30 MR COSIER: Yes.

MR BEASLEY: You were appointed to what was just called or titled the Basin Testing Committee in late 2010, was it, or early 2011?

35 MR COSIER: I'm not – I'm not precisely sure of the date that - - -

MR BEASLEY: All right. Was it around the time that Mr Knowles was first made the chairman of the Basin Authority?

40 MR COSIER: Yes. So it was either late 2010 or early 2011.

MR BEASLEY: Yes, I think Mr Taylor resigned as chairman of the Basin Authority in December 2010.

45 MR COSIER: .....

MR BEASLEY: So perhaps it was early 2011?

- MR COSIER: Yes, and since I gave the statement, I have checked my diary and I do have diary notes for meetings of that Testing Committee in around April 2011.
- 5 MR BEASLEY: Right. Okay. Was the first meeting that you've got a record of April 2011?
- MR COSIER: I would have to check. I think there might have been one earlier than that but I would need to check that - - -
- 10 MR BEASLEY: All right. Now, having these diary entries – is something you've just looked up since the time you've provided your statement?
- MR COSIER: Yes, that's correct, yes.
- 15 MR BEASLEY: All right. Are these merely entries of attending a particular meeting or do they also contain notes of the meetings?
- MR COSIER: Simply attending the meeting, and I couldn't even guarantee their accuracy there either.
- 20 MR BEASLEY: Okay. But you've got copies of those, if we need them?
- MR COSIER: Yes.
- 25 MR BEASLEY: Yes. We can – all right. Did you know Mr Knowles prior to him inviting you to be part of the Basin Testing Committee?
- MR COSIER: Yes. In fact, when I was Deputy Director-General in the New South Wales department, he was my Minister.
- 30 MR BEASLEY: Okay. So you had a professional relationship.
- MR COSIER: That's correct.
- 35 MR BEASLEY: All right. And did he, when he appointed you to the Basin Testing Committee, did he explain why he particularly extended that invitation to you?
- MR COSIER: Yes, he had inherited the Murray-Darling Basin Authority board, and what he was keen to do was to bring a group of people around him that he – he knew and who knew him to help him, at the beginning of the process, to re-establish trust in the community and he was looking for guidance and advice from what is now called the Basin Testing Committee. It was an informal process, rather than a formal part of the Authority's governance structure.
- 40
- 45 MR BEASLEY: All right. Was this his idea as a means of restoring trust?

MR COSIER: I presume so. Certainly, it was Craig that spoke to me about the process, yes.

5 MR BEASLEY: All right. And when we're talking about restoring trust, you're referring to, I think what is notoriously well known concerning the Basin – well, at least, parts of the Basin community's reaction to the publication of the guide to the Basin Plan in October 2010.

10 MR COSIER: That's correct.

MR BEASLEY: And that reaction by, at least, some people in Basin communities was fairly negative.

15 MR COSIER: That would be an understatement, yes.

MR BEASLEY: All right. I suppose the fact that the guide was burnt might make the words fairly negative an understatement.

20 MR COSIER: Yes, but I guess the irony of the burning of the guide was it happened ..... being one of the greatest beneficiaries of water reform in Australia has been, in terms of ..... as part of that process.

25 MR BEASLEY: Well you can't expect people who burn books to be particularly sensible, but, in any event, there was a negative reaction to the publication of the guide.

MR COSIER: That's correct.

30 MR BEASLEY: Now, who else was on the Basin Testing Committee with you? You've mentioned in your statement Mal Peters. Who was Mr Peters – sorry, not who was he. What was his qualification to be on the Testing Committee, as you understood?

35 MR COSIER: Yes, I'm struggling to give you more information than I have done in my statement because I don't have any records of that process.

MR BEASLEY: You didn't know Mr Peters before - - -

40 MR COSIER: Yes, I knew Mr Peters. Mal Peters, when I knew Mal, was the president of the New South Wales Farmers Association.

MR BEASLEY: Right. Farmers Association or Farmers Federation? You might be right.

45 MR COSIER: Farmers – I think it's called association in New South Wales.

MR BEASLEY: Right. Okay. Yes. Sorry, go on, you knew him in that position.

MR COSIER: Well, both myself and Craig Knowles knew Mal - - -

MR BEASLEY: He was an irrigator, I take it?

5 MR COSIER: I don't know that for a fact, actually.

MR BEASLEY: Okay.

10 MR COSIER: But Mal as chairman of the New South Wales Farmers Association worked with myself and Minister Knowles, as he was then, in establishing new native vegetation reforms in New South Wales and the establishment of catchment management authorities at the time.

MR BEASLEY: Right. Right.

15

MR COSIER: So we had a very long and detailed relationship, both of us, with Mal Peters.

20 MR BEASLEY: All right. And you also mentioned Mr Jeff Angel. Did you know Mr Angel?

MR COSIER: Yes. So Jeff is the director of the Total Environment Centre in Sydney and Jeff, equally, with Mal was part of the group of people that facilitated that native vegetation reforms with Craig Knowles.

25

MR BEASLEY: Right. And then there were some irrigators who you can't remember?

30 MR COSIER: Yes, I apologise for that, but I did check my records and I don't have records of the membership of the committee, so - - -

MR BEASLEY: That's all right. And how many people, approximately, were on the committee?

35 MR COSIER: I would say there's probably eight to 12 people.

40 MR BEASLEY: All right. And when Mr Knowles appointed you to the committee – and we understand that this is going back seven years, so we don't expect – we only expect you to do the best you can in terms of words to the effect of what conversations were, but he expressed a desire, did he, for this committee to help him calm things down in Basin communities and restore some trust in the MDBA?

45 MR COSIER: That was the first step that he – that he said he wanted to do, but his overall intention was to facilitate the development of the Basin plan in a more calm and rational manner than had been the case at the release of the guide.

MR BEASLEY: Was that an implied criticism that consultation in relation to the guide could have been better?

MR COSIER: Yes, I think you could reasonably assume that, yes.

5

MR BEASLEY: Was that something you discussed, or you don't remember?

MR COSIER: Look, I don't want to put words in people's mouths, but there was certainly a prevailing view in the Testing Committee and elsewhere that there was a desperate need to re-establish trust and get a more consultative process in development of the Basin Plan.

10

MR BEASLEY: You would never make a lawyer, Mr Cosier, if you don't want to put words in people's mouths, but paragraph 11 of your statement, you give a recollection of what happened at the first committee meeting and you were told that the accountancy firm KPMG had been asked to do an analysis of – I assume it's the economic impacts of a 4,000 gicalitre recovery for the environment as a plan.

15

MR COSIER: Yes, that's right, and what disturbed me about that analysis was it was very quick and – quick and dirty to use the expression.

20

MR BEASLEY: Well, just pausing there, though. Where did the – going back a step, we know that the guide had some – a suggested range of volume of water needed for the environment to meet certain ecological targets, certain environmental watering requirements, and I think the guide gave a range of 3,856 gicalitres for a high uncertainty achieving environmental watering requirements and 6,983 gicalitres for low uncertainty. So that had been what the guide had published. Did you – were you told at this first meeting why 4,000 was chosen, bearing in mind I should complete that by saying the guide, of course, then modelled 3,000, 3,500 and 4,000 gicalitres. Was any explanation given to you why they were analysing 4,000 at the time? If you don't recall, please say so.

25

30

MR COSIER: No, I can recall, I just need to – I don't want to be misleading, that's all. So – because there were a lot of numbers thrown around in the last 10 years on the Basin, so I just want to be very careful - - -

35

MR BEASLEY: Well, let me try and help you in terms of what you've actually got in your statement. It says first:

40

*At our first meeting, we were advised that KPMG had been asked to do an analysis of 4,000 gicalitres on –*

and I will interpret that statement as – sentence as being impacts on the economies of regional communities. Was that information – first of all, was that information that was given to you by Mr Knowles?

45

MR COSIER: Yes, in that – in that meeting with the representative of KPMG. So look - - -

5 MR BEASLEY: Right. Sorry, just stopping there. In terms of anyone with anything to do with the Basin Authority, outside of Mr Knowles who was the chairman, at your Testing Committee meetings, were there any other employees or executives or board members of the Basin authorities at these meetings or only Mr Knowles?

10 MR COSIER: In subsequent meetings, I believe there was, from memory, but at this meeting, there wasn't.

MR BEASLEY: Right. So that makes it likely, does it not, that it would have been Mr Knowles who advised you what KPMG had been asked to do?

15 MR COSIER: Well, it was actually KPMG at the meeting that made those comments.

20 MR BEASLEY: I see. Okay. Right. So there was someone from KPMG at the meeting?

MR COSIER: That's correct.

25 MR BEASLEY: Right. And they had been retained, I assume, by the Basin Authority.

MR COSIER: I would assume so.

30 MR BEASLEY: Yes, and to do – and so your recollection of being advised that they were asked to do an economic analysis of 4,000 gigs was that that's what they told you they had been asked to do.

MR COSIER: Yes, that's right.

35 MR BEASLEY: All right. When does - - -

MR COSIER: And just to clarify the expression 4,000 gigs - - -

40 MR BEASLEY: Yes.

MR COSIER: - - - it was a shorthand way of saying the guide was too high, and so the precise numbers of 3,876 or whatever they were in the conversations we were having in those times was shorthand for 4,000 gicalitres.

45 MR BEASLEY: In the sense that 4,000 gicalitres is a lot less than the low uncertainty figure of achieving environmental watering requirements in the guide.

MR COSIER: Yes, so the argument was that the low end of the range of guide would have too great an impact on regional communities, and, therefore, we had to go lower than the guide had set in place.

5 MR BEASLEY: Yes. All right. Then just – if I can just ask you to turn back to paragraph 11, you go on to say:

*And they came back and said 4,000 gicalitres wasn't possible because people in regional communities would never have it.*

10

MR COSIER: Yes.

MR BEASLEY: When you say, “And they came back”, does that – should I interpret that as KPMG told you that at the first meeting?

15

MR COSIER: That’s correct.

MR BEASLEY: Right. And by the phrase, “Regional communities would never have it”, can you explain – was that fleshed out in any more detail to your recollection?

20

MR COSIER: Not really, because it was the first meeting and it was, really, a very short conversation, but the fact that I remember it suggests that it was quite alarming to me at the time that someone would offer that opinion, given that there was not a lot of work put into that question before those opinions were forthcoming from the people in June.

25

MR BEASLEY: All right. Can you – do you have any recollection of being told when KPMG were first engaged to do this analysis?

30

MR COSIER: No, in fact, I don’t recall being told that at all.

MR BEASLEY: All right. Was your impression that they had been given the task relatively recently to this first meeting or you don’t know?

35

MR COSIER: Yes. In fact, that was the first time I had heard that they had been commissioned to do it. So the fact that they been commissioned to do it and had drawn a conclusion from that work, and that being the first time I was made aware of it, was a surprise.

40

MR BEASLEY: Was there only one person from KPMG there?

MR COSIER: From memory, yes. That’s – that’s correct.

45 MR BEASLEY: Yes. Do you recall their name?

MR COSIER: Yes. It was Jennifer Westacott.

MR BEASLEY: Right. And she was a partner of the firm at the time?

MR COSIER: Yes.

5 MR BEASLEY: And was her conveying this statement that communities would never have it – was that purely an oral presentation or did she have any overheads or did she have any written material that she circulated?

10 MR COSIER: It was certainly just an oral presentation. It was a very brief conversation, and those words might be my reflection of what was said rather than what was actually said.

15 MR BEASLEY: All right. Yes, and I understand that it has got to be some form of shorthand and it's more – closer perhaps to an impression than word-for-word what she – and how long do you recall her speaking for?

20 MR COSIER: Look, I don't think the meeting went for much more than an hour and a half, and we all – all made comments and gave observations to Craig. So it would not have been a long presentation at all.

MR BEASLEY: All right. How much of the meeting was taken up with KPMG's analysis of 4,000 gegalitres?

25 MR COSIER: My recollection, not a great deal.

MR BEASLEY: Right. And did Ms Westacott stay for the whole of the meeting?

MR COSIER: I can't recall that. I'm sorry.

30 MR BEASLEY: All right. And doing the best you can to remember and reflecting on the words "regional communities would never have it", was that based on any analysis or commentary or statement from Ms Westacott that the economic impacts of a 4,000 gegalitre plan would be too great or did you get the impression that it was simply regional communities aren't really interested in that form of analysis, they're  
35 just not giving up 4,000 gegalitres of water, or isn't - - -

40 MR COSIER: No. It's definitely the former. I mean, there was definitely work done. My – my impression was that KPMG had done some work on the – on the economics and that that was the opinion they formed from having done that work.

45 MR BEASLEY: All right. By mentioning that – by the use of the term "economics", was there mention of anything like possible job losses or decline in economic activity or – was it that specific or was it simply, "There will be too much pain out of this"?

MR COSIER: It was – as I said, it was a very general conversation, one that surprised me at the time, and I don’t recall ever – ever actually reading the final analysis of that work anyway. So it was certainly a very general conversation.

5 MR BEASLEY: And so it was a conversation that didn’t contain anything like, “We estimate there will be this number of irrigation jobs lost, there will be this impact on employment generally, there will be this downturn in amounts of money gained through sales of commodities,” that sort of thing? None of that sort of detail was mentioned?

10 MR COSIER: Certainly not to my - - -

MR BEASLEY: All right. Okay. In paragraph 12 you then say you made it clear at that meeting and at every subsequent meeting that your group’s support for the Plan  
15 was dependent on the best available science being used in setting the SDL. Can I just ask you why you felt the need to make that clear.

MR COSIER: Yes, because the political mood in the country at the time was because the Basin Plan – because the Basin Plan –  
20

MR BEASLEY: It wasn’t me. Yes. Go on.

MR COSIER: - - - had been so poorly received in regional – in the regional Basin communities, that there needed be to a re-evaluation of that process. So Wentworth  
25 Group have been on record for years and years, in fact, arguing that any such major economic reform, whether it be water reform or any other natural management reform, had to be done with communities, not imposing things on them. And our great criticism of the guide was it was imposed on them without a proper process. Our second criticism was that the guide in the Basin Plan was being produced in  
30 isolation of the other types of water reform that was taking place at the time through the National Water Initiative.

MR BEASLEY: Can you give - - -

35 MR COSIER: So, for example - - -

MR BEASLEY: Yes.

MR COSIER: - - - when we went into the Basin and were talking to communities, the disjunct between the \$10 million Water for Future Fund and the Basin Plan itself was not recognised by most people in the community. They saw the money being  
40 for one thing and the Basin Plan being for another thing, and so the focus became the guide itself rather than the guide being a component of the National Water Reform, which was the vision of the Howard Government in 2004.

45 MR BEASLEY: Right. And that was the vision in 2004 you’re referring to that led up ultimately to the enactment of the Water Act, correct, as part of it?

MR COSIER: Yes. That is correct. And why the Water Act was enacted was the announcement by the Prime Minister of the \$10 million Water for Future Fund to help facilitate these forms of reforms, and at the time you would not be surprised that  
5 the Wentworth Group was both astonished and delighted that that amount of money would be provided by taxpayers to facilitate such a major reform. The problem with the Basin Plan was that that financial potential to both facilitate the change in water use, but also to compensate communities that were affected was not factored into that conversation with the Basin Plan.

10 MR BEASLEY: All right. And on the back of those concerns, what you were making clear, am I right, at this first meeting and at subsequent meetings, is that the Wentworth Group's position at the time was that the best available science in terms of how much water was needed to meet the requirements of key environmental assets  
15 and ecosystem functions, etcetera, for the Basin was the range that was in the guide that we discussed earlier?

MR COSIER: That is absolutely correct.

20 MR BEASLEY: Yes. That is, in round terms, 3900 gegalitres is rock-bottom because it contains a high uncertainty of achieving what needs to be achieved environmentally up to 6900 gegalitres with the low uncertainty.

25 MR COSIER: That's correct.

MR BEASLEY: All right. In 13, you say that prior to the third or fourth meeting – how frequently were the meetings? Were they ad hoc or were they monthly or - - -

30 MR COSIER: They – they were around monthly, and I recall attending, maybe, three meetings all up.

MR BEASLEY: Were they in Canberra?

35 MR COSIER: Two were in Sydney, one was in Canberra.

MR BEASLEY: Right. Okay. And you always - - -

40 MR COSIER: But this meeting that we've been referring to today may not even have been part of that formal Testing Committee. That might have been the preamble to the establishment of this committee.

MR BEASLEY: I'm with you. Okay.

45 MR COSIER: And I think the first formal meeting occurred in Sydney some weeks after that initial meeting we've been referring to this morning – this afternoon.

MR BEASLEY: All right. Where were the meetings held?

MR COSIER: One meeting – I can't recall where the Sydney meeting was held. The Canberra meeting, which was in April, which is actually going to that – my 13th point, was in the Murray-Darling Basin Authority's boardroom in Canberra.

5 MR BEASLEY: All right. I want to take you to that meeting now. You say just prior to that third or fourth meeting you were sent a copy of an article from The Weekly Times containing a story that Commonwealth officials were in Victoria asking Victorian State officials if they would accept an SDL of either 2200 or 2400. Just in relation to that, firstly, do you recall who sent you a copy of that article?

10 MR COSIER: No, I don't. No, I don't, actually.

MR BEASLEY: All right. Do you have a copy of it still?

15 MR COSIER: We – since I've made my – my statement, we have found the text of the article, but not the actual copy of the article itself.

MR BEASLEY: All right. We might ask you for that in due course. You've read the text.

20 MR COSIER: Yes. I have it here in front of me.

MR BEASLEY: And you're comfortable that you don't need to rephrase in any way – because I haven't got it. So your – the memory you're relying on to say what you have in the first sentence of paragraph 13 is consistent with the text of the article you've now read?

MR COSIER: Yes. It's entirely consistent.

30 MR BEASLEY: Right. Okay. Well, in due course, if you could send us that text because I would like to tender that article. And you say you gave that article to Mr Knowles and the other members of the committee. And you say if the article was true, you considered it to be a monumental breach of trust. Can you explain why you felt that way?

35 MR COSIER: Well, because we were assured through the whole process of the establishment of the Basin Testing Committee that the Basin Plan would eventually be based on the best available sites.

40 MR BEASLEY: That was what Mr Knowles was reassuring you about, was he?

MR COSIER: At every single meeting.

45 MR BEASLEY: Right. And what did you say to him, if you remember, concerning the content of that article?

MR COSIER: Essentially what I've written down in my statement, which is that if it was true, it was a monumental breach of trust, and I asked whether it was true and I was assured then by the – by the Minister – by the chairman that the Basin Plan would be based on the best available science.

5

MR BEASLEY: Did he have any comment one way or the other about whether any Commonwealth officials – and I assume by that they might well be – well, who knows whether they're MDBA or some other employees of government, but did he have any comment about whether, factually, that was correct: that Commonwealth

10 - - -

MR COSIER: I don't recall him giving me a specific answer to my question.

MR BEASLEY: All right. All right. Other than ensuring you best available sites.

15

MR COSIER: Would be used.

MR BEASLEY: All right. Despite that, you resigned shortly after.

MR COSIER: Well, it's – so, again, we're talking seven years ago.

20

MR BEASLEY: Yes.

MR COSIER: So I will give you the best recollection I can.

25

MR BEASLEY: What I was coming to was did you attend another meeting or is that the last meeting you went to, as far as you recall?

MR COSIER: That was the last meeting I went to.

30

MR BEASLEY: And you say that Wentworth Group members formed the opinion that this commitment was not going to be honoured. Can I ask you first whether that was your own view – your personal view?

MR COSIER: It was definitely my personal view, but it was the unanimous view of the members of the whole group.

35

MR BEASLEY: Right. And why was it your view that despite the assurances Mr Knowles gave you, that you didn't think the best available science would be reflected in the Basin Plan?

40

MR COSIER: It was part of the conversation I had on that day of the committee. Either – either Craig asked us to or I offered to put forward a process by which we could be satisfied the best available science would be used. We – we sent that,

45 which is – I have in front of me, which I have found since as well, a proposal for an independent science - - -

MR BEASLEY: We've lost him. I'm relatively confident that's not his natural state. So I think we should go to phone.

THE COMMISSIONER: Is there another line?

5 MR COSIER: .....

MR BEASLEY: Sorry. Yes, Peter. Sorry. We lost you.

10 MR COSIER: Did you lose me? Me.

MR BEASLEY: We didn't hear you. So you might have to – the question was about why you formed your own personal view that the Basin Plan wouldn't be based on the best available science. We didn't really get any of your answer.

15 MR COSIER: Okay. So at – so, again, this is my recollection of seven years ago.

MR BEASLEY: Of course, yes, understood.

20 MR COSIER: Either – at that meeting either Craig asked us to or I offered to provide a suggested pathway by which we could be assured the best available science would be used. I subsequently met with the – other members of the Wentworth Group, and on the following day we sent to Craig a proposal for the establishment of an independent science accreditation panel. Subsequent to us sending that, we were

25 informed that the board would not be proceeding with that – with that process, and as a consequence of that we concluded that the Plan would not be based on the best available science.

MR BEASLEY: All right. Breaking that up into bits, do you have a copy of that

30 document that you sent?

MR COSIER: Yes.

MR BEASLEY: All right. Could you provide us with a – could you provide the

35 Commission with a copy of that letter to Mr Knowles, please.

MR COSIER: I don't have a copy of the letter and I don't – I'm fairly certain it went via email.

40 MR BEASLEY: Right.

MR COSIER: And I don't have my email records going back to 2011.

MR BEASLEY: All right. Do you have a copy of the response?

45 MR COSIER: Nor do I have the response.

MR BEASLEY: All right. So - - -

MR COSIER: What I do have is a – is a hard copy of the proposal that was sent.

5 MR BEASLEY: Okay. Can we have a copy of that then, please?

MR COSIER: Yes.

10 MR BEASLEY: All right. So when you say that the response you got was that the board wouldn't go down the path of that independent scientific accreditation, you're going from memory?

MR COSIER: That's correct.

15 MR BEASLEY: All right. Okay. Yes, approximately, would you know – be able to piece together, approximately, what the dates were of that correspondence exchange or email exchange?

MR COSIER: Well, the dates of the email exchange, I am almost certain, would  
20 have been 7 April which is the day after the Testing Committee - - -

MR BEASLEY: Yes, 7 April 2011?

MR COSIER: Yes. So if my recollection is right, that was a Friday.

25 MR BEASLEY: All right. You're doing very well to know that, but - - -

MR COSIER: Well, I just remember it being late in the week when we had to rush this stuff because there was a board meeting on the Monday.

30 MR BEASLEY: Right. All right.

MR COSIER: I do have a copy on my resignation letter, and it was dated 4 May. So between 6 April and 4 May was the period that the Wentworth Group formed the  
35 view that we weren't going to get any further with the independent scientific review process.

MR BEASLEY: Okay. Just pausing there, do you have a copy of your resignation letter?

40 MR COSIER: I do.

MR BEASLEY: And that refers to this non-agreement to the Wentworth Group's proposal about an independent science review?

45 MR COSIER: Yes, it does.

MR BEASLEY: All right. Could we have a copy of that please?

MR COSIER: Yes, you may.

5 MR BEASLEY: Thank you. So that, effectively, ended your role in any – in this informal committee concerning what the ESLT would be in terms of the Basin Plan?

MR COSIER: Yes, and my recollection might be faulty, but I don't believe it actually met after that.

10

MR BEASLEY: You don't believe the committee met at all?

MR COSIER: No.

15 MR BEASLEY: Can I ask you this: the other members of the committee were they supportive of your Wentworth Group suggestion about the independent science panel?

MR COSIER: I never had an opportunity to ask that because we produced that  
20 proposal after the Basin Testing Committee – but we didn't have anything ..... proposal the following day.

MR BEASLEY: Sorry, did the Basin Testing Committee dissolve for different reasons?

25

MR COSIER: I'm struggling to recall that, but I don't – I had resigned so - - -

MR BEASLEY: Okay.

30 MR COSIER: I don't recall it having met subsequent to my resignation in May.

MR BEASLEY: All right. Turning to another topic now. On 23 November 2012, you and – I think it's Mr Stubbs or is it Dr Stubbs, Mr Stubbs?

35 MR COSIER: Mr Stubbs, yes.

MR BEASLEY: Gave some evidence to a Senate committee about what, at that time, was the proposed Basin Plan; correct?

40 MR COSIER: Correct.

MR BEASLEY: Yes, and at paragraph 19 of your statement, you say:

45 *Notwithstanding the findings of that inquiry, the Basin Plan was approved by the Australian Parliament in 2012.*

Am I right that the inquiry you're – because there was a number of inquiries in relation to the Basin Plan, the inquiry you're talking about was the Senate Rural and Regional Affairs and Transport References Committee, and does it aid your recollection that the first recommendation of that committee was for the MDBA to develop a, what is called a, "Concise and non-technical explanation of the hydrological modelling used to develop the 2,750 plan, 2,750 gigalitre plan."

MR COSIER: My recollections – my recollections are being enhanced by me having a look at the copy of it. There were – there were quite a number of parliamentary inquiries at the time.

MR BEASLEY: There were. The one I think you gave evidence in, but you can tell us if we're wrong, was one that actually didn't publish its recommendations until March 2013, of which there were 23.

MR COSIER: That's correct.

MR BEASLEY: The first of which is for that concise and non-technical explanation.

MR COSIER: That's correct. The - - -

MR BEASLEY: Which has an irony about it because scientists want a more technical explanation and a less concise one, but anyway. That's the one you were referring to?

MR COSIER: Not all scientists ..... explanation.

MR BEASLEY: Some.

MR COSIER: I should – I should say that I recall that this committee made some interim findings before the Basin Plan was - - -

MR BEASLEY: Okay. Right. That explains why you say, "Notwithstanding the committee recommendations", you were talking about some interim recommendations.

MR COSIER: I think ..... there were other committee processes there .....

MR BEASLEY: Right. Okay. That probably explains that.

MR COSIER: But could I just clarify my point?

MR BEASLEY: Yes.

MR COSIER: So my – my – our point was that – the Wentworth Group, our goal is to connect science and public policy.

MR BEASLEY: Yes.

MR COSIER: That means we have a right to dictate policy. Science is just a tool  
for assisting society to come to decisions, and whilst we didn't agree with the Basin  
5 Plan, whilst we formed the view that it was not consistent with the Water Act,  
Australian Parliament took a different view and, as a consequence of that, we then  
formed the view that the – that our role now is to deliver the best possible Basin Plan  
that Parliament has approved.

10 MR BEASLEY: Understood. And that will, no doubt, be covered in evidence later  
with the Wentworth Group. All right. Thank you. That's all I have, Commissioner,  
for the witness. Do you have any?

THE COMMISSIONER: No, I think it best left to the group.

15 MR BEASLEY: All right. Thank you very much, Mr Cosier. That's all the  
evidence for today, and we will see you another time.

MR COSIER: Thank you very much for your time.

20 THE COMMISSIONER: Thanks for your trouble.

MR BEASLEY: And can you remember to pass on those documents I have  
requested.

25 MR COSIER: Yes - - -

MR BEASLEY: And if you need a reminder, we'll look at the transcript and – and  
remind you.

30 MR COSIER: So the Weekly Times article, my letter of resignation, and our  
proposed .....

MR BEASLEY: That's right. Thank you. Thank you.

35 MR COSIER: .....

THE COMMISSIONER: Thank you very much.

40 MR COSIER: Thank you.

**<THE WITNESS WITHDREW**

**[3.42 pm]**

45 MR BEASLEY: That concludes the hearings for today, Commissioner.

THE COMMISSIONER: Thank you. We adjourn till - - -

MR BEASLEY: 10 tomorrow.

5 THE COMMISSIONER: - - - 10 o'clock tomorrow at the Town Hall.

MR BEASLEY: Town.

10 THE COMMISSIONER: Thank you. We just do that now.

**MATTER ADJOURNED at 3.42 pm UNTIL THURSDAY, 28 JUNE 2018**

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