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TRANSCRIPT OF PROCEEDINGS

O/N H-910729

MR B. WALKER SC, Royal Commissioner

IN THE MATTER OF THE MURRAY-DARLING BASIN ROYAL COMMISSION

ADELAIDE

9.58 AM, TUESDAY, 3 JULY 2018

Continued from 28.6.18

DAY 4

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

MR BEASLEY: I've got a couple of housekeeping matters if you want to commence now, Commissioner.

THE COMMISSIONER: Yes.

5

MR BEASLEY: So, firstly, can I indicate I have agreed to take a different approach with dealing with exhibits. The manner I've been dealing with them in terms of just saying, "This will be tendered," or every report I refer to will be tendered has caused some difficulties for the staff, and they're having to check the transcript, and there's a bit of uncertainty as to what it is I tendered, so as long as you're happy with it, Commissioner, I will take a more traditional approach in terms of tendering documents because I don't want to create more work for the staff than otherwise is necessary.

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15 THE COMMISSIONER: Certainly.

MR BEASLEY: We've also had a query raised about the website in terms of details as to upcoming witnesses. It certainly wasn't put to us as a criticism, but it was put to us by some people who suggested they might seek leave to appear, but they're unsure because we don't have all the names of all the witnesses up on the website. Of course, the difficulty again for the staff in relation to that has been the High Court proceedings. We lost a whole lot of witnesses basically for a week, which threw the whole timetable out, and other arrangements had to be made.

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25 What I can tell you is we're very close to being in the position to at least list all the witnesses for the rest of this month, and there will of course be references to their submissions, if they've made one, and most have, and while not happening immediately, witness statements will go up as and when they're ready, and so anybody wishing to give consideration to seeking leave from you to appear should, in the very near future, should be able to make an informed decision. But the fact that names went up slowly is no fault of anyone's in relation to the Commission at least. You are going to be – that's not an implied criticism of anyone else either.

30
35 You are going to be hearing evidence from a number of people that represent Indigenous nations, including the Murray Lower Darling Rivers Indigenous Nation or MLDRIN, the Northern Basin Aboriginal Nations or NBAN, a representative of the Ngarrindjeri people, a representative of the Yorta Yorta nation and probably a representative from Barkandji, all of whom you've had meetings with already at various places around Australia. The reason I raise that is that MLDRIN yesterday supplied to me a document relevant to the opening day of hearing in relation to construction issues. And had I had it then, I would have raised it with you then. It's a legal opinion prepared by the Victorian Environmental Defenders Office, right back in March 2012. Its full title is 'Legal Analysis of the Proposed Murray-Darling Basin Plan', Environmental Defenders Office, Victoria, March 2012.

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It can be added to RCE11. I'm not going to take you through in detail the legal analysis. Suffice to say that it very much resembles Issues Paper 2 and very much agrees with your provisional views expressed in Issues Paper 2 concerning how an ESLT is to be properly determined in relation to the definition of that term in the
5 Water Act, and that is by environmental criteria, not by social and economic criteria, and that the approach of the MDBA is erroneous, and a concern also is expressed in this report based on some of the CSIRO reports that are already in evidence, that that erroneous approach to determining an ESLT has resulted in a determination of an
10 ESLT that does not, in fact, represent environmentally sustainable level of take.

There are other matters raised in it, such as concerns that the Basin Plan does not, in fact, implement – the draft Basin Plan will not be implementing Australia's international obligations, and criticism also of the fact that the Basin Plan is not going to have any consideration in relation to the determination of the long-term
15 average sustainable diversion limit for climate change. So, as I said, that document should be added to RCE11.

THE COMMISSIONER: The CSIRO review - - -

20 MR BEASLEY: Yes.

THE COMMISSIONER: - - - that the Victorian EDO legal analysis refers to in 4.2.2.2 page 11 - - -

25 MR BEASLEY: Yes.

THE COMMISSIONER: - - - is the CSIRO review that was subject of evidence last week, is it?

30 MR BEASLEY: No, I don't think it's the Multiple Benefits Report. It's the report slightly after that that actually addresses – sorry, slightly before that, that actually addresses what will be achieved by a 2,400 gigalitre, a 2,800 gigalitre and a 3,200 gigalitre.

35 THE COMMISSIONER: That's the review that's been referred to in evidence already?

MR BEASLEY: It has. But it just hasn't been dealt with extensively. I raised it in opening - - -

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THE COMMISSIONER: Yes.

MR BEASLEY: - - - as a means of saying that the MDBA would have been aware of analysis from the CSIRO suggesting that a 2,800 gigalitre plan, if I can call it that,
45 will not achieve all of their environmental watering targets. But with Dr Colloff, we, obviously, discussed at length the Multiple Benefits Report.

THE COMMISSIONER: Yes. Thank you.

MR BEASLEY: So the witness today is Professor Sarah Wheeler, who's going to be giving evidence in relation to some socio-economic aspects of the MDBA's work and the work of their consultants.

<SARAH ANNE WHEELER, SWORN

[10.05 am]

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<EXAMINATION-IN-CHIEF BY MR BEASLEY

MR BEASLEY: Professor Wheeler, can you give us your address? It can be a business address.

PROF WHEELER: Centre for Global Food and Resources. Nexus Tower, North Terrace, University of Adelaide.

MR BEASLEY: Thank you. I guess that tells me that you are a Professor at Adelaide University, and you're at the Centre for Global and Resources, the Faculty of the Professions.

PROF WHEELER: Correct.

MR BEASLEY: And can you tell the Commissioner your tertiary qualifications?

PROF WHEELER: I have a PhD in Economics and I specialise in environmental, agricultural and water economics.

MR BEASLEY: Thank you. You have done a considerable amount of work researching and working on issues concerning the economic and social impacts of aspects of the Basin Plan.

PROF WHEELER: Yes. I've been working in this area for over 20 years now.

MR BEASLEY: Right. Okay. And you've published a number of papers in academic journals on such matters as buybacks, for example, and impacts of buybacks.

PROF WHEELER: Yes. So I've probably published – I had over 100 peer-reviewed publications in the space of the Murray-Darling Basin and, particularly, looking at individual irrigator behaviour in areas such as water markets. We've looked at that in quite a lot of detail. And we've also sought to investigate as much as possible what's the impacts of selling water on irrigators' profitability and on their farms and trying to understand why do they sell water.

MR BEASLEY: Yes. And part of your academic writing, which has also been done with other academics, has been in relation to a comparison analysis between the buyback scheme, the restoring the balance scheme, and what's colloquially known as SRWUIP, the Sustainable Rural Water Use and Infrastructure Program, which is,
5 essentially, about efficiency measures.

PROF WHEELER: Yes.

MR BEASLEY: All right. And you've provided, with a number of other of
10 colleagues of yours, a submission to the Commission?

PROF WHEELER: Yes. That's right. So myself and other – four other professors of water economics in Australia, so Professor John Quiggin, Professor Quentin Grafton, Professor Lin Crase and Professor Jeff Connor. So, collectively, we have
15 hundreds and hundreds of papers on water economics in the Basin. And because of our disappointment with some of the recent economic studies, we joined together to do a peer review and provide some evidence to the Commission.

MR BEASLEY: All right. And Professor Connor is at the Centre for Sustainable
20 Governance, School of Commerce, University of South Australia?

PROF WHEELER: That's right. He used to work for CSIRO. So he has been heavily involved in all the economic studies that CSIRO have done.

MR BEASLEY: Yes. And Professor Grafton, who has provided the Commission with a separate submission with Professor Williams, and who is going to be giving evidence, is at the Crawford School at the Australian National University?

PROF WHEELER: Yes.

30

MR BEASLEY: He's an economist?

PROF WHEELER: Yes.

MR BEASLEY: And Professor Lin Crase is also at University of South Australia with Professor Connor?

PROF WHEELER: Yes. So Lin is Head of School at University of South Australia in the Faculty of Business there.

40

MR BEASLEY: All right. And Professor John Quiggin is at School of Economics, University of Queensland?

PROF WHEELER: Yes.

45

MR BEASLEY: And could I just ask you, does the submission represent a joint – the joint work of all of the authors, or did you take responsibility for some part and,

for example, Professor Connor take responsibility for another part? Or would you consider it all to be all of your work?

5 PROF WHEELER: It is a joint effort. But I did most of the work in peer reviewing the existing economic studies. And the other professors basically added value in terms of checking my work, making sure they agreed with everything. And - - -

THE COMMISSIONER: They peer reviewed your peer review.

10 PROF WHEELER: Yes. Well, it's quite important in academia.

THE COMMISSIONER: Absolutely.

15 PROF WHEELER: Yes. So - - -

THE COMMISSIONER: I don't mean it – I don't mean it facetiously at all. But perhaps in answer to Mr Beasley's question, the joint nature of your work is that all your minds were - - -

20 PROF WHEELER: Collectively working on it. Yes.

THE COMMISSIONER: - - - collectively focused on the state of the scholarship.

25 PROF WHEELER: That's right. And they jointly wrote the first number of the pages of the submission.

MR BEASLEY: But it would be fair to say you were the primary author of the submission. Would that would be fair?

30 PROF WHEELER: Yes.

MR BEASLEY: All right. I'm going to tender that submission, Commissioner. It's entitled 'Submission to the Murray-Darling Basin Royal Commission'. It then has each of the professors' names and where they're from and it's dated 30 April 2018.

35 THE COMMISSIONER: Thank you.

40 MR BEASLEY: I want to deal with some matters you raise in your submission at a level of generality first, so that we raise the topic and then I will come to the detail later, but if I could do the awful thing and roll your work up and your submission up into a ball. Your conclusion is that, first of all, buybacks have many advantages over efficiency measures?

45 PROF WHEELER: Yes. Correct.

MR BEASLEY: Amongst those advantages is that buyback is considerably cheaper?

PROF WHEELER: Yes.

MR BEASLEY: Possibly up to two and a half times cheaper than an efficiency measure, an on-farm efficiency measure.

5 PROF WHEELER: Yes.

MR BEASLEY: That buybacks are more reliable in terms of estimating a volume of water recovered.

10 PROF WHEELER: Correct.

MR BEASLEY: And there is no good economic or other evidence that buybacks have a significant negative impact on rural communities.

15 PROF WHEELER: Yes. To the extent there is a small negative effect, but not what has been commonly perceived.

MR BEASLEY: And they also have positive impacts.

20 PROF WHEELER: And they have positive impacts on individual farms.

MR BEASLEY: And there are, potentially, negative impacts from efficiency measures.

25 PROF WHEELER: Yes.

MR BEASLEY: They are all matters – and I will come to this in the detail again, but they are all matters that you have raised, from time-to-time with relevant people at the Murray-Darling Basin Authority.

30 PROF WHEELER: Yes.

MR BEASLEY: And, in general, tell me if I'm right, they've either said they don't agree with you or they don't want to engage with you.

35 PROF WHEELER: It's almost like – the most common response is that I'm told it's a political decision, it's not an economic one. It's not necessarily that they disagree with me. Many say they do agree with me. But their common response is it's a political decision.

40 THE COMMISSIONER: When you say it is a political decision, you mean, for example, to stop buybacks?

45 PROF WHEELER: To stop buybacks and support irrigation infrastructure. Yes.

THE COMMISSIONER: And does that latter support of irrigation infrastructure, the interactions you're recalling in general terms, do they have to do with those being used to justify a reduction in sustainable diversion limits?

5 PROF WHEELER: Yes. It's wrapped up in the reduction in, yes, the SDL. Original reasons why we ended up with 2,750 gigalitres SDL rather than higher, it's always – yes, it's basically put forward as a political reason. And, you know, rural communities don't want buyback or, supposedly, don't want buyback and would prefer irrigation infrastructure.

10 MR BEASLEY: Sorry. Just - - -

THE COMMISSIONER: Just keep the terminology correct. When we're talking about 2,750, we're talking about gigalitres of further water to be, so to speak, returned to the environment?

PROF WHEELER: Correct.

20 THE COMMISSIONER: Rather than used consumptively, such as for irrigation?

PROF WHEELER: Yes, yes.

THE COMMISSIONER: And a reduction in that reduction of irrigation water below 2,750 has been notoriously carried out on the basis of so-called efficiency and supply measures?

30 PROF WHEELER: Yes. So one of the reasons put forward for the current amendment by the Authority was the negative impacts on rural communities and to, therefore, focus solely on supply and on-farm irrigation infrastructure projects.

THE COMMISSIONER: So that buybacks were said to have socio-economic disadvantages?

PROF WHEELER: Yes.

35 THE COMMISSIONER: Whereby what might be called the straightforward way in which they contributed water to the environment should no longer be seen as a reason to pursue buybacks and the so-called efficiency and supply matters?

40 PROF WHEELER: Yes.

THE COMMISSIONER: Could I just ask about this, a buyback has the effect that, in the paradigm case, an allocation for irrigation is withdrawn?

45 PROF WHEELER: Yes.

THE COMMISSIONER: Is that – so an irrigator, to use simple figures, has an allocation of 100 megalitres and that irrigator gives that up in return for money?

5 PROF WHEELER: Yes. So to the extent they can choose to sell – we should note that it's willing sellers only. No one is forced to give up their water. So an irrigator can choose to sell all of their water entitlement, whether take that 100 megalitres, they can sell all of it or they can carve off some of it. So they can carve off 20 per cent, for example, and sell that. So then their water entitlement ownership reduces by 20 per cent, and allocations are still – they still receive allocations depending on
10 the security of the year, if it's a drought or full rainfall situation, they still receive allocations of 80 megalitres.

THE COMMISSIONER: But they can sell all of it.

15 PROF WHEELER: They can choose to sell all of it.

THE COMMISSIONER: Under the regime when it operated, they could sell all of it. Okay.

20 PROF WHEELER: Yes, yes. So I was one of the parties that actually in 2012 reviewed the 'Restoring the Balance Program', which is the sale of water entitlements by willing irrigators to the Commonwealth. So we know from looking at the data, only 30 per cent of irrigators sold all their water. The majority carved off portions of their water entitlements. So over 60 per cent carved off portions and sold
25 water back to the Commonwealth. So it's only a small amount of irrigators actually do sell all their water. And some of them don't exit irrigation. Some of them stay in irrigation and only buy temporary water. The remainder either leave farming completely or they switch to dry land agriculture.

30 THE COMMISSIONER: Now, when an allocation is bought back in that sense, it's counted, is it, 100 per cent towards the, as events stood, 2,750 gigalitres to be recovered for the environment?

35 PROF WHEELER: Yes. In the sense that it depends on the security of the entitlement. So, as you probably know, there's high security, general security, low security. And depending on the region, there's a long-term average annual yield equivalent attached to that entitlement.

40 THE COMMISSIONER: So the degree to which or the quantum which can contributes to achieving 2,750 recovery is produced by factoring down by historical usage of the allocation. Is that right?

45 PROF WHEELER: Yes, yes, yes. And the Authority has now put up a position paper to change that long-term average annual yield because it's thought to be overestimated in a number of areas.

THE COMMISSIONER: Do you mean it's thought that people have, in fact, used a smaller proportion of their nominal allocation?

5 PROF WHEELER: It's not based on use. It's based on long-term figures of water trade, some utilisation factors, and climate change over time. So it's kind of recognising that, you know, potentially, a general security, for example, 70 per cent – 70 years out of 100 – it's not necessarily that reliable in the future, and that it may need to be decreased.

10 THE COMMISSIONER: So does that mean that if there were a buyback again, and it were nominally 100 megalitres, it would not contribute 100 megalitres to the achievement of the 2,750 or whatever the figure was; it would contribute something less than that?

15 PROF WHEELER: Yes.

THE COMMISSIONER: And that under the re-thinking you've just referred to, it might even - - -

20 PROF WHEELER: Even be less.

THE COMMISSIONER: - - - contribute even less again, again.

25 PROF WHEELER: Yep.

THE COMMISSIONER: On the basis that, in principle, the environment is only obtaining the benefit of water which, but for the buyback, would have been used.

30 PROF WHEELER: Yes, yes. And the Commonwealth do take in – those things into account when they work out how much water they think they've got and buying the water back.

THE COMMISSIONER: Thank you.

35 MR BEASLEY: So I don't forget some of the things that you just mentioned in your discussion you just had with the Commissioner, I will just raise them now so they don't get forgotten. But one of the discussions you had was talking about an entitlement that one – an irrigator might have for water; secondly, the allocation they might get in a particular year, which will often be less than the entitlement.

40 PROF WHEELER: Correct.

MR BEASLEY: And then there's the third thing about how much water they actually use, which might be less than the allocation.

45 PROF WHEELER: Mmm.

MR BEASLEY: And so, for example, an irrigator with a 100 megalitre entitlement might sell 20 megalitres to the government of that entitlement, leaving them with an entitlement of 80 megalitres, but that particular year, they may have had an allocation of 40 and only used 20. But the following year, even though they've sold 20 to the
5 government and have an entitlement of 80, they actually get an allocation of 80 and use 80.

PROF WHEELER: Mmm.

10 MR BEASLEY: And those different permutations have to be considered in relation to any proper economic analysis of the impacts of buybacks.

PROF WHEELER: Yes, yes, that's right. So - - -

15 MR BEASLEY: And just to complete that, that is not something that's been factored in to the modelling of the report you've analysed for the MDBA and its own work.

20 PROF WHEELER: No. So most of the consulting work at the moment assumes that a decrease in water entitlements has a direct linear effect on decreasing farm production by the same amount.

MR BEASLEY: Yes. Yes.

25 PROF WHEELER: But this ignores the fact that the majority of irrigators have surplus buffer water. So it's water that they never used in farm production in the first place.

THE COMMISSIONER: Yes.

30 PROF WHEELER: It wasn't being used in farm production. So it's an erroneous assumption to assume that all water sold automatically results in a decrease – similar decrease in farm production.

35 MR BEASLEY: Yes.

PROF WHEELER: So we've got evidence, again, looking at thousands of records of irrigators, that they end use a certain proportion of the water that's allocated to them. And, you know, there's – there's good reasons why they don't use it all.
40 Carry-over, they use it for carry-over. A lot of – have environmental reasons. They like leaving spare water in the river. Or they – they like having surplus or buffer water so when - - -

MR BEASLEY: They might sell it.

45 PROF WHEELER: Ye, and they – they sell it. They make profits. And - - -

MR BEASLEY: I'm – yes. I'm going to come to your disagreement with the linear relationship between reduction in water and reduction in farm production, so we will get there. But can I just go back to something else you raised with the Commissioner, and that was you raised the issue of the perceived – and, I guess, no
5 doubt, at times vocal – hostility that people in rural communities have had to buybacks. You've actually done some research in that area; correct?

PROF WHEELER: Yes.

10 MR BEASLEY: And you've done – and it's part of one of your papers which we will come to. But the upshot of your – or the conclusion of your research is that they're in fact not as unpopular as some people might suggest in rural communities.

PROF WHEELER: Yes. So if I may - - -
15

MR BEASLEY: Yes, go ahead.

PROF WHEELER: I – I just want to kind of put a bit of context in there - - -

20 MR BEASLEY: Please do.

PROF WHEELER: - - - to try and understand why rural communities are so upset with Basin Plan and buybacks. I think it's important to know that it's historical fact that farm numbers have been falling for decades in rural communities, and some
25 areas have been suffering a loss of population and jobs. So it's - - -

MR BEASLEY: Well before the Water Act.

PROF WHEELER: Well before. You know, we're - - -
30

THE COMMISSIONER: Did you say farm numbers?

PROF WHEELER: Farm numbers, yes.

35 THE COMMISSIONER: Does that mean the numbers of farms or does it mean numbers relating to farms?

PROF WHEELER: It means physical numbers of farms, so farm managers. Not necessarily farm employment, but it's kind of wrapped up together.
40

THE COMMISSIONER: Now, the numbers of farms could fall though the acreage being farmed could increase.

PROF WHEELER: Correct. Correct.
45

THE COMMISSIONER: So that'd be consolidation of ownership or management.

PROF WHEELER: Yes, and that's what happens generally in – in many areas, and at the same time, farm production has been increasing over time. But rural communities become very upset by losses of farms and farmers, and population, because they associate it with a reduction in services, such as education and health, you know, low – loss of shops in their area, etcetera, so that – that's why they're – they get upset by losing farms, not necessarily it being aggregated into larger farms. But the important point to note is it's been happening for decades. You know, we have terms of trade which is farmers' prices have been falling over time and their costs have been increasing, which is – there's direct correlation between the two, but anyway, I will come to that later.

But I just wanted to point out that is very valid reasons why rural communities are upset at decline, but part of the problem, especially within the Basin, is that the Basin Plan has been wrapped up as the reason which many people blame for why there is this rural decline. So I wanted to – to highlight there is a very valid reason why they get upset.

MR BEASLEY: Sure.

PROF WHEELER: But the Basin Plan has been wrapped up and is blamed for everything now.

THE COMMISSIONER: What year should I have in mind as the real start of a supposed effect of the Basin Plan on the decline of households in the Basin?

PROF WHEELER: Well, we started recovering water in 2008. So to the - - -

MR BEASLEY: So just pausing there, that's – predates the Basin Plan.

PROF WHEELER: Yes.

MR BEASLEY: Not – it doesn't predate the means of recovering the water for the environment that incorporated into the Basin Plan, but buybacks started - - -

PROF WHEELER: Buybacks started - - -

MR BEASLEY: - - - before the Basin Plan was legislated.

PROF WHEELER: Yes, it did. Yep.

MR BEASLEY: While it was being drafted. Yeah.

PROF WHEELER: Yep. So technically, if we say the Basin Plan has harmed rural communities, it's from 2008 onwards, but - - -

THE COMMISSIONER: It's – 09 is the benchmark?

MR BEASLEY: No, 09 is the modelling benchmark, so it's 1895 to 2009, but I think there is obviously a distinction between – I suppose we could say hostility towards the Basin Plan possibly starts before the Basin Plan is actually a legislated instrument because it's in the process of being drafted the moment the Water Act is
5 - - -

THE COMMISSIONER: Well, I think the history shows that.

MR BEASLEY: Yes.
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THE COMMISSIONER: That it was a difficult conception and birth.

MR BEASLEY: Extremely difficult.

15 THE COMMISSIONER: Yes. So that if we say – if you'll forgive me for fudging, if we say 08/09, so 08, the first round or first bout or the commencement of what can be called buybacks, I think.

PROF WHEELER: Yes.
20

THE COMMISSIONER: 09 used, for the historical hydrology that sets, as it were, the level of take that Parliament eventually enacts, has been excessive and has to be reduced. Is that a correct understanding?

25 PROF WHEELER: Yes.

THE COMMISSIONER: Thanks.

PROF WHEELER: So - - -
30

MR BEASLEY: Yes. Sorry.

THE COMMISSIONER: So when we talk about – did you say – you said decades, I think, is the proper – is the general measure - - -
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PROF WHEELER: Yeah.

THE COMMISSIONER: - - - of how long there has been a decline in the number of farms.
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PROF WHEELER: Yeah. I mean, I show graphs from 1950 onwards correlated with terms of trade decline to show that this is an ongoing issue within rural communities.

45 THE COMMISSIONER: So for most of that period, there has been increasing irrigation, not reducing irrigation.

PROF WHEELER: There's been decreasing irrigation farm numbers, but there's been increasing irrigation area.

THE COMMISSIONER: Yes. That's what I mean.

5 PROF WHEELER: And – yeah

THE COMMISSIONER: So more water is being used for more irrigated production
- - -

10 PROF WHEELER: Increasingly over time.

THE COMMISSIONER: - - - over the bulk of the period where you measure a decline in the number of farms.

15 PROF WHEELER: Mmm.

THE COMMISSIONER: That sounds to me as if it were a very convincing foundation for the hypothesis that it is not the reduction in the amount of water
20 available for irrigation that can be used to explain the continued decline in numbers of farms after 2008.

PROF WHEELER: Yes.

25 THE COMMISSIONER: Yes. It doesn't logically compel that, because it could be that, in the earlier period, logically, at least in the abstract, one set of factors, including increasing availability of water for irrigation, has nonetheless been accompanied by a reduction in farm numbers, and then lo and behold, in the later period where the Basin Plan operates, a reduction in the amount of water available
30 for irrigation and still a decline, a continued decline in farm numbers, it could be that there is a causal relation, but it would require, as it were, a reversal of the former relation between those factors; is that correct?

PROF WHEELER: It is correct, and - - -

35 THE COMMISSIONER: Which would be – to me, as a layman, would be counter-intuitive, or at least I would be sceptical of that being so unless it could be tested.

PROF WHEELER: Yes. And I should say here, for the last four years, we've been
40 trying to put together a whole heap of databases on the Basin, trying to model what drives changes in farm members at small statistical local areas. And so – and this – so this includes, you know, changing commodity prices received by industries within areas, urbanisation, climate change in terms of temperature change and rainfall, water diversions, water used, water trade in and out of areas, social, economic,
45 education and health, employment within the area – so we – we're trying to do - - -

THE COMMISSIONER: What about mechanisation of farm operations?

PROF WHEELER: We – it's pretty difficult when you're looking at farm numbers as a whole, but it includes kind of variables for time changes and stuff where that kind of comes into it. That's one area where we don't look at that well, and from those results, basically, it confirms that water is just not a factor in driving out farm numbers. Economic factors such as changing commodity prices – so the more commodity prices decrease, the more that drives out farms, because it's a direct impact on their profitability.

THE COMMISSIONER: So people decide it's literally not worth their time and trouble?

PROF WHEELER: There's a – there's a number of – people – farmers either leave voluntarily or they go bankrupt. If they can't keep earning decent farm net income or rates of return profitability, they end up having to leave. Neighbours who are doing better end up buying them out. Farm area land size gets larger. So from – from this work that we've been doing, which we haven't submitted yet as a journal article, but that's why, like you said, we – we know that, really, it's economic factors, and the other main thing I haven't talked about – we know it's climate change. So we know that the more particular areas get hotter, and we know we had a drought over this period, 1991 onwards, a number of droughts in different areas, we know that the more likely we lose farms in – in statistical local areas. But water just does not come out as a significant factor in driving out farms in the Murray-Darling Basin.

MR BEASLEY: An example of what you just said about it getting hotter would be viticulture.

PROF WHEELER: Yes.

MR BEASLEY: There's places where you used to be able to grow grapes for wine and it's no longer suitable.

PROF WHEELER: It's definitely not suitable for certain varieties - - -

MR BEASLEY: Yes.

PROF WHEELER: - - - can no longer be grown there, and they – they either have to reallocate – for example, a number have reallocated to Tasmania to make sure they can still grow certain types of wine there – varieties. There's – there's lots of other reasons why - - -

MR BEASLEY: Sure.

PROF WHEELER: - - - climate change impacts on – on farms and their profitability.

THE COMMISSIONER: Now, people walking off, as it used to be put, by reason of drought, was an established pattern when Henry Lawson started to arrive. So it's not new, and it's not the millennium drought.

5 PROF WHEELER: No.

THE COMMISSIONER: If you think you can explain to me at the moment, please try this: how do you design a study so as to distinguish between people walking off because the drought has beaten them, and thereby reducing farm numbers, and
10 people giving up because their water allocation has been reduced, and then as a variant on that, because not theirs but their neighbour's water allocation has been reduced. How do you design a study to test between those possibilities?

PROF WHEELER: Well, it depends how you're going to look at it. So we've
15 designed and done a number of different studies. So we look at, for example, exit intentions of farmers, when – you know, to what extent they're saying they're thinking about leaving the farm. And we study, how does that intention change within drought years, for example. And we also, therefore, model the characteristics of that farmer in how it changes their planned intention to exit. So one of the
20 characteristics may be their water security of entitlements, what allocation they've received in the past five years, and how does that compare to their rates of return, their farm net income, their age, their health, the industry they're in. So that's one way we kind of look at it, so using unit record farm individual survey data.

25 From a wider kind of community-level Basin modelling, you look at the characteristics of a local area and you look at – you know the sort of water entitlements they hold and then you know the allocations they receive. And so the allocations of an area then kind of come into play, are they driving out farm numbers within this area. So you can do it in a number of different ways. That's what we try
30 and do with our research in terms of, okay, what about if we look at it this way, what does that tell us? If I just come back to farm exit intentions – farmers do all they can not to walk out during drought periods because their capital value of their land is very low. It's very hard to sell. Whereas, in better times, land values – it's much easier to sell your farm and get a better price. So even though – those who leave
35 during drought times literally are forced out the door, pretty much bankrupt. And, otherwise, they will choose to leave when they can get a decent value for their farm.

MR BEASLEY: Thank you. In your - - -

40 PROF WHEELER: Richard, sorry, can I come back to an original point which I never got to, your point about do they like buyback - - -

MR BEASLEY: You have to ask my permission.

45 THE COMMISSIONER: No, no. Away you go.

MR BEASLEY: But I was just about to say, I will grant it.

PROF WHEELER: Okay. So I never answered it because I know I went off on a tangent. But you made the point of rural communities not liking buyback - - -

MR BEASLEY: Yes.

5

PROF WHEELER: - - - and supporting infrastructure subsidy programs instead. So I would like to make the point that, yes, that's a common view, and that's the view you will hear from national irrigator council, that's the view you hear from National Farmers Federation. That's the view you hear pretty much every day in rural newspapers, about, you know, buyback, buying water directly back is bad and harmful. And that, you know, other forms of water recovery through subsidies have to be supported. But we've investigated this, because that was never my experience with irrigators. I actually know lots of them like water trade. I also know that lots of them wanted the opportunity to sell their water to the Commonwealth because they perceived they got a higher price than selling it in the market. So we - - -

10
15

MR BEASLEY: Can I just stop you there. But still on – finish your answer but I just want to interject there that there's still people that want to sell water, even now. Correct?

20

PROF WHEELER: Correct. Yes.

MR BEASLEY: Sorry. Go on.

PROF WHEELER: Yes. But we designed to a study to say, okay, you know, how many farmers really, you know, do – if they got to choose, so we've got a hypothetical. You know, we've had \$13 billion on the table to try and get to a sustainable level of balance in the Murray-Darling Basin and a large portion of that is water recovery directly. So we designed a study to say to irrigators, okay, if you get to choose in the budget how much should go to, say, market-based measures, so buying water directly back from irrigators and also perhaps buying temporary water or exit packages, so that's known as market-based packages.

25
30

MR BEASLEY: Yes.

35

PROF WHEELER: Versus putting the money into on and off-farm irrigation infrastructure? So we surveyed hundreds and hundreds of farmers on this and, basically, the general result is around 60 per cent say, yes, put the money – of irrigators say put the money into irrigation on an off-farm infrastructure and around 40 per cent say no, I would prefer the money go towards market-based measures.

40

MR BEASLEY: I think it's 56/44 in one of your reports. Does that ring a bell?

PROF WHEELER: Yes. Around that. So it's - - -

45

THE COMMISSIONER: Just to be clear, those on and off-farm efficiency measures are funded in return for a proportionate reduction in allocation.

5 PROF WHEELER: Yes, yes. So depending on the type of modernisation support, 50 per cent of the so-called water savings get split, half to the farmer, half to the Commonwealth. And it's a transfer of water entitlement back to the Commonwealth. So it is just important to note that there is actually a lot of irrigators out there who do support buyback and want the opportunity to sell their water.

10 MR BEASLEY: Now, just to be clear, you don't need to seek my permission to say anything that you want to say. So any time you want to raise something, please feel free. I'm checking the letters patent as to whether the Commissioner has got to seek my permission to ask questions but it doesn't seem so either. Can I just – you've done an analysis in your submission of a number of reports on social and economic impacts of buybacks that have either been commissioned by the MDBA, commissioned by a separate organisation or that reflect the MDBA's own work. Correct?

15

PROF WHEELER: Correct. Yes.

20 MR BEASLEY: I'm just going to read out – because I'm going to tender them, to make it easier for everyone. Before I take you to some of these reports, I'm just going to list them. One is the MDBA's own report entitled 'Northern Basin Review: Technical Overview of the Social and Economic Analysis', December 2016. I think you refer to that as MDBA16 in your submission?

25 PROF WHEELER: Yes.

MR BEASLEY: So that will be tendered. You've also analysed and provided some commentary on a report by RMCG.

30 PROF WHEELER: Yes.

MR BEASLEY: And their report is entitled 'Basin Plan – GMID Socioeconomic Impact Assessment Final Report'. It's dated 2016. And I will tender that report. That study was not actually commissioned by the MDBA. Correct?

35 PROF WHEELER: No, no.

MR BEASLEY: It was commissioned by – it says at page 1 by:

40 *A group of stakeholders within –*

GMID must be Goulburn Murray Irrigation District:

45 *... GMID with an interest and concern about water use for irrigation and environment.*

Those members include senior representatives from local councils, water authorities, irrigation sectors, CMAs and Victorian Environmental Water Holder, food-processing companies, the VFF – someone will have to tell me what that stands for.

5 MR O'FLAHERTY: Victorian Farmers Federation.

MR BEASLEY: Victorian Farmers Federation. You don't need to whisper that. Just say it out loud. And the local member for Shepparton, who, I think, we have met. So that report will be tendered. There's also the work of KPMG in relation to
10 northern Basin and southern Basin modelling in relation to socio-economic impact of buybacks.

PROF WHEELER: Our submission only reviews the northern Basin because the Southern Basin wasn't out then.

15

MR BEASLEY: Correct. You're right. Have you read the southern Basin one?

PROF WHEELER: I have. Yes.

20 MR BEASLEY: Okay. So the KPMG – the report is entitled 'Northern Basin Community Modelling Economic Assessment of Water Recovery Scenarios', November 2016. The southern Basin community modelling is called 'KPMG Southern Basin Community Modelling Preliminary Data Analysis – Chart Pack', February 2018. I will tender that. There's also a peer review report of both KPMG
25 and MDBA's work from the University of New England.

PROF WHEELER: Yes.

MR BEASLEY: And that is entitled 'Final Review Report for the Murray-Darling
30 Basin Authority: an independent review of the social and economic modelling inputs to the Northern Basin Review', 12 October 2016, University of New England, authors Dr Boyd, Blackwell, Mr Jim McFarlane, and Mr Richard Stayner. And there is one other report that you refer to in your submission. But if I can say in more complimentary terms than the other report and that's a report from Marsden Jacob.

35

PROF WHEELER: Correct.

MR BEASLEY: And that is entitled 'Economic Effects of the Commonwealth
40 Water Recovery Program in the Murrumbidgee Irrigation Area: report prepared for the Department of Agriculture and Water Resources', October 2017, final report. In summary, that report actually draws the conclusion that the impacts of water buybacks, at least in this area, are either neutral or very, very minimal impact.

PROF WHEELER: Yes. They actually conclude it's – it will actually be quite
45 positive, up to 300 jobs by 2034.

MR BEASLEY: Yes. All right. If I can take you to the headlines of your concerns in relation to the analysis contained in these various reports I've just drawn your attention to. I want to take you to the parts of the report which seem to highlight where your concern comes from. And then I'm going to ask you why you have that concern. But I think one of the – perhaps the principal concern you have about this work is that, with the exception of Marsden Jacob, all the other reports in terms of assessing the economic impacts on buybacks draw, as you've already said, this linear relationship or proportional relationship between a reduction in water use and a reduction in farm production.

10

PROF WHEELER: That is – that's the key problem, though there's lots of other problems. But that is the key problem.

MR BEASLEY: Right. And before we get to the details of why you have that concern, one of the things you've said in the submission is that you're not aware of any published peer-reviewed analysis that actually identifies that there is a proportional relationship between water use and farm production.

15

PROF WHEELER: Yes. Correct.

20

MR BEASLEY: Right. So in relation to the MDBA's work, if we could just go quickly to – and I only need to identify a few pages of these reports before I ask Professor Wheeler about what the details of the concern are. But if we can firstly go to the report I mentioned, Northern Basin Review, the MDBA's own technical overview analysis of the social and economic analysis. You've got that in front of you.

25

PROF WHEELER: Yes.

MR BEASLEY: If we go to page 9, you will see a heading 'Indicators and Approach to Measuring Change'. The community level modelling – what does community level modelling mean?

30

PROF WHEELER: It means taking an area as a whole. So if you can see on page 8, the circles, taking the data for a particular area and modelling changes within that whole area.

35

MR BEASLEY: Right.

PROF WHEELER: So you're not modelling at individual farm level, you're modelling at a community level.

40

MR BEASLEY: And they identify in that first sentence what you suggest is one of the difficulties with this analysis, and that is linking annual estimates of regulated and unregulated water diversions against entitlements with the area of irrigated agricultural production.

45

PROF WHEELER: Yes. So one of the issues that we have with the analysis is – well, the main issue is that they only consider a few variables. They’re trying to model changes in employment, for example, within an area.

5 MR BEASLEY: Yes.

PROF WHEELER: But if you only include water and irrigation production area as your main variables of driving change of employment, if everything is on – if you each got variables such as water diversions, and let’s say climate or terms of trade, if
10 they’re all declining in the same direction, but you don’t account for economic factors such as changes in commodity prices, or increases in temperature and decreases in rainfall, for example, but water is going in exactly the same direction and you ignore everything else, and only model water and irrigated production, and
15 then assume, okay, water – we’re showing that water is having a negative impact within this community, but you’ve ignored a whole heap of other potential drivers. So that’s – that’s one of the main criticisms in the sense that they’ve ignored other key variables of interest, namely, economic prices, commodity price changes, etcetera, which means we cannot rely – the model is unreliable, the results are unreliable, without doing proper estimation of all the potential impacts of
20 employment in a region.

THE COMMISSIONER: When you say impacts you mean all the potential drivers of falling employment.

25 PROF WHEELER: Yes, yes. Positive and negative. Yes. So they – they’re variable. Their model was very easy for me to pull apart and say, “You’ve missed this, you’ve missed commodity prices, you’ve missed urbanisation, you don’t have climate change in there, you don’t have, for example, drought impacts or decreases in rainfall, increases in temperature.”
30

MR BEASLEY: When you say urbanisation, just – I’m going to come to what you mean by that precisely in a moment. So don’t feel that you – go ahead and answer any way you want but you don’t feel you need to explain that now because that’s one of the things that I want to explore with you. Go ahead. Sorry. I cut you off.
35

THE COMMISSIONER: I just wanted to – so that by choosing the variables, acreage under irrigation, population of the town or village, there is left the possibility that other factors, commodity prices, I will just take for the moment, might explain all or some of an observed decline in employment.
40

PROF WHEELER: Correct. Yes.

THE COMMISSIONER: And that, particularly, if both, say, water allocation and commodity price have moved adversely, that is, reduced allocation and squeezed on
45 the price, the cost revenue squeeze, if they had both moved adversely during the period at the end of which a decline in employment is observed, then, you cannot possibly say that one is causal and the other is not. Indeed, logically, you can’t even

say either is causal because you are going to have to show that you've designed your study, really, to include as broad a range and imagination and common sense suggests could be causally significant.

5 PROF WHEELER: Yes. Correct.

THE COMMISSIONER: Otherwise you may just have mapped some coincidences.

PROF WHEELER: Association. Yes. Association.

10

MR BEASLEY: You say a more reliable guide to how you should analyse economic impacts is to look at farm revenue rather than production. Correct?

PROF WHEELER: Yes.

15

MR BEASLEY: Because revenue will factor in a whole range of things, for example, adaptation by farmers - - -

PROF WHEELER: Yes.

20

MR BEASLEY: - - - to a reduction in water.

PROF WHEELER: Yes. So - - -

25

MR BEASLEY: Amongst other factors. I'm not suggesting that's the end of the story.

PROF WHEELER: Yes.

30

THE COMMISSIONER: Well, just anecdotally, if somebody buys a great big new piece of machinery, whether for sowing or husbandry or harvesting – it doesn't matter for the present purposes – but it does tasks formerly taking more people to do and thereby reduces their need for, say, contract labour. Is that directly taken into account by the MDBA approach?

35

PROF WHEELER: No. It's not.

MR BEASLEY: So that - - -

40

THE COMMISSIONER: Is it taken into account by some – any proxy form that takes it in?

PROF WHEELER: No, no. I mean - - -

45

MR BEASLEY: It is mentioned by them. So this is – this is your point about they've also not factored in technological change. Correct?

PROF WHEELER: Yes.

MR BEASLEY: And that's what the Commissioner was just addressing there.

5 PROF WHEELER: Yes.

MR BEASLEY: Like, for example, round baling cotton. They do mention in this report – they mention - - -

10 THE COMMISSIONER: Page 10, third paragraph. It starts off with the sentence:

The broader link between employment and social condition has many elements
–

15 which is a bland understatement, I would have thought.

MR BEASLEY: Yes.

THE COMMISSIONER: But in the next sentence:

20 *A change to one or more drivers of irrigated production such as drought, commodity prices, mechanisation, technological innovations or water reforms can influence the demands for inputs such as labour.*

25 Now, that's fairly formal language. But it means that jobs reduce as the investor or capitalist or entrepreneur diverts expenditure into machines.

PROF WHEELER: Correct. Yes.

30 THE COMMISSIONER: Which is not exactly a dazzling new insight.

PROF WHEELER: No. It has been happening in agriculture for a long time.

MR BEASLEY: Page 26, also, Commissioner, if you could - - -

35 THE COMMISSIONER: Well, what I wanted to find out was: to what extent does this report by the MDBA - - -

MR BEASLEY: Advances in technology.

40 THE COMMISSIONER: But to what extent are they actually measuring this in a way that might ascribe causal significance?

PROF WHEELER: In terms of the technology, they're not. Mainly, at a
45 community level modelling, it is actually hard to incorporate technological change in it.

THE COMMISSIONER: Why is that?

5 PROF WHEELER: Because it's – because (a) you're modelling the characteristics of a community as a whole. So, technically, you could do it. How I would be doing it is looking at modelling an industry by itself and looking at their changes in requirements and capital investment over time, and the consequent impact on employment within that industry.

10 THE COMMISSIONER: So Mr Beasley refers us to page 26 under the heading 'Advances in Technology', where some pretty forthright statements are made concerning a pretty striking reduction in full-time equivalent jobs per thousand hectares attributed to mechanisation and the use of chemicals.

15 PROF WHEELER: Yes, yes.

THE COMMISSIONER: Not just chemicals, also the plant breeding. Yes.

PROF WHEELER: Yes.

20 MR BEASLEY: And despite being aware of that issue, an example of how the MDBA has approached their modelling and their analysis in this report is if you turn to pages 39 through to, as an example, 41. So we see at page 39 – tell me when you're there. They say:

25 *Communities most –*

under the heading 'Communities Most Affected by Water Recovery', there is then a discussion about the reductions of water to various towns and areas. And the discussion is only in relation to decreases in area irrigated. And they note in the table the reduction of water available to particular towns or areas under the various scenarios from 270 gigalitres for the environment scenario down to the 450 gigalitre scenario. They make the statement in the paragraph above the table, second-last line:

35 *With regards to changes in the maximum area of irrigation, effects are likely to be increasingly apparent as the decrease in the maximum area of irrigation exceeds 15 per cent.*

40 Again, related to the amount of water. And when they then analyse each particular area or town, as an example, if we look at page 41 for Moree, second paragraph:

45 *The modelling used and the result is as simple as from the reduction in irrigated area associated with current water recovery, the estimated reduction in jobs for the farm and farm-related sector is around 2.4 per cent, and up to 1.5 per cent for the other private business sectors.*

So the whole analysis is based on water recovery, and area irrigated. We end up with a figure for a loss of employment.

PROF WHEELER: Yes. Correct.

THE COMMISSIONER: So how does that – what is the design of their study that attributes that causal relation in job loss to the reduction in an irrigated area?

5

PROF WHEELER: So, basically, they model each community. So it's (a) they've got very small observations which causes problems within statistics anyway. They just have very few variables trying to drive their dependent variable. And the number of models kind of feed into each other and they only model areas of statistical local areas where they – where there is quite a large area of irrigation and area watered. So to be able to know what their models are, you have to kind of look at a number of different reports and put them together. And I don't think this technical overview provides the actual models or the results. The KPMG consultancy report has the details of all their particular models.

15

But there is just – I suppose a key point is, you know, what they're trying to do is quite difficult. To the extent it's very easy to say they've missed out a whole heap of key variables that should have been in there. And there's other methods of data analysis such as CGE modelling, which is computer general equilibrium model, which is a model of a whole Basin which was done, originally, 2010 and 2012. It could have – those sort of models take into account adaptation, technological change, commodity price movements, etcetera. The key point is that there's other methods they could have used that would have taken into consideration impacts of water recovery within basins with a lot more robust results. We could have been a lot more confident.

25

MR BEASLEY: And you just mentioned the KPMG report. If we can go do that because they are slightly more exclusive about what they're doing. So that's the 'Northern Basin Community Modelling' KPMG report, November 2016.

30

PROF WHEELER: Yes.

MR BEASLEY: That might be in the witness' bundle. If the tabs are the same as mine, it will be tab 5. That's the one the Commissioner has got. So if you go to tab 5, Professor Wheeler, there. You should hopefully have the - - -

35

PROF WHEELER: Yes.

MR BEASLEY: So if we turn to page 11, where they – which is chapter 3 of the report where they discuss the development being modelled, you will see under 3.1, in the second sentence:

40

A key model input for each community is the number of hectares of irrigated farmland that would be supported by different water recovery scenarios.

45

PROF WHEELER: Yes.

MR BEASLEY: And that's, essentially, how they've approached the modelling.

5 PROF WHEELER: Yes. So they've modelled that within each community. So both the southern and the northern Basin, they select out a certain amount of areas to model. And they model each one individually.

THE COMMISSIONER: But at the end of that first paragraph of 3.1, they introduce the idea of what, to use their word, ideally, the simulations would be designed to answer. Do you see that? It says:

10 *Ideally, simulations using this baseline –*

that is, 1999-2000 –

15 *would be designed to answer the following question.*

And do you see that long four and a bit line question ends up, after referring to the variables of irrigated acreage, wages and jobs, population, they say:

20 *In the context of underlying climate variability –*

well, that will include aspects of climate change, will it not?

25 PROF WHEELER: Yes.

THE COMMISSIONER:

... underlying productivity improvements –

30 that will include the mechanisation and chemical and genetic improvements, I think.

PROF WHEELER: Yes.

THE COMMISSIONER:

35 *... and other factors affecting each community.*

And the beauty of the expression "other factors" is we don't know what they're referring to.

40 PROF WHEELER: Mmm.

THE COMMISSIONER: At least in those general terms, this ideal state of affairs, it starts off with the word ideally, this ideal state of affairs does include variabilities more than irrigated acreage, jobs, wages, etcetera. It includes all the other things that you have used as illustrations of what has to be taken into account. Did they do that, though?

PROF WHEELER: No. No, they didn't. So - - -

THE COMMISSIONER: So that sentence, I really can read as pretty much a concession or a statement accepting that it would be better if that had been done?

5

PROF WHEELER: Yes.

MR BEASLEY: And that's made good further on at page 19, where there's a part of the chapter that deals with what they state are the limitations of their modelling approach.

10

THE COMMISSIONER: Yes. But, Professor, I think you're suggesting that one way to describe the limitations of the approach is that you would need to be extremely cautious, bordering on sceptical, about any causal attribution.

15

PROF WHEELER: Yes, yes. So - - -

MR BEASLEY: So at 3.3 at the bottom of page 19:

20 *Importantly, the structure set out in figure 3.3, which is over the page, provides a reference point for understanding the limitations of our modelling approach. That is, we can be transparent about what assumptions we have made about those parts of the local economy which are not modelled explicitly. Similarly, we can recognise the potential limitations of using reduced form*
25 *representations of relationships, for example, in a structural sense, jobs in the agricultural supply sector depend on activity in the farm sector, which in turn depends, amongst other things, on the amount of irrigated farmland. In the absence of a direct measure of activity in the farm sector, we might use a reduced form approach that relates jobs in the agricultural supply sector to the*
30 *amount of irrigated farmland.*

In other words, more hectares equals more jobs.

PROF WHEELER: Yes.

35

THE COMMISSIONER: Now, reduced form approach – it's reduced to below what would be ideal or better.

PROF WHEELER: Reduced form means it's reduced to only a particular variable of interest, which – so if – in econometric modelling, that's fine if you do an initial model, which is your full model of all potential things that you think may impact - - -

40

THE COMMISSIONER: Yes.

45 PROF WHEELER: - - - on your dependent variable, and then you may do a reduced model because it might be your only variable of interest, but you've already taken into consideration a whole heap of things around what – what else potentially drives

it. But in a situation such as this consulting report, they only do the reduced form approach, in the sense they only have a few variables trying to explain job changes.

THE COMMISSIONER: Yes.

5

PROF WHEELER: And my argument is that they miss all the other key points of interest and hence they overestimate the relationship between irrigated area, water use and jobs within communities, plus the fact that they have a whole heap of statistical problems with how they do their models and the – the methods chosen, the communities chosen to model – there's sample selection bias on that. I just know if I had their exact data they used, I could most likely come up with completely different result.

10

THE COMMISSIONER: Well, now, could I just, while conveniently at that part in the KPMG report, ask you about figure 3.2 on page 18.

15

PROF WHEELER: Yes.

THE COMMISSIONER: There is a steeper decline in seasonal jobs in cotton production there suggested between 2000 and 2006 than between 2006 and 2011. Is that not right?

20

PROF WHEELER: Yes, it is steeper, yes.

THE COMMISSIONER: By which I mean it's literally steeper in terms of the graphic, but - - -

25

PROF WHEELER: Yes.

THE COMMISSIONER: - - - it means there's a larger loss of jobs in absolute terms in the first of those periods than the second periods.

30

PROF WHEELER: Mmm.

THE COMMISSIONER: And that presumably precedes any possibility of - - -

35

PROF WHEELER: Water recovery.

THE COMMISSIONER: - - - water recovery affecting acreage under production.

40

PROF WHEELER: Yes, yes, and drought – I mean, there was a – there was – 2002 onwards, you know, we did have reduced rainfall and increased temperatures, but the most severe parts of that reductions in allocations was 2006 onwards.

THE COMMISSIONER: Yes.

45

PROF WHEELER: So, you know, a direct interpretation of that graph would be technological change drove out more jobs, then drought - - -

THE COMMISSIONER: Or drought.

5

PROF WHEELER: Or – then drought, and then I would say – then potentially drought.

THE COMMISSIONER: But when one knows what happened between 2000 and 2006, with drought, and presumably one knows something about mechanisation and chemicals and genetics; is that right?

10

PROF WHEELER: Mmm.

THE COMMISSIONER: You know something about that for that period?

15

PROF WHEELER: Yes, yes.

THE COMMISSIONER: That would tell you, for the later period, that you can't leave such matters out of account, wouldn't it?

20

PROF WHEELER: Yes, correct.

THE COMMISSIONER: Do I understand correctly, nonetheless, they have?

25

PROF WHEELER: Well, they talk about it, but it's not in their actual model.

THE COMMISSIONER: I mean left out of account in terms of measuring it. Yes.

PROF WHEELER: Trying to estimate, yes. I mean, many – many things are left out of the estimation, yes.

30

THE COMMISSIONER: And as you brought out very fairly, they draw to attention that they don't do it.

35

PROF WHEELER: Part of drawing to the attention was that there was a peer review done of their work, which highlighted a number of major missing areas, which was fine in – in what it highlighted. It also didn't highlight a number of other issues, but part of – part of responding to the peer review was putting in a lot more commentary to say, okay, we have potential problems in these different areas.

40

THE COMMISSIONER: Yes. Yes, thanks.

MR BEASLEY: Just let me turn that up. What tab is that peer review?

45

MR O'FLAHERTY: Four.

MR BEASLEY: That's why I can't find it.

THE COMMISSIONER: Have you been in any contact with Dr Cretegy or Dr Malakellis?

5

PROF WHEELER: Are they – they're the KPMG - - -

THE COMMISSIONER: On the back page.

10 PROF WHEELER: Yes. Yes, they're the authors. No, I haven't. I don't know who they are. I've never seen them publish anything in the broader economic space. That's not to say they haven't, but I don't – I don't know of them.

15 MR BEASLEY: Just on that point – first of all – and I'll come to the details later, though – these are matters that you have had discussions with relevant people that have responsibility for socio-economic analysis with the MDBA; that's - - -

PROF WHEELER: I – I have provided a number of advice over the years over how potentially the MDBA can model economic impacts within communities.

20

MR BEASLEY: Right. I'll come back to that. You mentioned the peer review report. Am I right that's the report that I mentioned earlier, the final review report by the University of New England?

25 PROF WHEELER: Yes, number 4.

MR BEASLEY: Can I just ask you this: the authors of that are Dr Boyd Blackwell. Are you aware of whether he's published any work or a paper on water economics on the Basin?

30

PROF WHEELER: Not to my knowledge.

MR BEASLEY: What about Mr McFarlane?

35 PROF WHEELER: Not to my knowledge, but I – I can't say for sure.

MR BEASLEY: No. You can only talk about what you – the extent of your knowledge, so I'm not asking you for a guarantee. But you've worked extensively in this area, as you said, for how long? 20 years.

40

PROF WHEELER: 20 years.

MR BEASLEY: All right. So it would be fair to say that you keep up to date with other people's work in this area?

45

PROF WHEELER: I think so. I mean, one of my jobs is – I have a number of jobs as an editor of agricultural economic journals, so I often have to send papers out for

review, and hence I have to know who are the experts in an area, to be able – for them to conduct peer review.

5 MR BEASLEY: Can I just suggest to you if Mr Blackwell or Mr McFarlane or, for example, Mr Stayner, had published a significant paper on water economics or water economics in relation to the Murray-Darling Basin, it's unlikely that you wouldn't be aware of it?

10 PROF WHEELER: No, but I'm - - -

MR BEASLEY: I'm not asking for a guarantee. It is unlikely you would not be aware of it?

15 PROF WHEELER: Unlikely.

MR BEASLEY: Yes. Okay. We may as well deal with it now. No, I just – I know. Look, first of all, I will complete what I was taking you to in the KPMG report, but I'll come back to that peer review report in a moment. We were on, Commissioner – taking you to the table at page 18 and we discussed the contents of page 19 under the section 'Limitations of the Current Approach'. Over the page is table 3.3, and on pages 20 and 21, there are stylised – on 20 there's a stylised representation of 3.3, and on 21, a stylised figure 3.4, both of which discuss, though, in the context at page 20 in relation to this – the limitations of the current approach section, and, in particular, there's the concession that's in the bottom paragraph on page 20 that it's evident from figure 3.4 – and 3.4 is just a slightly different depiction than 3.4, but in the same vein, that:

25
30
35
The simulation model captures only a very small fraction of the economic relationships within the local communities and impacts of water recovery on employment gives thus only a partial representation of the full economic impact on the community. It is important to reiterate that this outcome reflects data and resource limitations rather than a limited understanding about how local economies operate. Having said that, we believe that significant information about how the local economy operated is contained in the jobs data.

So there's a concession that they haven't incorporated some of the things you suggest should be incorporated to get a more reliable and trustworthy result in relation to impacts of water reduction in local economies.

40 PROF WHEELER: Correct.

MR BEASLEY: All right. And I think, just to complete what's disclosed, in terms of methodology, if we now go to the RMCG report, which you should have behind tab 3 – tell me when you have that, and if you'd be kind enough, please, to go to page 8, and you'll see there that they indicate they've done what you suggest is not the best approach under 2.2.3, 'Production Impact Assessment':

Chapter 5 takes the figures of projected water use by sector from the previous chapter – translates them into production impacts. It records and analyses –

etcetera:

5

...identifies likely reduction in allocation volume –

etcetera:

10

...extrapolates from the SCB to establish total volumes and distribution that would have occurred in the future across the Goulburn-Murray Irrigation District –

etcetera, in the absence of the Basin Plan, and then:

15

...calculates an economic value for this loss of future production.

PROF WHEELER: Mmm.

20

MR BEASLEY: So that's the fairly simplistic approach you were talking about that you describe as producing a lack of reliability in - - -

PROF WHEELER: Yes, it is. So I – I just make a comment there.

25

MR BEASLEY: Yes, please do.

PROF WHEELER: I mean, there are – there are two models. So - - -

30

MR BEASLEY: Yes.

PROF WHEELER: EconSearch actually did the – I think using either input/output or CGE – I can't quite remember, but – so they – they calculated the actual economic value impact within the community.

35

MR BEASLEY: Yes.

PROF WHEELER: But they state quite clearly that it was based on the assumptions of the reductions in future agricultural reduction that would result, which comes about through completely inadequate modelling previously. So it's just important to kind of distinguish between the two different types of assessment in that report.

40

MR BEASLEY: Yes. Thank you. And you've helped to remind me, by saying that – if you could go back to page 4 of this report, so there's a section there, 1.5 on page 4, 'Study Scope and Peer Review'.

45

PROF WHEELER: Mmm.

MR BEASLEY: And they discuss that the MDBA is undertaking a review on the social and economic impact of the Basin Plan on 21 regional communities across the northern basin, then they say in the next paragraph:

5 *This study, by contrast, was promoted and funded by the regional community.*

And that is the Goulburn-Murray Irrigation District, and then dropping down to the bottom of the page, they say:

10 *The final report was subject to peer review by John Rolfe –*

R-o-l-f-e:

15 *...professor of regional economic development at Central Queensland University.*

They can say in summary of his peer review, but the full peer review is on the very last page of this report. So if you go to page 86, annexure 6:

20 *Peer review.*

PROF WHEELER: Yes.

25 MR BEASLEY:

Review of RMCG study report Basin Plan GMID socioeconomic impact assessment overview.

And then it commences with two paragraph:

30 *This is a well-constructed report –*

etcetera:

35 *...that provides a thorough analysis –*

I'm not going to read the whole thing out. Is Professor Rolfe someone known to you?

40 PROF WHEELER: He is, yes. So I should state he's not a professor of water economics.

MR BEASLEY: Right.

45 PROF WHEELER: But he is – he is a very good economist.

MR BEASLEY: Yes.

PROF WHEELER: And when I read this overview, I was a touch surprised, given my reading of the report.

MR BEASLEY: Yes.

5 PROF WHEELER: And I contacted John and said, “John, what was your peer review on this?”

MR BEASLEY: Yes.

10 PROF WHEELER: And he provided it to me - - -

MR BEASLEY: Yes.

15 PROF WHEELER: - - - and though – even – even though the overview is written quite positively, the actual peer review that he did highlighted a number of considerable problems of the report that weren’t addressed.

MR BEASLEY: Just stop there. This purports to be Professor Rolfe’s – well, a reader would reasonably consider, I suggest, that what is printed on page 86 is the peer review by Professor Rolfe.

20 PROF WHEELER: Yes. And it’s not.

MR BEASLEY: All right.

PROF WHEELER: It’s only the first – it’s the overview page. It’s not the actual peer review.

30 MR BEASLEY: So you have read a peer review that goes beyond the glowing praise in these two paragraphs and actually makes criticisms of the report.

PROF WHEELER: Yes.

35 MR BEASLEY: I don’t suppose you can explain why those criticisms aren’t here?

PROF WHEELER: It would have been probably too difficult for them to address the criticisms. It was too hard, so, obviously, it’s just ignored.

40 MR BEASLEY: I guess that’s speculation on your behalf, but informed speculation?

PROF WHEELER: I think that is pretty much 99 per cent correct.

45 MR BEASLEY: All right. Can you give the Commissioner an example of, as best – I take it you don’t happen to have a copy of this peer review, do you?

PROF WHEELER: I do. Not here.

MR BEASLEY: Would you be able to provide it to us?

5 PROF WHEELER: I would probably have to ask John if I could pass it on.

MR BEASLEY: Yes. I completely understand that. But if you ask Professor Rolfe – did you discuss with Professor Rolfe that only part of his peer review had appeared in the final version of this report?

10

PROF WHEELER: Yes.

MR BEASLEY: Was he happy or unhappy about that or neutral?

15 PROF WHEELER: He was surprised.

THE COMMISSIONER: I take it all his contact details are set out on page 86 because the – those who published this report don't wish to conceal from anyone how Professor Rolfe could be contacted, no doubt, for inquiries.

20

MR BEASLEY: That might be true, but can I draw your attention, Commissioner, to above the words:

Professor John Rolfe –

25

in bold, it says:

This peer review was provided by - - -

30 THE COMMISSIONER: Yes.

MR BEASLEY: Now - - -

35 THE COMMISSIONER: Well, that, presumably, is a reference to what's called in the sentence beforehand, external peer review, etcetera. There's a - - -

MR BEASLEY: This isn't a question for the witness. My own report is that before the witness pointed this matter out to me, I read that as being the peer review.

40 THE COMMISSIONER: Yes. It's an overview of the peer review.

MR BEASLEY: Well, it may not even be that.

45 THE COMMISSIONER: Well, we will see. If you can make inquiries of Professor Rolfe, we can make inquiries of Professor Rolfe as well.

MR BEASLEY: Yes.

THE COMMISSIONER: But I take it that those who published the RMCG are perfectly happy for the peer review to be available because that's why they provided his contact details. It's a rather large assumption. But, anyway, you might be right.

5 THE COMMISSIONER: It can be tested.

PROF WHEELER: Usually they don't expect people to actually look at a peer review.

10 THE COMMISSIONER: No. Maybe not. But I presume that in what I might call scholarly etiquette, you wouldn't dream of concealing it. Is that right?

PROF WHEELER: No, no.

15 MR BEASLEY: Can I ask this, to your knowledge, was Professor Rolfe's permission sought to only publish part of his peer review and not the entire peer view?

PROF WHEELER: I can't answer that.

20

MR BEASLEY: All right. Doing the best you can to remember, what were some of the criticisms he made of the report?

25 PROF WHEELER: It's been a while since I've read it but I think it was along the lines of probably farm profitability versus farm production. I think that was a key point, because it a key point economists generally make. I think there was some other criticisms about some of the assumptions. It would have meant them remodelling, basically, if they actually addressed his comments that he made that he was – where he had some issues within the report.

30

MR BEASLEY: All right. And do I take from that the reason you said they would not have been able to answer these criticisms is linked to the answer that you just gave, that they pretty much would have had to have started from scratch again.

35 PROF WHEELER: Yes.

MR BEASLEY: In terms of their modelling approach.

40 PROF WHEELER: Yes. Well, from their whole report, from my peer review of it, had fundamental problems of economic methodology within it, would have had to have been completely redone. And the conclusions that they were drawing – I mean, it's just a fact that they – not only did they make mistakes in their assumptions but it's also a fact, because it was my own work, so I know it very well - - -

45 MR BEASLEY: Now, let's not skip over that. What are some of the mistakes in the assumptions then?

PROF WHEELER: Well, concentrating on-farm production versus farm profitability.

MR BEASLEY: Yes.

5

PROF WHEELER: Assuming that there's a complete linear reduction – linear proportional - - -

MR BEASLEY: Linked to the criticisms you've already made in your submissions?

10

PROF WHEELER: Yes.

MR BEASLEY: Sorry. Yes. All right. I thought you were talking about something separate.

15

PROF WHEELER: Just, you know, ignoring all other possible variables of what drives change within communities, assuming the Basin Plan causes all those problems. Misreporting existing literature and – to the extent to support the story that they were trying - - -

20

MR BEASLEY: Can you give me an example of that in the report?

PROF WHEELER: Well, I will have to have a look. To the extent - - -

25

MR BEASLEY: We're going to have a morning tea break at some stage so if you would like to take that question on notice and look at the report while someone gets you a coffee, you can do that.

PROF WHEELER: That's very nice.

30

MR BEASLEY: So do you want to come back to that question?

PROF WHEELER: Yes.

35

MR BEASLEY: All right. We will wait for that question. Can I just ask you, before we do have a break, this report, I don't know whether – I don't actually know whether he is the author, but there's someone identified as the key project contact which is someone called Matthew Toulmin. Do you know him?

40

PROF WHEELER: I don't know him but I did contact him after reading the report.

MR BEASLEY: Right. Yes.

45

PROF WHEELER: Because I was completely confused by a number of figures in the report and data because I didn't know where he sourced it from. So I asked him to provide me the sources.

MR BEASLEY: Yes.

PROF WHEELER: Which he could not. He just said it was a collection of data over time from a variety - - -

5

MR BEASLEY: What does that mean, a collection of data over time? That would just be - - -

PROF WHEELER: If you can't provide the exact source for where you get data, generally, it means it's potentially anecdotal or you don't have strong evidence for it.

10

MR BEASLEY: Right. So he wasn't able to provide you a satisfactory answer to that query.

PROF WHEELER: No. And he didn't want to provide me with the data either. He chose not to.

15

THE COMMISSIONER: Did he explain why?

PROF WHEELER: Said it was their own – the data they had been collecting for years and generally – it's difficult, researchers don't often share data if it's something they've been collecting. That or he didn't want me to pull it apart.

20

THE COMMISSIONER: So why don't researchers share data?

25

PROF WHEELER: Generally because – well, it depends. If it's existing data from a variety of databases that we have collected – for example, my own survey data, thousands of records over time. I only share it if I'm working with people on projects, in a sense, (a) because, for that reason, it's confidentiality and you can actually identify farmers within it, so I have an obligation ethics-wise to be very careful in sharing data.

30

THE COMMISSIONER: You published it in a de-identified form.

PROF WHEELER: Yes. So that's one of the requirements of when we go out and do surveys that no one can ever be identified from the research that we do, in case of particular harm. But other researchers don't necessarily share data because they have spent years and years collecting it and they would lose research advantage. So it's only generally in collaboration. But I share data where I have collected it from publicly available sources. I will share that data and it is non-confidential.

40

MR BEASLEY: That was one of the things you asked him, I assume, "Is some of this data publicly available and where do I find it?"

PROF WHEELER: Well, I wanted to know the sources.

45

MR BEASLEY: Yes.

PROF WHEELER: Because I was – some of the – it just did not look right to me and I still don't believe a number of the data in the report. But I don't believe a whole heap of assumptions either – I don't believe anything in the report, I should say.

5 MR BEASLEY: All right.

PROF WHEELER: And, to me, it's a worry because this report is the one most used by rural communities to justify the fact that buyback is hurting their communities.

10 MR BEASLEY: Yes. It's nearly 11.30, Commissioner. Is now a convenient time to have a 15 minute break.

THE COMMISSIONER: It is. Thank you very much.

15 MR BEASLEY: Okay. I usually leave it to you to adjourn, but I can say we're adjourned to - - -

THE COMMISSIONER: We will adjourn now and, no doubt, someone will make good your promise about coffee for the witness.

20 MR BEASLEY: Yes. All right. Thank you. So 15 minutes or 20 minutes?

THE COMMISSIONER: Fifteen.

25 MR BEASLEY: All right. Thank you.

ADJOURNED **[11.30 am]**

30 **ADJOURNED** **[11.44 am]**

35 MR BEASLEY: I should say, Commissioner that I was told in the break that we're not allowed to bring takeaway coffees into the building, by dictate of the management. I still, nevertheless, managed to get one which means someone has broken the law. But whoever that person is, if their name's in the freezer, it's coming out. Someone from the Town Hall's name is going in. Just moving forward,

40 did you find the reference that I asked to you locate and you're concerned about?

PROF WHEELER: Yes. Okay. So the question you asked - - -

THE COMMISSIONER: Which page should I go to? Sorry.

45 PROF WHEELER: In – it's annex 3 in the RMCG report. I'm not sure of the page.

THE COMMISSIONER: Yes. That's all right. Annex 3. Starts off at page 71.

PROF WHEELER: Yes. Okay. So annex 3 – I mean, this is just an example, I think, of the whole report in terms of – to me, it was about they were trying to paint a
5 negative impact of buyback and saying how terrible it has been for the community.
And so just – I will try and find the actual page. Okay. A.3.4.

THE COMMISSIONER: Thank you.

10 MR BEASLEY: A.3.4.

THE COMMISSIONER: Page 74. Yes.

PROF WHEELER: I'm just trying to find the exact thing. So part of my criticism
15 was they have used work of mine in terms of survey of sellers to – sellers of
irrigators – irrigator sellers of water entitlements to the Commonwealth.

MR BEASLEY: Is that footnote a reference to your work, is it?

20 PROF WHEELER: Yes. So I partnered with MGA to actually do the analysis of
water entitlements - - -

MR BEASLEY: Just tell us, is that Marsden Jacob?

25 PROF WHEELER: Marsden Jacob. Yes. So I was the one who did all the surveys.
So part of the criticism - - -

MR BEASLEY: What does SUPAC stand for?

30 PROF WHEELER: That – that was the department of Environment. So
Commonwealth Department of Environment before water moved from environment
to - - -

MR BEASLEY: Is that when it had a climate change aspect?

35 PROF WHEELER: Yes. They changed their name about three times.

MR BEASLEY: We don't believe in that any more. Go on.

40 THE COMMISSIONER: Well, now - - -

MR BEASLEY: Sorry. You were criticising - - -

45 THE COMMISSIONER: Under the heading What Happened to the Sellers, the
authors of this report describe and, to a degree, explain the work that you had done
with MJA in 2012.

PROF WHEELER: Yes. So they were basically talking about that report. And then if you look on page 75, their lessons from the research into the impact of buybacks. So the last kind of paragraph before 8.3.5.

5 THE COMMISSIONER: Yes.

PROF WHEELER: And the second point – so they’re just making a general point:

10 *Sellers who maintain production did so through increased purchases on the temporary market.*

THE COMMISSIONER: Yes.

15 PROF WHEELER: Okay. So they’re saying that’s the lessons that this study has. So that is – that’s directly false. So by saying that, basically they’re saying the only possible way that farmers – irrigators who sell water, who stayed farming, the only possible way they couldn’t have changed their farm production was that they bought temporary water on the market. So that’s – that’s the statement they made there. And this is – this is pretty consistent of the whole report in terms of drawing
20 inferences from other work.

MR BEASLEY: Did you – was that one of the things you raised with Mr – I’ve forgotten his name, Matthew Toulmin, when you rang him?

25 PROF WHEELER: No, no. I didn’t talk about that. But, for me it’s a common issue. So the assumption that if you sell water, farm production has to go down. So that’s the common assumption made everywhere. This is what this report reiterates. It’s false. And, in a sense, if they actually read our report, we explain very, very clearly that buying temporary water is just one measure that farmers actually do after
30 selling permanent water. And some farmers don’t have to even buy temporary water at all. So there is a whole heap of farm adaptation measures that farmers can do – so ignoring the fact that they actually had surplus and buffer water so they technically didn’t even decrease water use at all, assume they were using all their water entitlement and all their water allocations, if they sold water, yes, they could have
35 bought temporary water on the market. But they can also do a whole heap of other things like decrease their irrigation area, change crop and land use management.

MR BEASLEY: Diversification.

40 PROF WHEELER: Diversification. Go to dry land. They can – if you’re a dairy farmer, instead of watering pasture for lucerne to – for cows, you know, to graze on, you can buy feed barley. Okay. You can swam inputs. So - - -

45 MR BEASLEY: Just pausing there, there is a tipping point where a dairy farmer would make a decision that it’s now, based on the price of water per megalitres, there’s a tipping point where the farmer would make a decision it’s cheaper for me to buy barley than it is to water to get some lucerne for the cows to eat.

5 PROF WHEELER: Yes. Because there's an opportunity cost for water. They can trade it and sell it. So we've done research on that and it's about – marginal impact is about \$300 a megalitre. So, above that, dairy farmers generally start selling their water allocation on the market and buying feed barley instead to keep maintaining dairy production.

MR BEASLEY: And because that's the smartest decision to make in terms of their revenue. Correct?

10 PROF WHEELER: If you're trying to optimise farm profitability, yes. You make a decision about inputs and outputs and what's my best mix at any point in time.

MR BEASLEY: But would the assumption you make, that they're trying to maximise their profitability rather than do the opposite.

15 PROF WHEELER: Yes. And that's what analysis of thousands of surveys show us.

MR BEASLEY: Yes.

20 PROF WHEELER: It doesn't mean that's what every individual farmer does.

MR BEASLEY: No.

25 PROF WHEELER: But it is an average over thousands of analyses.

MR BEASLEY: There's no doubt good farmers and bad farmers, informed farmers and less well-informed farmers.

30 PROF WHEELER: Yes. Correct.

THE COMMISSIONER: Well, the thesis in A3.4 of the RMCG report to which you've drawn my attention, particularly includes the notion that in the longer term than the three years ending 2013, demand for temporary water seems to have resulted in its price increasing about fivefold. Is that right? They point that out, I think.

35 PROF WHEELER: Yes. So - - -

THE COMMISSIONER: And then they say that that means, to use their expression, that:

40 *Buyback, therefore, helped convert the impact of the drought from a short-term debt financing crisis into a medium-term temporary water financing crisis. It merely deferred the timing of the impact by five years.*

45 That's a reference to the fact that there was this period when temporary water prices were relatively low for people who had sold some or all of their permanent allocation entitlement, had maintained production by buying temporary water but that as prices

went up, there was the effect they describe. I am wondering if you can explain to me, does the temporary water price more or less reflect demand and supply?

5 PROF WHEELER: Yes. So excellent question. This is what a lot of my research is on. So their assumption is that because of increased demand in the temporary market from those farmers who've sold permanent water, it's somewhere else in their report that they – they predict – and it's very a very, very poor model – that because of the increase in demand, there's a 100 per cent increase in the temporary water market price. So that's – that's one of the big conclusions from this study. All my research suggests this is completely wrong. So, for a start, the assumption that they use to get there, so that dot point, the sellers who maintain production only did so through buying temporary water, (a) that's blatantly false. And they had the report to show exactly the amount of percentage of farmers who actually did so, which was a small amount.

15 THE COMMISSIONER: About how much?

PROF WHEELER: I can't quite remember. I think it was about a third.

20 THE COMMISSIONER: Yes.

PROF WHEELER: But don't quote me on that. I would have to go back and look at it.

25 THE COMMISSIONER: So that dot point on page 74, when it says that the 33 per cent stated production had reported little impact on their level of production could only do so by becoming more reliant. You say that's an unsubstantiated speculation?

30 PROF WHEELER: Yes. Well, it's incorrect when you look at thousands of observations of farms and what they actually did in response - - -

THE COMMISSIONER: But I shouldn't read "could only do so" as being the report on observations of actual behaviour. It is, apparently, a kind of reasoning that talks about logical possibilities.

35 PROF WHEELER: Yes.

THE COMMISSIONER: And they seem to have, you say, thereby, ignored your observation.

40 PROF WHEELER: Yes. So they use it as an assumption as to why, in their view, there has been a 100 per cent increase in the temporary water price as a result of buyback.

45 THE COMMISSIONER: Now, what about the end of that sentence, could only do so by becoming more reliant? If I was to read that as meaning that there were more purchases than there had been before, is that correct?

PROF WHEELER: There's – over time. So if you look at the water market over time – take the Goulburn, where I've actually done most of my research on water markets, because we've got data from early 1990s onwards about volumes and prices in the temporary and permanent market.

5

THE COMMISSIONER: Yes.

PROF WHEELER: So if you model water markets – so this is one of the negative externality impacts that they say buyback has, that it's increased water prices permanent and temporary and, therefore, farmers are suffering as a consequence and so on. But coming back to your point about demand and supply and how does it impact on water markets – we know through all our modelling that scarcity factors, namely, reductions in rainfall, drought and percentage of water allocations received by farmers – so water scarcity impacts are the biggest drivers of water markets, particularly temporary water markets. And we've actually – and we've just finished this work, we have tried to model the impact of institutional change such as buyback in returning water from irrigation to environmental use.

The impact of pulling that water out of the market, so it's almost like a reduction in supply, compared to increasing demand factors, increased demand for temporary water through – we know there's a lot new permanent irrigation going on who rely on temporary water, you know, other scarcity factors such as rainfall, dam storage, water allocations, etcetera, to try and test this claim that buyback has had a huge impact on temporary water market prices. And, basically, what we conclude is, yes, it has had an impact, but it's a very, very small one. So for every 1 per cent of volume bought out of the market by the Commonwealth, it leads to an increase in temporary water market prices of 0.01 per cent.

So a very small per cent over time. The reason being, you have most of the fluctuation because of scarcity factors and increased demand over time. So that's – that's, basically, what the research is telling us. This research, therefore – so the concern I have about this research is that they're directly blaming buyback on the increase in temporary water market prices. So if I give you an example, so they have fluctuated quite considerably. They've gone from, you know, \$10 – they used to trade very – \$10, \$15 a megalitre in the 90s coming through to 2000s. You hit the drought, temporary water market prices hit \$1,000 a megalitre at the height of the drought. After flooding - - -

THE COMMISSIONER: That's the intent, isn't it, of devising a regime of trading in water? I - - -

PROF WHEELER: Yes. Part of it is to reflect the marginal value of water.

THE COMMISSIONER: At the moment, at least, I'm not making a social comment but it is actually intended to hit as high a price as the market will bear.

PROF WHEELER: It's intended to allow, yes, the water market to float.

THE COMMISSIONER: As high a price as the water market will bear.

PROF WHEELER: Yes.

5 THE COMMISSIONER: Because somebody has theorised that that is a social benefit.

PROF WHEELER: Yes. And all our research suggests that it is a benefit in the sense to irrigation in kind of helping maintain production.

10 THE COMMISSIONER: Well, water is a benefit to irrigated production, you mean?

PROF WHEELER: Yes. In terms of - - -

15 THE COMMISSIONER: Why are high prices for water a benefit?

PROF WHEELER: Well, in that situation, it's – say, take the millennium drought. So you had prices hit \$1,000 a megalitre.

20 THE COMMISSIONER: Yes.

PROF WHEELER: That was a situation where water allocations were at the lowest level ever.

25 THE COMMISSIONER: Yes.

PROF WHEELER: If you take South Australian irrigators who have high-security irrigation, they're used to getting 95 per cent of their water. In some of those years they only got 18 per cent of their water allocations and they were also faced with a reduction in rainfall. So without – if the water market hadn't existed, there is no way they could have had – got the water to keep a lot of their permanent crops alive and we would have had much more reduction in irrigation and farms across the Basin.

35 Because of the water market, you had rice and cotton growers in – for example, in New South Wales, who were able to shut down because they also received – they received even less water allocations than permanent croppers, being general security. The – the – the consequence for them was because they only had a very small allocation, there's no way they could put a crop in because they just didn't have
40 enough. So they sold whatever they could downstream, which – because New South Wales owns the largest amount of water entitlements, it was still a significant volume, even though the percentage of allocations was still small.

45 They could sell a large – they could shut their – their operations for the year, sell whatever temporary water they had on the market. They received \$1,000 a megalitre. Permanent irrigators got the water to be able to keep their crops alive and hence not go bankrupt, and annual irrigators had money to keep operating. So in that

sense, without the water market, we would have had a lot more bankrupts across the Basin without it. So - - -

5 THE COMMISSIONER: So if buyback had reduced the amount of water available, and if it be true that that had an influence on increasing the price, just by a crude supply/demand calculus, then on what you've just explained, buyback could be seen to have produced a benefit by which, during extreme dry times, revenue can be generated by the physical reallocation of the water downstream.

10 PROF WHEELER: So I - - -

THE COMMISSIONER: Is that right? Have I - - -

15 PROF WHEELER: Yes and no. So from an economic point of view, if you – so if buyback – so that point I made that okay, there's been a very, very small increase in prices as a result of buyback – nothing to the extent that RMCG predict, but an increase in the water market price benefits some and causes others the cost. So if there's an increase in a water market price, say temporary, if I'm a farmer and I've got surplus water and I'm selling it, it's a benefit for me because I'm getting more
20 money and it's supporting my farm business, but if I'm a – a buyer of that water, then it's an increased cost for me. So in one sense it's – it's neutral because a dollar increase on one side is the same as a dollar increase on the other side.

25 And – and over – that's from a temporary water market price, but if you take the water entitlement increase in permanent prices, this actually is beneficial for anyone who owns water, because their water entitlement ownership value increases, they can borrow more from banks, we can – banks now lend directly on water, so there's – there's positive – positive impact on those who own water, but those who are trying to get into the market, same as house ownership – it increasingly becomes more
30 difficult to buy water entitlements.

THE COMMISSIONER: So where I read, as I do from place to place in the RMCG report, statements that attribute harm to buyback by means of the indirect effect on the price of temporary water, you want me to take into account that there is a totally
35 opposite way of looking at the pricing of temporary water - - -

PROF WHEELER: Yes.

40 THE COMMISSIONER: - - - with respect to economic benefit.

PROF WHEELER: Yes, yes. So – yes.

45 THE COMMISSIONER: Now, the only alternative to having a market where scarcity and other factors will affect price – the only alternative to having a market is some kind of – do we just – state allocation; is that right?

PROF WHEELER: Well, yes, we can go back to not having any market and everyone - - -

THE COMMISSIONER: That's what I mean.

5 PROF WHEELER: Yes. Yes.

THE COMMISSIONER: So you're just given an allocation and - - -

10 PROF WHEELER: Yes.

THE COMMISSIONER: - - - a bureaucrat determines it. And you can't sell it.

PROF WHEELER: Well, yes, and water can't be traded, yes. But all economic modelling - - -

15 THE COMMISSIONER: No one seems at the moment to be arguing that that would be economically better for farmers?

20 PROF WHEELER: No. There's – there's been arguments about the – the benefit of water markets for a very long time.

THE COMMISSIONER: Yes.

25 PROF WHEELER: Irrigators are much more accepting of temporary trade than permanent trade, but our – our research shows that increasingly, more and more farmers – we know that – for example, we know that 80 per cent of all irrigators have conducted at least one water market trade as at 2015/16, so it's been an increasing method of farm management used by irrigators, especially within the southern Basin,

30 which has a lot more hydrological connection for water trade. It's – in terms of modelling, modelling of water markets shows that we get a – much more increase in value in terms of production, reduced bankruptcies, etcetera, improved benefits for farms, by having water markets in place. But – but an important point that we have to make is the institutional - - -

35 MR BEASLEY: No. Okay.

PROF WHEELER: - - - property markets, property rights around water markets - - -

40 MR BEASLEY: Yes.

PROF WHEELER: - - - are very, very important, so having compliance and monitoring, having checking, making sure we understand how water can move and the – the negative impacts of it. It's – those things are critical for a water market to be beneficial, and if you don't have those systems in place, then a water market's not

45 beneficial. But to – so the – the – yes, to the extent I – you don't see much arguments about getting rid of water markets in – in the Murray-Darling Basin. I

mean – but the argument around the world – so we work in lots of different jurisdictions around the world. They are at that point to say, “Is water markets beneficial or not?”

5 THE COMMISSIONER: Yes.

PROF WHEELER: But again it comes down to do they have the fundamentals and the institutions in place first, and then water markets are beneficial? If they don't, if they're in an area of high corruption and – and the science is not there, then water markets should not – are not going to be beneficial to be put in those situations.

10

THE COMMISSIONER: Thank you.

MR BEASLEY: Commissioner, just before I ask the witness another question – there's something I should've said right from the beginning. Professor Wheeler and her colleagues in their submission and, obviously, in her evidence today, have made comments and criticism of other people's work, KPMG, RMCG, etcetera. Those people, the authors of the reports or representatives of those firms, are not here, but that is their choice. I will tender some letters, both dated 22 June 2018, where RMCG and KPMG – relevant people there were first of all notified of Professor Wheeler's and her colleagues' submission, notified that she and Professor Grafton would be giving evidence today and on 12 July – that date may have changed by now, I think – but – and indicating that there would be a critique of their reports and inviting them to take any steps they want to take in relation to having themselves represented here.

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THE COMMISSIONER: It says if they wish to make a comment or be heard in relation to the evidence.

30 MR BEASLEY: Exactly. I can tell you that we have had no response from RMCG.

THE COMMISSIONER: Thank you.

MR BEASLEY: We've had a response from KPMG which has asked whether they can put something to us in writing and that they are “considering their position”, which is a phrase I've heard before.

35

THE COMMISSIONER: Thank you.

40 MR BEASLEY: I think there are other letters. I just don't have them to tender at the moment, but I tender those - - -

THE COMMISSIONER: Thank you.

45 MR BEASLEY: - - - letters. Obviously, they're not here. That chair is reserved for the MDBA, that one for the CSIRO, but we can get other chairs if they had chosen to turn up, but they haven't.

THE COMMISSIONER: Thank you.

MR BEASLEY: I want to go back to your – just to flesh out finally your concerns with using some sort of linear representation between a loss of water – a reduction in the water and a reduction in farm production, and your point that what really should be looked at is farm revenue. Just to clarify, the reason that you say farm revenue would be a better guide is that it is something that looks at some of the matters that you’ve already discussed in your evidence, such as – I think you say farmers are clever in your submission. In other words, if there is a reduction in water, they will make adaptations to keep their business going. You’re nodding. You’ve got to say “yes”.

PROF WHEELER: Yes. Correct.

MR BEASLEY: Sorry about that. It’s just that - - -

THE COMMISSIONER: You don’t have to say “yes”. Whatever is truthful. You were agreeing with him, I think.

PROF WHEELER: I was agreeing with him, yes.

THE COMMISSIONER: Yes. But just - - -

MR BEASLEY: See, I always associate a nod with a yes. I don’t know. I’m strange like that. But she wasn’t shaking her head vigorously, Commissioner.

THE COMMISSIONER: Could I just – is it too crude for me to think that the superiority of farm revenue comes from the fact that we are considering economic effect?

PROF WHEELER: Yes.

THE COMMISSIONER: That money is a measure of exchange value, which is at the bottom of any understanding of economic effect.

PROF WHEELER: Yes.

THE COMMISSIONER: Is that right?

PROF WHEELER: Yes. So if we’re worried about – so the point I often make about farm production versus farm profitability is farm production – farmers don’t necessarily always sell their output. So the viticulture industry is a very good example of this in the last few years, where there was a huge commodity price drop, and because of the – this happened in the citrus industry as well.

THE COMMISSIONER: Well, grape crops can produce gluts, which drop prices to a point where you might prefer not to pick the fruit.

PROF WHEELER: Exactly. Well, you've got the labour costs of picking fruit. Often you have to pick the fruit if you're going to worry about your production next year, but then in terms of the transport costs, what you actually - - -

5 THE COMMISSIONER: Yes.

PROF WHEELER: You know, how much it costs you to then get it to market, no matter if – even if you're getting a very small amount. Often you can get a situation where farmers won't sell 100 per cent of what they produce. They – sometimes they
10 dump their whole crop, or for whatever other reason – contamination, etcetera. So, therefore, farm production is not necessarily a perfect measure of the returns being received by a farm, so that's why we say farm net income, which is all farm revenue received, which is, you know, all farm revenue received, which is – production is a function of, you know, revenue, but lots of other things come into play – how much
15 they're – they're selling their produce at, and then all their costs in terms of what they're incurring to actually produce that. That's a better measure of economic returns within a community than just farm production. So it's – it's just a – it's just a kind of common – common economic principle.

20 THE COMMISSIONER: Did you mean that revenue is a function of production or the other way round?

PROF WHEELER: Yes, revenue – production drives revenue to some extent.

25 THE COMMISSIONER: Thank you.

PROF WHEELER: But then there's – there's other factors that drive it.

THE COMMISSIONER: Of course.

30 MR BEASLEY: You just used the term “common economic principle”. You're just saying this is basic fundamental economics; correct?

PROF WHEELER: Yes.

35 MR BEASLEY: And you have referred us, I think, in your submission to peer-reviewed articles that demonstrate that the evidence is that farm revenue is much less proportional to a reduction in water availability.

40 PROF WHEELER: Yes.

MR BEASLEY: For example, even at the range of a 0.1 per cent drop in revenue for up to a one per cent reduction in water.

45 PROF WHEELER: Yes.

MR BEASLEY: Yes. Were any of those peer-reviewed articles – did you see them cited or used by KPMG or RMCG?

5 PROF WHEELER: I – I can't say for sure, but put it this way. Their peer – their literature review was inadequate.

MR BEASLEY: And we've probably covered some of this territory, but I just want to emphasise it in case we've missed anything. The other factors that you say that the modelling by these other firms ignores, which are long-term influences on farm production, even if we assume that there is a correlation between farm production and a reduction in water, are things like – I think you mentioned very early in your evidence increase in urbanisation.

15 PROF WHEELER: Yes.

MR BEASLEY: Yes. And by that, you mean not so much people wanting to leave rural areas for the city, for example, to do tertiary education or not being interested in farming, but you're talking about increased area of urbanisation around rural centres or regional centres.

20 PROF WHEELER: Yes. Yes.

MR BEASLEY: Which – so land use changes or land zoning changes, whereby land once zoned rural gets a new zoning, for example, a residential-type zoning or a hobby farm-type zoning, that has an immediate increase in the value of the land.

25 PROF WHEELER: Yes, it changes the opportunity cost of it being for rural production versus selling for urban residential use.

MR BEASLEY: And another matter that you mention that the other firms' modelling ignores, you've already mentioned, is what appears to be changes in climate, ie, less rain, hotter conditions. Does that have a twofold effect: (1) I would assume – tell me if I'm wrong – that people that have lived in rural areas as farmers or irrigators for a long period of time might be noticing changes in weather patterns, and that creates fear and a perception that there is a greater risk for them in terms of how much water they will get.

30 PROF WHEELER: Mmm.

40 MR BEASLEY: "Yes"?

PROF WHEELER: Yes.

45 MR BEASLEY: And – but also, it impacts on – and you've mentioned this before – it impacts on the certain crops they can grow.

5 PROF WHEELER: Yes. So – so climate change impacts, if we assess it through increased – you have increased maximum summer temperatures over time. You have reduced rainfall over time. You have an existence of a drought period, which is an extended period of low rainfall and high temperatures. We know through our modelling that areas that experience greater increases in temperature, and historical changes from – from the mean in rainfall – we know that those areas are going to lose more farms over time.

10 MR BEASLEY: Yes.

15 PROF WHEELER: And it is – it is through two potential ways, either a perception from a farmer thinking it's just getting too hard, you know, "I'm going to sell up and leave," but there's also a direct influence on changing farm production in terms of reduced soil productivity, so it becomes harder. You know – ignoring any changes in plant breeding or technology, but it just becomes harder to produce the same crop over time. You've got shorter seasons. You've got change in, you know, frost patterns that mean certain varieties can no longer be - - -

20 MR BEASLEY: Yes.

25 PROF WHEELER: To be grown. So these are all the impacts, and so one of my concerns is that a lot of the current modelling that's been done in the Basin is – is concentrating on – on the relationship between reduced water diversions and farm and community changes over time, and we're ignoring the bigger picture of climate change, which, in our modellings, is much more significant in driving out farms than – than water use patterns. So that's a serious concern and one of the reasons we made this submission.

30 MR BEASLEY: And another, and we have touched on this also, but I'll come back to it – another criticism you have in terms of a important matter that's left out of the other firms' modelling in terms of long-term impacts on farming production is technological change.

35 PROF WHEELER: Yes. Yes.

MR BEASLEY: So things like round-baling for cotton would be one example where you now have a machine that replaces either a certain number of full-time employees or certainly a certain number of casual employees.

40 PROF WHEELER: Yes.

MR BEASLEY: Which has a flow-on effect to local economies.

45 PROF WHEELER: Yes. Yes, and, you know, the dairy industry also has increasingly capitalised as well. So, yes, it is specific to industries here, but each industry at certain periods of time has had a significant change in technology, and this has impacted on the demand for farm labour.

MR BEASLEY: And I think another point you make in relation to – even if you assume farm production is proportionate to water reduction, ie, a 20 per cent drop in water equals a 20 per cent drop in production, which I know you don't accept and say is fundamentally wrong, but even assuming that, even that type of modelling, you say, ignores things like, for example – you gave the example of if the price of water goes beyond a certain point, a dairy farmer, for example, will start buying barley and sell their water and not water for lucerne.

PROF WHEELER: Yes.

MR BEASLEY: As an example of an input that should go into a model - - -

PROF WHEELER: Yes.

MR BEASLEY: - - - if the model is going to have more accuracy than what the firms have done.

PROF WHEELER: Yes. You just have to – a – I mean, a point I often make, and I give talks in rural communities all the time, is that farmers are really, really smart. You know, we don't – we can't just assume that we take something off them and it's going to be a direct negative impact. A lot of them work out ways to deal with it, and there's a huge amount of adaptation measures that they can do to deal with a reduced input.

MR BEASLEY: Well, they've been adapting for a long time, haven't they? They don't need the Basin Plan to adapt. I mean, for example, a cotton grower, as an example, will probably grow a cotton crop if it's rained and there's water, if it's rained and it's snowed in the southern Basin and there's water. They might grow something else if they know next year what the climate projections are we're just not going to have that water.

PROF WHEELER: Yes. Well, a farmer will make choices based on prices they're going to receive, expectations, capital costs, yes, rainfall, etcetera.

MR BEASLEY: Sure. But my point is that even before the Basin Plan came along and water had to be recovered for the environment, under that plan, in relation to each valley losing a certain amount of water for the environment, farmers or irrigators already had to stay in business or maximise their profit, adapt from time-to-time to climatic changes that occur in what's a very variable system.

PROF WHEELER: Yes. They try to. Yes.

MR BEASLEY: And so that, as – that adaptation capacity as an input to a model isn't something new or that's only come around since the Basin Plan?

PROF WHEELER: No, no. And so economic models like CGE analysis, for example, they will have assumptions in there about adaptability of farmers in terms

of a change in the input like reduced water availability. So this – again, this is a common economic principle that you do assume a certain amount of adaptation by the farming sector.

5 MR BEASLEY: Again, when you – the use of the phrase – and this is by no means a criticism, it may be the correct expression but “common economic principle”, to someone that’s not an economist, does that basically mean something that is just a basic fundamental economic principle that - - -

10 PROF WHEELER: I would say - - -

MR BEASLEY: - - - an undergraduate would find out about quickly.

15 PROF WHEELER: Well, yes, we teach it quite often. And yes, if you’re an economic modeller in this space, I would say, yes, it’s something that’s well known.

MR BEASLEY: All right. One of the other topics that you raise a concern is that these reports by the other firms both ignore positive effects of buybacks and ignore negative effects of irrigated infrastructure subsidies.

20

PROF WHEELER: Mmm.

25 MR BEASLEY: Just dealing with the positive effects of buyback, your research – the data you’ve collected indicates that, in the main, whatever compensation irrigators or farmers have received for selling a part of their water entitlement, usually stays in the local community or is spent in the local community, in any event.

PROF WHEELER: Yes. Correct.

30 MR BEASLEY: Which, obviously, has a positive impact on that local community. And that sale proceeds from selling part of an entitlement, for example, could also be used as a means of reducing debt.

PROF WHEELER: Yes.

35

MR BEASLEY: Reducing debt means paying less interest.

PROF WHEELER: Yes.

40 MR BEASLEY: Reducing debt and paying less interest makes people more willing to or able to spend in local communities.

PROF WHEELER: Yes.

45 MR BEASLEY: Reducing debt and reducing interest also makes – reduces the incidences of bankruptcy, for example, or business failure, farm failure.

PROF WHEELER: Potentially. Yes.

MR BEASLEY: Potentially.

5 PROF WHEELER: Yes.

MR BEASLEY: In terms of the negative effects of efficiency measures, your main concern is the one, I think, that has been a long-term concern of Professor Grafton and Professor Williams. And that is, first of all, a seemingly not thorough analysis of the issue of return flows.

10

PROF WHEELER: Yes.

MR BEASLEY: But, also, I think you have a concern, and it's one of your recommendations, about a lack of transparency and a lack of information available as to where the Commonwealth money has gone for efficiency schemes precisely, what it has been spent on, and what has been obtained for the environment for it.

15

PROF WHEELER: Correct. Yes. So - - -

20

MR BEASLEY: And that forms part of one of the recommendations you have suggested to the Commissioner that there needs to be an audit of that process, bearing - - -

25 THE COMMISSIONER: I take it you mean a published audit?

PROF WHEELER: Yes. Well, a publicly available, audit. Yes. So we have concerns - - -

30 MR BEASLEY: I was just going to ask you where those concerns come from, if you could tell the Commissioner.

PROF WHEELER: Okay. So we have a number of concerns with irrigation infrastructure subsidies. So the first concern is it's not value for taxpayer money. So when - - -

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MR BEASLEY: So that's the two and a half times more expensive, for a start.

PROF WHEELER: Per megalitre. So two and a half – it has cost us, using figures provided by a Commonwealth department to us at the end of last year, we know that it cost us two and a half times more per megalitre to get water back through irrigation infrastructure subsidies than it does through buying water directly back off irrigators.

40

MR BEASLEY: So that was a figure given to you by the Department of Agriculture, the Commonwealth Department of Agriculture.

45

PROF WHEELER: They provided us data to be able to calculate those figures.
Yes.

MR BEASLEY: Yes. Okay. Sorry.

5 THE COMMISSIONER: What, including the hypothetical purchase after purchases had ceased?

PROF WHEELER: It was at a point in time. So there were still a few more
10 purchases to come after that. I think it was at the end of September.

THE COMMISSIONER: I see.

PROF WHEELER: But the overall amount, that 2.5 probably won't change much.
15 Maybe – to the extent it will probably go up in the future because it's getting harder and harder to identify low costs of recovering water through irrigation infrastructure, but - - -

MR BEASLEY: Well, with the recent 605 gigalitre adjustment in the Northern
20 Basin Review, the only water left to be recovered, so to speak, is the additional 450 gigalitres through some other efficiency measures. But in terms of what the MDBA would say was the recovery of – what was the 2,750, they would say they're pretty much there at 2,100 because of the STL adjustment and the Northern Basin Review amendment.

25 PROF WHEELER: Yes. And the supply projects that are meant to provide environmentally equivalent outcomes.

MR BEASLEY: Sorry. By SDL adjustment. That's what I was talking about. Yes.

30 PROF WHEELER: Yes. So - - -

MR BEASLEY: Sorry. I interrupted. You were answering the Commissioner.

35 PROF WHEELER: No, no. That's okay. So, yes, the first point is way more expensive. Second point is the re-flows issue that which I think you know quite well - - -

THE COMMISSIONER: Yes. I have heard about it. Yes.

40 PROF WHEELER: So the volume of water, therefore, through irrigation infrastructure is actually far less, in reality, for the environment than what is claimed. The third key point why we're concerned about irrigation infrastructure is the fact that we currently spent \$4 billion on upgrading irrigation infrastructure, and we've
45 changed capital cost, we have increased the likelihood of converting to permanent crop, because once you modernise equipment, it increases your incentive to go

towards permanent irrigation. And that's a concern for us in the future in terms of the risk, what's going happen in the next drought.

5 MR BEASLEY: That increases the risk profile.

PROF WHEELER: Yes.

10 MR BEASLEY: Because you can't – unless there's water given to a permanent plant, it will die.

15 PROF WHEELER: Yes, yes. So we don't think there will be the water to share in the next drought, basically. So that's – as an agricultural economist, that's of grave concern to me because, I mean, one of my research interests is we're trying to model rural suicide and mental health. So, for me, I have grave concerns about the future and what it may mean.

MR BEASLEY: I'm going to ask you some questions about that at the end.

20 THE COMMISSIONER: Before you do - - -

MR BEASLEY: No, not now. At the end.

25 THE COMMISSIONER: Could I just – a permanent planting will be, for example, almonds. Correct? An annual planting would be, for example, rice.

PROF WHEELER: Yes. Or vegetables.

30 THE COMMISSIONER: Or vegetables. I think horticulture is ordinarily used to describe permanent plantings more than the annual plantings.

PROF WHEELER: Yes.

35 THE COMMISSIONER: Although, it doesn't literally mean that as a matter of English but in this area, it tends to be the permanent planting.

PROF WHEELER: Yes.

40 THE COMMISSIONER: Well, now, if individual decision makers, farmers, or the capitalists that are either or support them, decide to invest in permanent plantings because they have got marvellous new irrigation equipment subsidised by the Commonwealth, the risk you're referring to is what happens in the – the certain event, unknown as to time and duration or severity, but the – certain in the fact that it will happen, of a drought.

45 PROF WHEELER: Mmm.

THE COMMISSIONER: And the thousands of hectares of new almond trees have to be watered just to live, even if they're not going to produce. That's the kind of risk we're talking about?

5 PROF WHEELER: Yes.

THE COMMISSIONER: Now, that will, will it not, have an effect on the price of temporary water?

10 PROF WHEELER: Yes.

THE COMMISSIONER: And the effect will be that those who can afford to not only make that investment in new permanent plantings, but also can afford to pay to save them for the good times they hope will come after the drought has broken, may have the effect of pricing out of temporary water smaller or less financially resilient operators such as rely upon annual crops. Is that correct?

PROF WHEELER: Yes, yes. That's exactly correct.

20 THE COMMISSIONER: Now, whereas if there were a heavier influence of the annual crop growers in that same market for temporary water, they are not facing the loss of a multi-year investment that is represented by permanent plantings. They may be facing either a decision not to plant the cabbages that year or they will lose one crop of cabbages.

25 PROF WHEELER: Yes.

THE COMMISSIONER: And I – I don't mean that cabbages aren't nicer than almonds, I personally think they are, but it is a less terrible event in terms of the risk financially, socially, probably environmentally as well.

30

PROF WHEELER: Yes, yes.

THE COMMISSIONER: Well, now, does that suggest that there may be a missing factor which is the current fairly wide, broad, unlimited discretion given to farmers to be clever and to work out for themselves what crops they want to plant and how they're going to grow them. And if they are free to do that, then, they're free, alas, to alter this distribution of risk, which will have the effects that you and I have just discussed.

35
40

PROF WHEELER: Yes. So this is something I struggle with as well, because I don't believe we should regulate farming.

THE COMMISSIONER: Why not?

45

PROF WHEELER: Because, I think, coming from South Australia, we often hear we should ban cotton and rice, for example, which - - -

THE COMMISSIONER: Which, obviously, is not a whole lot in South Australia.

PROF WHEELER: No, no. They are definitely targeting the upper stream states.

5 THE COMMISSIONER: Yes, yes.

PROF WHEELER: So – and I don't believe we should because I believe in
diversity of the system and I also believe in farmers making their own choices. You
know, I think they're very, very good at trying to make choices within the short to
10 medium term, not necessarily the longer term, but the short term about, you know,
what's best, what will get them the biggest return. But what I disagree about is
pouring billions of dollars into policy programs such as SRWUIP, the irrigation
infrastructure program. And by doing so, you change incentives. It doesn't mean
15 it's the only reason it happens. But you change incentives for a certain type of
behaviour. And the behaviour that we're worried about is the conversion away from
annual to permanent. So, for me, it's about trying to change bad policy. And then,
beyond that, where it comes to new greenfield development, for example, of new
irrigation sites, if there's any public money going through or support through local
20 councils or Federal Government or State Governments, again, we have to think very
carefully about what incentives we're putting in place and what's going to be the
implications for long-term impact on a community. So I think it's just – I think it's
just very important to, first of all, look at government policy and what are the
incentives it has in changing irrigator behaviour and try and deal with that. And then
25 the bigger picture is how do we potentially guide farmers and change their behaviour
in a world of climate change and reduced water scarcity and future drought?

THE COMMISSIONER: Well, one model, just for the purpose of testing an
argument, would be simply to dictate there shan't be permanent plantings in certain
30 places.

PROF WHEELER: Yes, potentially.

THE COMMISSIONER: And you're suggesting that that is, for a number of
reasons, to be regarded only as an argument in the extreme and should not be
35 adopted?

PROF WHEELER: I am open to increased in terms of regulation of greenfield
development. I'm open to the consideration of, you know, it should be a proper
social benefit cost analysis undertaken.
40

THE COMMISSIONER: By greenfield do you mean the process of turning dryland
farming into irrigated - - -

PROF WHEELER: New irrigation areas. Yes.
45

THE COMMISSIONER: For once, it's literally true. Yes. Well, now - - -

MR BEASLEY: Sorry, would that mean regulation of someone growing an apple crop decided to put in 15,000 almond trees, or is that a decision you think they should be free to make?

5 PROF WHEELER: It – personally, it’s – yes, I think farmers should be free to make certain decisions regarding – if they own their own land and water, etcetera. It’s just there should be, in terms of government policy and how it changes incentives and motives – that’s what we have to kind of focus on first, and then the second – second
10 question is what additional regulation and consideration do we need to put in place to make sure we – we don’t have negative outcomes in the future? And to me, that’s a – that’s a second-level question. You address the first one because it’s easier to kind of change that versus the second one.

15 THE COMMISSIONER: We do know, don’t we, that a likely effect, certainly a systemic risk, of more permanent plantings will be a greater demand in times of extremity, drought - - -

PROF WHEELER: Yes.

20 THE COMMISSIONER: - - - for temporary water and we do know that that’s likely to have a disparately harmful effect on smaller operators.

PROF WHEELER: Yes, we do know that. Yes.

25 THE COMMISSIONER: So if subsidised infrastructure improvement provides impetus towards somebody making their free decision to plant permanent – more plant – permanent crops, then that government subsidy will have produced the risk of the greater harm to the smaller annual crop operator.

30 PROF WHEELER: It has contributed to it, yes.

THE COMMISSIONER: Right. Apart from noting that and perhaps spreading knowledge of it as widely as possible, what else can be done? What could be done about it?

35 PROF WHEELER: Well, coming back to the point of the audit, we – we don’t have information exactly on what irrigation infrastructure money has been spent on, because it’s been spent on a number of different things. So I think one point of the audit is highlighting this is what we have actually achieved or perhaps we haven’t
40 achieved. Has it been monitored or complied with at all? I think part of information availability and transparency goes along the first step there. In terms of, yes, trying to highlight more – I mean, that’s something that we’re thinking about for future work – is – is trying to model scenarios of what is – what is going to be the consequences if – you know, if we have the next millennium drought or a
45 millennium drought times two.

THE COMMISSIONER: Well, it won't be a thousand years away. It'll happen a lot sooner than that.

5 PROF WHEELER: Yes. So, you know, we are talking about what sort of research we would need to do to try and model what is the impact across the Basin in future scenarios, assuming, you know, X, Y and Z, given we have got this increasing conversion away from annual to permanent, but, I mean, I think that work has to be done, and it's not been done at this moment.

10 THE COMMISSIONER: This is absolutely not a criticism. No doubt my slow thinking. I haven't worked out what I should be thinking of, then, in light of your evidence as how a Basin Plan or a permutation of it should approach the risks that you and I have just discussed about more greenfield permanent plantings mediated through an effect on the market for temporary water, and then its social and
15 economic effect on smaller operators, and not to be too sentimental about it, who will tend to be, as it were, families.

PROF WHEELER: It will be the smaller farmers, yes.

20 THE COMMISSIONER: Family farms.

PROF WHEELER: Yes.

25 THE COMMISSIONER: Yes. Which, by and large, are regarded as a social good.

PROF WHEELER: Mmm.

30 THE COMMISSIONER: Not a neutral thing just to be described in statistics, but a good thing.

PROF WHEELER: Mmm.

35 THE COMMISSIONER: Well, this is an inquiry. Isn't the scenario we've just sketched one in which the most obvious element that poses that threat to the family farm is the large capitalist venture of permanent planting?

PROF WHEELER: It's – there's – there's increasing corporatisation of Australian agriculture, and – but this - - -

40 THE COMMISSIONER: I'm not saying that's bad any more than I'm saying capitalism is bad. What I mean is people who are making, in a usually highly rational, not always correct, fashion, an investment of much larger sums of money than a family farm can command. That's what I mean.

45 PROF WHEELER: Yes. Yes. I mean, from a irrigated production point of view, generally, you'll have an increase in irrigated production the more you get bigger,

larger corporate farms, because they're much better at rationalisation and planning, technological change, productivity - - -

5 THE COMMISSIONER: And under the abstract expression economies of scale is usually reduced labour per hectare.

PROF WHEELER: Correct. Yes.

10 THE COMMISSIONER: Yes.

PROF WHEELER: Yes. I should just make the – the point that the Murray-Darling Basin Authority is aware of these issues in terms of increased permanent plantings and what it means, and it's also an issue for particularly a few weeks of the year in summer, when there's a huge now increase in demand for water of a particular time.

15 MR BEASLEY: There was a crisis just this summer, I think - - -

PROF WHEELER: Yes.

20 MR BEASLEY: - - - in Sunraysia or Mildura.

PROF WHEELER: Yes, yes.

25 THE COMMISSIONER: Although that's the very time of the year that mother nature, if she exists, would have the river at its lowest.

30 PROF WHEELER: Yes. Yes. So it – it's not in the – in terms of the Basin Plan, it's not – as far as I see it, my view is it's not part of its remit, but in terms of policies being put in place by government to achieve Basin Plan goals, to what extent they're having negative externality impacts - - -

THE COMMISSIONER: Yes.

35 PROF WHEELER: - - - on our farm communities, that is what we need to take into account and that's what should be reversed and – and got rid of.

THE COMMISSIONER: I'm not suggesting, I'm sure to the relief of many, that the Commonwealth has power to regulate what farmers choose to plant. In times of - - -

40 PROF WHEELER: No – well, marijuana, but yes.

THE COMMISSIONER: In times of war, maybe they can – I'm sure they can, but in peacetime, not so straightforward.

45 MR BEASLEY: A war on terror

THE COMMISSIONER: But the states certainly do. And it doesn't seem to be initially a very attractive idea that the State Government starts making farming decisions.

5 PROF WHEELER: No.

THE COMMISSIONER: To put it mildly.

10 MR BEASLEY: Or Local Government.

THE COMMISSIONER: But you do see the problem I'm trying to consider, which is - - -

15 PROF WHEELER: I – yes.

MR BEASLEY: Except for

20 THE COMMISSIONER: - - - we seem to have identified that as we improve physically and technologically the infrastructure for irrigation under these heavily subsidised programs, which have, as one of their outcomes, an increase of environmental water, supposedly, we seem to see in its train these risks to what I'm going to just encapsulate to get the flavour of it – family farms. And the Water Act explicitly says of the Ministers and the authorities' functions under the Water Act, 25 which don't include planning farmers' crops, fortunately – it says of those other functions or related functions, that they are to be carried out so as to maximise social, economic and environmental outcomes, I think a phrase from which the unfortunate expression "triple bottom line" may in part derive.

30 It's notorious that – I think that's a misreading of the Act, but we can come back to that in other ways. What I'm interested, very interested, to hear is from your point of view, what does all that indicate might be had from the proposed audit, and, in particular, doesn't it mean that an audit has to look beyond what I'm going to call current year or next year outcomes? It has to look at the effects on, say, the 35 temporary water market.

40 PROF WHEELER: The audit is more about where we've spent our money for water recovery and what we have received for it. So it's – it's – (a) it's the transparency of all the irrigation infrastructure subsidy money and where it has gone because we - - -

THE COMMISSIONER: Say, for example, we've lined 78 kilometres of formerly urban channel.

45 PROF WHEELER: Yes, yes, exactly, or we've – you know, X amount of drip irrigation has been put in.

THE COMMISSIONER: Yes.

PROF WHEELER: X number of boatsheds. You know, whatever it comes out.

THE COMMISSIONER: But what we're discussing is that may be – simply tell
5 you we've now created conditions in which capitalist farming corporations are more
likely than they would otherwise have been to plant 15,000 new hectares of almonds.

PROF WHEELER: That – that may be one of – one of the implications. The other
implication is trying to understand the re-flows argument more and – and where it's
10 being reduced in what particular areas.

THE COMMISSIONER: Yes.

PROF WHEELER: And what does that mean for real - - -

15 THE COMMISSIONER: So there is hydrology as well as market economic - - -

PROF WHEELER: And what does it actual mean for our volumes of water
recovery? So that's part of the whole audit that we feel is needed because we just
20 feel there's a lack of transparency and – if you try and get data from a lot of these
schemes - - -

MR BEASLEY: I was going to ask you, this concern and the request for the audit is
based on you trying to obtain data - - -

25 PROF WHEELER: Yes.

MR BEASLEY: Correct? And why don't you explain.

PROF WHEELER: Yes, so there's a whole heap of modernisation schemes across
30 all the different states. I think there's up to 15 or so of them, and if you try and get
data from any of them, even simple rules about, you know, where – what are they
spending the money on and who's uptaking it and has there been checks, is – you
cannot get that sort of data. It's just not provided. And I think a lot of the time - - -

35 MR BEASLEY: Is this a request you've made in all states?

PROF WHEELER: No. I've – I think I've made it in South Australia and Victoria.

THE COMMISSIONER: And have you used statutory means to what we popularly
40 call freedom of information, have you?

PROF WHEELER: No. No, we've – no, we've never gone to that level.

THE COMMISSIONER: Why is that? Because you're too pessimistic about it
45 being successful?

PROF WHEELER: No.

MR BEASLEY: Cost involved, isn't it?

PROF WHEELER: More likely I have a lot of work on our plate, a lot of research that we're trying to get out - - -

5 MR BEASLEY: Sure, sure.

PROF WHEELER: - - - and we keep - - -

10 MR BEASLEY: Significant cost, isn't there, to do that?

PROF WHEELER: We do want to work in that space, but we kind of keep pushing it – it back. I – I have a new PhD student starting, for example, who used to be head of the SARMS Project, so I'm actually hoping that he will have the links – we might

15 get the data to actually analyse, but it's - - -

MR BEASLEY: The SARMS Project is a South Australian water efficiency scheme; correct?

20 PROF WHEELER: Yes.

MR BEASLEY: Yes.

PROF WHEELER: Yes, yes.

25 THE COMMISSIONER: And has anything by the Commonwealth Auditor-General come to your attention that is of assistance here?

PROF WHEELER: Apart – the compliance and monitoring and all that, do you

30 mean by that?

THE COMMISSIONER: Well, in terms of the expenditure of Commonwealth money.

35 PROF WHEELER: Yes, it's – it's still not the full audit, and not – and it's not as transparent as we'd like to see.

MR BEASLEY: Can I just ask, we won't finish by 2, but we won't finish that much past 2. Is your preference to break at 1?

40 THE COMMISSIONER: You mean won't finish by 1?

MR BEASLEY: Sorry.

45 THE COMMISSIONER: Yes.

MR BEASLEY: It won't finish by 1, but it won't go – we might go up to 15 minutes past. Is your preference to just finish the witness or do you want to have the luncheon break?

5 THE COMMISSIONER: I think we should ask the witness.

MR BEASLEY: Yes. What's your - - -

10 THE COMMISSIONER: Professor, I am very, very grateful for your patience and the length of time you've given evidence today so far.

PROF WHEELER: That's okay.

15 THE COMMISSIONER: And I wish to take full account of your comfort, if that's the word that can be used. Would you prefer to break at 1 and come back at 2, or would you prefer, as Mr Beasley has temptingly laid out, the possibility that you won't have to come back if we sit on a bit past 1?

20 MR BEASLEY: I have no preference, so - - -

THE COMMISSIONER: Neither do I.

PROF WHEELER: Okay. I would probably prefer to keep going, then. Yes.

25 MR BEASLEY: Very good.

THE COMMISSIONER: I'm much obliged. Thank you.

30 MR BEASLEY: Thank you. One of the other – I forget my nomenclature on it – concerns you had about the sustainable rural water use and infrastructure program, the efficiency program we've being – discussed, is something you describe in your submission as the rebound effect. Could you just explain what that – what you mean by that term.

35 PROF WHEELER: What – what we mean by that. So this is – this is another negative impact, we say, of the \$4 billion that's – that's been spent on irrigation on and off-farm infrastructure. So a rebound effect – I'll – I'll give you an example. So rebound effect, for example, first kind of occurred in energy use. So, for example, where you get a technological advance, if you consider solar being put on a
40 household, it ends up resolving, because you've got solar and you get a decrease in the amount you're paying for electricity, so the point of that technology is that it's meant to reduce overall energy use overall.

45 MR BEASLEY: Yes, yes.

PROF WHEELER: And reduce carbon emissions, etcetera. What the actual fact happens is, yes, it does now – it reduces the price that households potentially pay for

electricity, but then it also changes their behaviour. So they might leave lights on all the time and heating on because it's now costing them less and they worry less about using energy. So the original aim of the program was to reduce energy use and, consequently, what actually happens is people use more energy. That's the rebound, is behaviour is rebounding in the opposite direction to what we expect.

MR BEASLEY: And how does that affect – apply in relation to efficiency measures for water?

PROF WHEELER: So the aim of efficiency programs is to save water across – for consumptive use across the Basin. But this is what studies show right across the world, if you study irrigation infrastructure programs. And this is also what our research shows. We haven't finished this research. What happens is that farms get a lot of money, for example, to upgrade the irrigation infrastructure, through various grants. They then end up – because - - -

MR BEASLEY: So they might put the money towards a drip system for permanent plantings or a drip system for some form of horticulture or - - -

PROF WHEELER: Yes. So we've already described how we kind of change. We can go from annual to permanent.

MR BEASLEY: Yes.

PROF WHEELER: We change crop mix. We also – what also happens is they bring on more irrigated land. So because they have now got more modernised equipment, they can actually irrigate more of their land, convert some of their dry land to irrigation production. So, overall, what happens is you have the rebound effect. Instead of farms saving water overall and a reduction in consumptive use, you get an increase in consumptive use and it's through the mechanisms of bringing on more hand, changing crop mix, etcetera. And it's – one of drivers is the fact that they have received a grant.

MR BEASLEY: All right. In other words, they might have sold part of an entitlement. But they may have only used a certain proportion of their entitlement before they upgraded their infrastructure. Having upgraded their infrastructure to, say, a drip system, they, as an example, put in another thousand permanent plants and actually used more water - - -

PROF WHEELER: Yes. Correct.

MR BEASLEY: - - - than they were using before.

PROF WHEELER: Yes. So it's an increasing utilisation of their water entitlement right through the mechanism - - -

MR BEASLEY: We may have seen examples of that. Thank you. Another – I think we may have covered this but I will just ensure that we’ve done it in a detail that you’re happy with. One of the criticisms you have of the MDBA’s and other firms’ modelling is that they are modelling a loss of potential water rather than a loss of actual water.

PROF WHEELER: Yes.

MR BEASLEY: And to explain that, what you mean by that is that an irrigator or a farmer may have an entitlement to 100 litres of water. But in a given year, they may have – may be allocated 80 per cent or 80 litres. So allocation is not infrequently less than entitlement. But, further, even if they have an allocation of 80 litres in a given year, for whatever reason, they might only use 60 litres of what they are allocated. And so, not infrequently, use is also less than allocation.

PROF WHEELER: Mmm.

MR BEASLEY: And they are things that have to be input into a model to get a better reliability in terms of what is the consequences or economic impacts after a reduction in water. Have I described that correctly?

PROF WHEELER: Yes. So if you’re modelling actual impact, you should be modelling actual water use impact, not potential water use impact.

MR BEASLEY: So it’s just simply wrong to be modelling the entitlement, because the entitlement is not necessarily an accurate reflection of what is actually being used.

PROF WHEELER: Yes. You should be taking into account actual water use and impacts on that.

MR BEASLEY: All right. A further criticism you make of the other work is what you describe as sample bias.

PROF WHEELER: Mmm.

MR BEASLEY: Particularly in relation to the communities selected to be analysed in the northern Basin by KPMG. Can you just explain your concerns there?

PROF WHEELER: Yes. So sample selection bias exists in modelling when we only select certain, you know – for example, if it’s – if I’m surveying the population, for example, and I only pull out the people who are unemployed or young people, for example, and then I – I say I’m trying to translate an impact to the whole population, that’s a sample selection bias because I have only used certain records to actually try and find this out. So what KPMG did in the northern Basin was they – when they looked for the impacts – so they’re looking for economic impacts of reductions in

water use. They chose – in the end, they chose 15 communities which had the highest water use.

They used them to model impact of reductions in water use within communities.
5 And in the southern Basin, I've just looked at that this morning, they used – they modelled 40 irrigation communities out of 181 communities for impacts of reductions in water use. But – so that sample selection bias. We're only modelling the communities which are most affected. But then we're using that assumption to say, "Well, we're reducing water for the whole basin, northern and southern, but
10 we're using the, supposedly, worst affected communities to do so." That's sample selection bias.

MR BEASLEY: In other words, you're not incorporating important data that may give a completely different result to the data you are using for your modelling, which
15 simply means your modelling – the result from your modelling just won't be accurate.

PROF WHEELER: Yes. So if the other communities – the example is the northern Basin.
20

MR BEASLEY: Yes.

PROF WHEELER: If floodplain agriculture in other SLAs downstream which wasn't – those SLAs weren't actually modelled. And so an increase in water in the
25 river actually is of benefit for those areas, you're ignoring all those benefits. So - - -

MR BEASLEY: Yes. I was going say, you might be – you might be focusing on a whole lot of areas where there's potentially negative impacts but you might be – by choosing what you're choosing to analyse, you might be ignoring places where
30 there's a positive benefit.

PROF WHEELER: Yes, yes. And so, overall, if I modelled all – take the northern Basin, all 67 communities rather than just 15, the ones most affected, but I model all
35 67 then, potentially, benefits in - - -

MR BEASLEY: It might outweigh.

PROF WHEELER: Yes. Or it turns insignificant. The result is no impact.

MR BEASLEY: Thank you. Thank you. Another criticism you make is – this isn't
40 new ground. But you make a criticism of the reports that we've been discussing, where you say there is a lack of referencing and it's hard to review and data sources aren't properly identified. I assume that that's, in part, a reference to the discussion you had with Mr Toulmin, I think, Matthew Toulmin, for example from RMCG,
45 where you said, "Where's the data for this", and didn't get a satisfactory response. Is that – that may not be a comprehensive summary of your concern in relation to what

I would call a lack of transparency or you call an inadequate documentation, but please expand on that if you wish to.

5 PROF WHEELER: Yes. It applies to RMCG's reports but it also applies as to MDBA's reports, their documentation for hydrology and land use modelling and, also, the KPMG reports, to some extent, where they source data from.

MR BEASLEY: What would you have expected?

10 PROF WHEELER: It's – you know, for peer-reviewed purposes – consultancies are different. I mean, there is all different levels of quality done in consultancies which I'm sure we all know. But if I - - -

15 MR BEASLEY: In other words, it is a slightly different process to writing, for example, a research paper for a journal.

PROF WHEELER: Yes. It's – there's less rigour, basically. But from a peer review point of view, you should provide all the sources of information. So - - -

20 MR BEASLEY: Just stopping there. When you say there's less rigour, and you agreed with me that it's a different process to writing a research paper for a journal, we do have to bear in mind, though, although it's a consultancy, this is a government authority seeking a report from albeit an external provider or drafting their own report, which has a statutory requirement to be based on the best available socio-economic analysis.

25 PROF WHEELER: Yes.

30 MR BEASLEY: Correct? So that might – when you're talking about reports for consultancies, it may be for different things. They might be for, I don't know, planning applications. They might be for a court case. This is, I would suggest, at a higher level because of the statutory command and the fact that we're dealing with public money and an incredibly important investment in a degraded system.

35 PROF WHEELER: Yes.

MR BEASLEY: That is hugely important both environmentally and economically, a lack of rigour – and you can agree or disagree with me – in this, a lack of rigour doesn't seem to be ideal in that context.

40 PROF WHEELER: No. It's not ideal if you're making decisions based on what you say the socio-economic outcomes are, if we have no faith in those analysis.

45 MR BEASLEY: All right. So in terms of identifying data and the like and modelling processes or any underlying assumptions, these reports fall short, in your view, of what you expect at least for – for example, a paper to be published in a journal.

PROF WHEELER: Yes. There is no way it would get published in a journal, a high-quality or even medium-quality journal.

MR BEASLEY: And explain why.

5

PROF WHEELER: Because of the variety of issues associated with the modelling. We document a number of them. There's just a lot of issues - - -

MR BEASLEY: But I'm not restricting – I'm – my question probably was restricted to the inadequate documentation. I take it from your answer that you're going straight to the fact of ignoring basic or common economic principles.

10

PROF WHEELER: There's that, and then there's just statistical issues with modelling and checking to make sure you're getting robust results. There's just no obvious checking of that, and then the tests that they say are done are – we know are incorrect. It all just means, because of (a) lack of economic principles, (b) sample selection bias, (c) lack of documentation in checking the actual data sources and, finally, the lack of rigour in the actual regression modelling. Like, we know that there's a number of issues that are of concern. Because of all those facts, we cannot have faith in the end results.

15

20

MR BEASLEY: And as a result of that lack of faith, you are of the opinion, as you've expressed in your submission with your colleagues, that these reports and the conclusions drawn from them should not be used as a means of making policy decisions or decisions in relation to important aspects of the Basin Plan.

25

PROF WHEELER: Correct.

MR BEASLEY: Can I just briefly ask you to confirm some matters in relation to some of your published work that you have been kind enough to provide to us.

30

PROF WHEELER: Mmm.

MR BEASLEY: Behind tab 8, I hope, of your folder - - -

35

PROF WHEELER: Yes.

MR BEASLEY: - - - is one of your papers with Professor Grafton, published recently in March 2018, in the annual review of resource economics titled Economics of Water Recovery in the Murray-Darling Basin. Do you see that report?

40

PROF WHEELER: Yes.

MR BEASLEY: That report is one where both of you have discussed issues concerning buyback and, also, issues in relation to efficiency recovers. And in that you raise a number of concerns regarding a comparative between the Restoring the Balance program and the Efficiency program.

45

PROF WHEELER: Yes.

MR BEASLEY: One of the things you highlight, first of all, in relation to the Sustainable Rural Water Use and Infrastructure Program, or SRWUIP, at page 3.11, this is the area that has been dealt with at length by Professor Williams and Professor Grafton about returns regarding return flow. But you have cited a paper by someone – well, by Jagermeier and others, 2015. Work in relation – the only question I had their work in relation to concerns about return flows is not a concern that has only been expressed by scientists and academics in relation to the Murray-Darling Basin. Correct?

PROF WHEELER: No.

MR BEASLEY: It's a globally studied phenomenon, globally studied and reported-on phenomenon that this is a concern that has to be considered in relation to programs like this, efficiency-type measures, the issue of return flow.

PROF WHEELER: Yes.

MR BEASLEY: All right.

PROF WHEELER: So I will just add one point to that.

MR BEASLEY: Go ahead.

PROF WHEELER: There was a recent report by Chris Perry and colleagues by the Food Agricultural Organisation that very much highlights this issue around the world. You may or may not know the situation that Australia was included as a case study in that report.

MR BEASLEY: And it was taken out.

PROF WHEELER: They were asked to change it and the authors refused to change it and, as a result, they were more happy to take it out rather than change what they had in there.

MR BEASLEY: Do you know the people that were the authors of that?

PROF WHEELER: I know Chris Perry.

MR BEASLEY: Have you discussed that with him?

PROF WHEELER: Yes, yes. He – yes. His view is that he was not changing his views or he didn't think the analysis was wrong, but for the fact that the – that they wanted the report to be published, they chose to then remove the Australian case study.

MR BEASLEY: Who told him to change it again?

PROF WHEELER: I am not aware of who it was. It came from the Australian Government.

5

MR BEASLEY: Right. All right. Just excuse me for a second. This report, also, is one where you have identified obtaining data from the Department of Agriculture in relation to the cost differential between buyback and efficiency measures.

10 PROF WHEELER: Mmm.

MR BEASLEY: And I think at 3.18, you – in about the middle of the page under Discussions and Conclusions, there's a – part of the report says:

15 *Based on nominal –*

part of your article says:

20 *Based on nominal costs of recovering water for the environment, subsidies are at least 2.5 times more expensive than buybacks.*

There is, however, a table, I think, on page 3.15, where you have indicated that you have obtained data from the Australian Department of Agriculture and Water Resources.

25

PROF WHEELER: Yes.

MR BEASLEY: I just want to make sure I'm looking at the right things. RTB – sorry, RTB – this is the second-last column. RTB Restoring the Balance, Australian dollars per megalitre. Total, looking at all those years, 2026 dollars a megalitre.

30

PROF WHEELER: Correct.

MR BEASLEY: Then the infrastructure program in the last column, Australian dollars a megalitre, 4,970.

35

PROF WHEELER: Correct.

MR BEASLEY: And that's where you get the two and a half times.

40

PROF WHEELER: Yes.

MR BEASLEY: Tab 9, this is an article that you entitled – sorry, I will just say it so that everyone is happy with me, that I will be tendering the – I'm calling it an article. What would you call it?

45

PROF WHEELER: Yes. A journal article.

MR BEASLEY: Journal article, Economics of Water Recovery in the Murray-Darling Basin, R. Quentin Grafton and Sarah Ann Wheeler, 5 March 2018 Annual Review of Resource Economics. I will tender that.

5 THE COMMISSIONER: This is a provisional form, is it, this article?

PROF WHEELER: That journal article?

THE COMMISSIONER: Yes.

10

PROF WHEELER: Yes. It's actually – it's online and it's fully published, I think, November this year. So that's why, that's the online - - -

THE COMMISSIONER: It's called Review in Advance.

15

PROF WHEELER: Yes.

MR BEASLEY: Yes. Sorry. I should have drawn that to everyone's attention.

20 THE COMMISSIONER: Does that have effect of you being able to take account of any of public comments?

PROF WHEELER: No. There are a few little edits on that that we have asked them to take into account but we can't make any substantial changes to it.

25

THE COMMISSIONER: Thank you. Thanks.

MR BEASLEY: Thanks for that. Tab 9, this is an article in a journal called 'Agricultural Water Management,' the title of the journal article is 'Investigating the delayed on-farm consequences of selling water entitlements in the Murray-Darling Basin.' Authors, Sarah Ann Wheeler, Alec – do I pronounce that - - -

30

PROF WHEELER: Zuo.

35 MR BEASLEY: Sorry. And Henning Bjornlund.

PROF WHEELER: Bjornlund.

MR BEASLEY: I got that one right. Okay. There's a bit of Swedish in me. Quite a lot, actually. And this is an article that deals with both impacts and attitudes towards buybacks?

40

PROF WHEELER: No. It's only impacts.

45 MR BEASLEY: Sorry, only impacts.

PROF WHEELER: The next one is attitudes.

MR BEASLEY: The next one is attitudes.

THE COMMISSIONER: Could I just ask you about that?

5 PROF WHEELER: Sure.

THE COMMISSIONER: There is a figure of speech that's used commonly in relation to a perceived bias of buybacks and it's the Swiss cheese effect. I see from your nodding that you're familiar with it.

10

PROF WHEELER: Yes.

THE COMMISSIONER: And if I've understood it correctly, I'm not suggesting it's a precise concept, it includes the notion that the sale of entitlements will remove from the collective of irrigators, those who have sold as being, first of all, potential contributors to the – both capital and recurring expenditure on what I call private schemes, to use an old-fashioned expression – that's one of the possibilities. Is that right?

15

20 PROF WHEELER: Yes.

THE COMMISSIONER: It's a reduction in critical mass of those willing to keep spending on an irrigation

25 MR BEASLEY: Without wishing to interrupt, those words "Swiss cheese effect" appear in this article on page 73 in the second column.

THE COMMISSIONER: Yes. I don't think I picked up that reference but I picked up that it's relevant to Swiss cheese.

30

MR BEASLEY: And discusses the myth versus the reality.

THE COMMISSIONER: I just wondered, is there also an idea that there is that imagined hole in the cheese when somebody has sold – forget private schemes, because not all irrigation involves private scheme expenditure. But the idea is that somebody has ceased to be an irrigation farmer. And if they've reverted to being a dryland farmer, that somehow, that's a lesser social or economic presence. Is that part of the idea as well?

35

40 PROF WHEELER: Kind of. So - - -

THE COMMISSIONER: I must say, I find that a bit bordering on the offensive in terms of dryland farmers.

45 PROF WHEELER: Yes. So I will take that last point first. So, traditionally, irrigated farm production has had greater in terms of returns to profitability than dryland production.

THE COMMISSIONER: Yes.

5 PROF WHEELER: So that's why the assumption is if we move away from being an irrigated farm toward as dryland farm, then, that's a negative in terms of returning for the community profitability.

THE COMMISSIONER: It's basically a vacancy, as Swiss cheese is intended to suggest.

10 PROF WHEELER: I'll come back to the Swiss cheese effect. But just a point on the irrigator to dryland, to an extent, that was – like, reduced viability and profitability was true, potentially, when, you know, beef and cattle, sheep prices used to be quite low. But because they have recently come up, it's actually not always going to be true that you lose value converting from irrigated to dryland. So that's
15 just a first point there. In terms of the Swiss cheese effect – so, you know, it is a valid concern in terms of if you have a lot of irrigators within an irrigation district, and a lot of them say if they sell all their water and completely leave, leave irrigation, then, the cost for running the whole system then had to get divided amongst a lesser amount of irrigators. And then the issue with the Swiss cheese effect, which people
20 say is, well, if you're down a particular channel and now you have lost a few farms off there it's no longer valid, potentially, to deliver water to that end farm and so you're going to – you have holes in the system, making it very difficult to operate and you either have to rationalise - - -

25 THE COMMISSIONER: So why can't that be controlled by an operational discretion on the part of the purchaser, would-be purchaser, not to make offers to people on those channels?

30 PROF WHEELER: Yes.

THE COMMISSIONER: That might upset the people who are hoping to get offers.

35 PROF WHEELER: Yes. So this comes to a number of points which I think are important. So, first of all, that was the hypothetical. But when you look at the reality – so irrigators, when they own water, they have a right for water to – if you're an irrigation property, you have a right for water to be delivered to you. Then you have an ownership. So depending on how many actual water entitlements you own, so you pay fees on how much water you own and you also pay fees variable charges for the volume of water that comes to your property. But a large percentage of fees
40 associated with the right to receive water. And that is different to your volume of water ownership.

45 So research that we've done – and this is – I should recognise, you know, this is now somewhat dated and it would be good for this analysis to be updated. It shows that when irrigators – say they sell their water to – sell all their water to the Commonwealth, they actually keep their delivery rights. So they keep paying for the right for water to be delivered to their farm. So we know that of those farmers who

stay farming, whether it's dryland or irrigator, they stayed on their farm, 94 per cent of them kept their delivery right. And the reason for that is – and to sell the farm, the capital value, if you're trying to sell an irrigated farm versus dryland, and, again, it comes back into the historical values of production, because, hypothetically, it can produce higher value, it's of an irrigator's benefit to sell that land as an irrigated property.

And, hence, they need the delivery right of water, to come to that farm. So it's in their best interests to keep paying the delivery right. Now, because water is unbundled from land, that's completely separate. If you were buying that as a property, you would you have to buy additional water anyway. So if I'm coming in and I want to buy that land, I can always go out and buy water on the market. So it keeps its capital value. So the whole idea of the Swiss cheese effect is – there is some element of truth to it. But, generally, it's not true because they keep their delivery rights. Coming back to your point of, well, should we have picked and chosen where we bought water from? My view is what we should have done is – and I should say, the water economists were saying this right in the beginning - - -

MR BEASLEY: This is back right at the beginning of the – even when there was a draft plan, is what you're referring to?

PROF WHEELER: This is back 2008, basically.

MR BEASLEY: Go ahead.

PROF WHEELER: What we really should have done, knowing – we always know that buyback was going to be a lot more effective irrigation infrastructure. Because we already – you know, economists were saying these are the problems with these sort of subsidy programs - - -

MR BEASLEY: I think the Productivity Commission had the same view.

PROF WHEELER: The Productivity Commission in 2010. That was very good report. We should have gone in, bought all the water back from willing sellers, then see – see where the systems is worse, where did farms end up going and then you go in with your off-farm irrigation infrastructure and you update various irrigation regions as needed. And you have structural adjustment programs also in place for those farms who end up stranded down various channels and it's not economic to get to them - - -

MR BEASLEY: What do you do, compensate them, or move them, or - - -

PROF WHEELER: You compensate them for the fact they have to go to a dryland or you move them elsewhere. You know, it should have been a very much kind of program of buyback first, then upgrade, structural adjustment policies, also invest in other community, health, education, transport, you know, proper structural adjustment processes and we would have had the best impact for environment and

rural communities. But we didn't do it. We went into a complete mishmash of both programs over time.

5 MR BEASLEY: Just on that, investing in health and education and – what else did you say, I'm sorry, health, education - - -

PROF WHEELER: Transport issues within communities.

10 MR BEASLEY: Transport in regional communities instead of spending extra money on irrigation efficiency programs, I – tell me if I'm wrong, but I assume investing in things like health and education and transport, generally, has a positive economic benefit to regional communities or any communities?

15 PROF WHEELER: Yes. So Glyn Wittwer, who's a very good CGE modeller who – who did a lot of work on the Basin Plan back in the 2010s – he's shown – so he's modelled, well, how much do we get from investing in irrigation infrastructure programs.

20 MR BEASLEY: Yes.

PROF WHEELER: Remember they're very short-term impacts, you know, and a lot of the money is spent on things that are of questionable value versus if we put the money instead into education and health programs within rural communities, and we know we get two to three times more additional jobs doing that sort of investment than we do irrigation - - -

MR BEASLEY: Can you just say that gentleman's name again.

30 PROF WHEELER: Glyn Wittwer.

MR BEASLEY: And this is based on published work he has done?

PROF WHEELER: Yes. Yes, it's – it's referenced in our documentation.

35 MR BEASLEY: Okay. Thank you.

PROF WHEELER: Yes.

40 MR BEASLEY: Can I just ask you this, then? We don't have a time machine so we can't go back.

PROF WHEELER: I know. Unfortunately.

45 MR BEASLEY: But moving forward, moving forward, there's still 450 gigalitres of water that is to be recovered for enhanced environmental objectives under the Basin Plan, which is entirely contingent not on buyback but on efficiency measures.

PROF WHEELER: Yes.

MR BEASLEY: I assume, given the evidence that you've just been giving, your
5 recommendation as an economist that's worked in this area for a considerable period
of time is that that water should be recovered. It would be preferable, and not by a
small amount – a small extent, to recover that water by buybacks and spend any
savings on things like health, education and transport infrastructure in local
communities.

10 PROF WHEELER: Correct, and other structural adjustment exit packages. We
have only spent – of the \$13 billion, we've only spent one per cent on structural
adjustment measures to date, which is - - -

MR BEASLEY: And another thing that money could be spent on is helping –
15 accepting the climate is changing, is helping rural communities adapt to a future with
less water.

PROF WHEELER: Yes. Yes, yes.

20 THE COMMISSIONER: What's the structural adjustment measure?

PROF WHEELER: It's – it's things such as exit packages or if we had to move
farms from one area to another.

25 THE COMMISSIONER: So kind of one-off expenditures either to ease someone's
exit or to enable someone's adaptation?

PROF WHEELER: Yes, yes. So to the extent you have a lot of older farmers who,
30 you know, if selling all their water, for example, means that they never are able to
work again, it's probably potentially, you know, either retraining or – or adjusting,
changing areas of – of where that farmer is farming, etcetera.

THE COMMISSIONER: Structural adjustment is a euphemism for closing a
35 factory. That sort of thing.

PROF WHEELER: Yes.

THE COMMISSIONER: Thank you.

40 PROF WHEELER: It's – it's not dissimilar.

THE COMMISSIONER: It's all right. I know that type of language. No, I - - -

PROF WHEELER: Yes, yes.

45 MR BEASLEY: And the last report that I wanted to take you to is another journal
article that you were one of the co-authors entitled – and this is in a journal called

'Land Use Policy,' volume 36, 2014. The title of the article is 'Irrigator Preferences for Water Recovery Budget Expenditure in the Murray-Darling Basin Australia.' I won't read out all the authors but you are one of them.

5 PROF WHEELER: Yes.

MR BEASLEY: This report, again, discusses a buyback, and as you mentioned before and corrected me, it also discusses irrigator preferences in relation to buyback.

10 PROF WHEELER: Yes.

MR BEASLEY: You, on page 397, under the heading in the right-hand column, 'Water Entitlement Purchases,' talk about the opponents of buyback citing negative social and environmental consequences, and you talk about the Swiss cheese effect, and then you talk about survey work you have done with Cheeseman. I'm not sure who Cheeseman is. Is that an artefact - - -

PROF WHEELER: That's Marsden Jacobs.

20 MR BEASLEY: Marsden Jacobs. Surveying up to one-fifth of all sellers. Can you just give us some – can you give us an idea of the extent of the survey work you have done in this space generally, and tell us whether you're aware of anyone – any other academics or scientists in this area that have done any similar-type survey work?

25 PROF WHEELER: Okay. Yes. So I've been part of surveys – as I said, I have been working in the space for up to 20 years in a variety of surveys but particularly looking at water issues and water markets and buyback in the Basin from 2007 onwards, so I estimate since 2007, and part of working with Henning Bjornlund, who has been working – doing the survey since the early 2000s. We've – we've got tens of thousands of surveys within this time period, so the other sources of irrigator survey data is – at the moment it's University of Canberra. They've been doing – they're partly sponsored by - - -

35 MR BEASLEY: They're cited – the University of Canberra is cited, I think, at least in MDBA's own Northern Basin Review report on social and economic analysis in relation to the Northern Basin Review, and they might be cited – I just can't recall at the moment – in relation to some of the work by the other consultants. Have they done anything like the extent of survey work, though, that you've done?

40 PROF WHEELER: Not of irrigators. So their survey is a general survey of the whole Murray-Darling bulk population and a subset of farmers within which irrigators – they try and – and get a certain sample of irrigators, but they don't have the amount of surveys that we do, and we also have much higher response rates. They tend to have very low response rates.

45 MR BEASLEY: Why is that?

PROF WHEELER: Because they – they try and survey the whole population through (a) online surveys.

MR BEASLEY: Right.

5 PROF WHEELER: And online surveys do not work with farmers. I have tried it once before, even though I didn't want to, but it was in conjunction with CSIRO, and we got a four per cent response rate, which means we cannot – it's just not representative.

10 MR BEASLEY: That's too small a sample, is it?

PROF WHEELER: It's – again, you get response bias. In – in the situation – in - - -

15 MR BEASLEY: This is like the bias of – in relation to people that turn up at a community consultation, is it? You get - - -

PROF WHEELER: Yes. Yes, so when you – when you get a scenario - - -

20 MR BEASLEY: Not that that I'm suggesting that that has happened, but - - -

PROF WHEELER: Well, I can tell you that that's true.

MR BEASLEY: Really?

25 PROF WHEELER: Yes.

MR BEASLEY: Okay.

30 PROF WHEELER: So negative response rate. In the – in respect to farmers and the Basin, especially online surveys – you are going to get the farmers who are most upset responding, so you cannot think anything they say is representative of the population.

35 MR BEASLEY: And is your approach face-to-face?

PROF WHEELER: Our approach is telephone surveys.

MR BEASLEY: Right.

40 PROF WHEELER: So we work incredibly hard to get our response rates as high as possible. So I, for example, will go on radio in rural communities - - -

MR BEASLEY: Yes.

45 PROF WHEELER: - - - before it's out and say, "This is – we're doing this. This is the purpose." We have incentives. We pay gifts to farmers. We give them a book or

a gift card for filling in our – for participating in our telephone survey. You know, we survey large – every time we go out we try to get 1000 irrigators surveyed.

5 MR BEASLEY: Why is telephone – I mean, I can understand the obvious advantage that someone is speaking to another human being. Is that why a phone survey is more effective or are there other reasons?

10 PROF WHEELER: It just gets – for farmers, it gets the highest response rate, than mail-out, traditionally. Unless you're going to those who have already agreed to be part of the ongoing research, mail-out gets generally 10 per cent response rates, and again, that's quite questionable, especially when you're trying to give policy advice, which is what we try and do.

15 MR BEASLEY: Yes.

PROF WHEELER: To give policy advice, I've got to be – have fairly certain views that what I'm saying is representative of the population as a whole. So, therefore, telephone – farmers love talking on the phone. They like the personal contact. That is what gets – but it's very, very expensive.

20 MR BEASLEY: That's what I meant by a human interaction, whereas to the extent that you can form it, there's some form of human connection or relationship before you're actually getting to, I imagine, asking the pertinent questions from the survey; is that right?

25 PROF WHEELER: Yes. Yes, yes, and – yes, I – and, I mean, I do all our focus group and our pilot testing, but I'm also available – if a farmer says, "Well, I'm not going to do this survey through a market response group," for example, "I want to talk to Sarah," then I do all the surveys and talk to them on the phone.

30 MR BEASLEY: Okay. And what is the response rate you get from the phone?

PROF WHEELER: Well, it varies.

35 MR BEASLEY: Of course.

PROF WHEELER: But we get – we get up to 50 to 70 per cent of response rate.

40 MR BEASLEY: And that is significant in terms of it being reliable?

PROF WHEELER: Yes.

MR BEASLEY: At that rate. Yes.

45 PROF WHEELER: Yes, at that rate, it's – it's considered representative, but I should say, you know, that costs us a lot of money to get those response rates.

MR BEASLEY: And a lot of time, I imagine.

PROF WHEELER: Yes.

5 MR BEASLEY: Anyway, back to that page 397, where you have indicated some of your survey results. I think this is – what I – you’ve outlined a number of matters regarding the survey, but this is where I was getting to in your conclusions at page 403. I think I have mentioned before, but the figures were about 56 to 44 per cent in relation to a preference for infrastructure expenditure over a buyback.

10 PROF WHEELER: Yes. Yes.

MR BEASLEY: Right. Can I just go back quickly to the recommendations that you’ve made to the Commissioner. We have already dealt with the audit that you recommend.

15 PROF WHEELER: Yes.

MR BEASLEY: Number 2 is not to preclude water entitlement buyback on the basis of negative socio-economic outcomes and consider all long-term impacts of change on rural communities. I think we’ve covered that in the sense of your very strong preference as buyback being preferable, for all the reasons we’ve discussed, to efficiency measures.

25 PROF WHEELER: Yes.

MR BEASLEY: 3, though, is develop stronger governance to ensure cost effectiveness. Can you just flesh that out – exactly what you mean by that recommendation that you want the Commissioner to consider?

30 PROF WHEELER: Sure. We’re – we’re concerned that independent bodies such as the National Water Commission was disbanded in 2014 and ’15. You know - - -

MR BEASLEY: What was its role?

35 PROF WHEELER: Its role traditionally was being an independent body and monitoring and reporting on water reform. And from that, you know, its – its roles were split up by ABAREs, the Authority and the Productivity Commission going forward. We don’t feel that the Authority is a completely independent body. You know, it has a number of constraints on it.

MR BEASLEY: Just explain why you don’t consider the Basin Authority to be a fully independent body. Is that because of the nature of its board or other issues?

45 PROF WHEELER: This – this is not directly - - -

MR BEASLEY: Or its - - -

PROF WHEELER: - - - my direct level of expertise here, but there is a level of political, we believe, interference within the Authority's decisions.

5 MR BEASLEY: Does that mean that your concern is that policy outcomes are preferred to science? Or is that too general?

PROF WHEELER: I - I - I mean, I think it's - it's - it's quite clear that a number of decisions it's made is not based on the best available economic, social, and environmental science.

10 MR BEASLEY: We're just coming to that. You have spent some time, both in the joint submission and also in your evidence today, telling the Commissioner your views of the Basin Authority's own work in relation to economic and social impacts of buybacks in the Northern Basin Review and the other consultants' reports, and
15 you have made criticisms of their modelling approach, to the extent of saying it ignores common economic principles. Based on that, do you consider that the work we've been discussing does reflect the best available socio-economic analysis?

PROF WHEELER: No.

20 MR BEASLEY: Is it even close?

PROF WHEELER: No.

25 THE COMMISSIONER: Could I just ask, have you got the Northern Basin Review technical overview of the social and economic analysis, December 2016?

MR BEASLEY: I don't know if the witness still has it, but it was - - -

30 PROF WHEELER: Yes.

MR BEASLEY: She does - somewhere.

35 THE COMMISSIONER: On its pages 3 and 4, the summary - - -

PROF WHEELER: Yes.

THE COMMISSIONER: I hope we've got the right - same document, have we?

40 PROF WHEELER: Which is - - -

THE COMMISSIONER: The Northern Basin Review technical overview of the social and economic analysis.

45 MR BEASLEY: December 2016.

PROF WHEELER: Number 3. Sure.

THE COMMISSIONER: December 2016. It's got the picture of a - - -

MR BEASLEY: That's the one.

5 PROF WHEELER: Okay.

THE COMMISSIONER: - - - cotton harvester on the front.

PROF WHEELER: Yes.

10

MR BEASLEY: Yes, the witness now has that.

PROF WHEELER: Yes.

15 THE COMMISSIONER: Now, I will see if I can do this in short form. From your
last answers to Mr Beasley, I should assume, putting that together with what you told
us about earlier this morning, that the statements, some of which I will select in a
moment, from this summary are statements with which you would disagree. Thus,
20 for example, in the fourth paragraph on page 3, there's the conclusion that through
the approach referred to, it was possible to examine the effect reduced water
availability has on the area of irrigation and, consequently, employment at a
community level. I gather that that's something that you regard as unsubstantiated?

PROF WHEELER: Correct.

25

THE COMMISSIONER: And, in the next paragraph, it has got a sentence that says
that the information that had been gathered, including on advances in technology,
etcetera, has enabled the Authority to place the expected effects of water recovery
within the context of all the other changes affecting the communities. I gather from
30 what you have told us that that is also without any foundation in science.

PROF WHEELER: No. Well, they didn't include it in their modelling. It's not to
say that they didn't think about it in the context of that but all their results rely on
their modelling and their modelling did not consider other factors.

35

THE COMMISSIONER: That's what I mean. The idea of the information about
these other factors driving changes - - -

PROF WHEELER: Yes.

40

THE COMMISSIONER: That's what Mr Rumsfeld would call a known unknown.
They know it exists but they don't know how it has had an effect.

PROF WHEELER: Yes.

45

THE COMMISSIONER: Which really means that that sentence would be true if it
had the word "not" in it, in front of "enabled". Because this information has not

enabled it to place it in context, because all they know is there are things that they haven't been able to take into account. Isn't that right?

PROF WHEELER: Yes. I think that's probably one interpretation.

5

THE COMMISSIONER: Well, in the next paragraph, the second sentence refers to outputs from the modelling being interpreted with the use of all the other social and economic information collated. I have struggled trying to understand what that's a reference to because we know that it doesn't include factors other than an extrapolated relation between recovered water and reduced acreage. It's a bit obscure, I find. Can you explain it?

PROF WHEELER: Well, it's – from my memory of all the modelling, it's kind of associated to the individual, those 15 communities, and using a variety of assumptions, how it impacts on actual community outcomes, whether it's the level of employment, farm or total. But the way they did their modelling and the variables they used doesn't allow them clearly to – to pull that result out.

THE COMMISSIONER: Thank you.

20

MR BEASLEY: Had you finished everything you wanted to say about – I suppose there's two separate concepts here, governance and cost effectiveness. Cost effectiveness, in relation to your third recommendation, does have some link to the first recommendation about an audit, I assume.

25

PROF WHEELER: Yes, it does.

MR BEASLEY: But is there anything further you wanted to say about governance or is that also related to your concerns about the audit and cost effectiveness? Just trying to find out whether you're saying anything broader about the actual governance of the Basin Authority or is it limited to the matters that you - - -

30

PROF WHEELER: I mean, I suppose a broader point, going forward, is, you know, we would advocate for very strong benefit cost analysis to be undertaken on these supply projects because, (a) the economic issues which we've highlighted but, also, the potential environmental issues. And that's something we would like to very much see going forward, that there was a rigorous assessment of the economic benefits and costs of these projects. So part of the governance is making sure that we do the proper assessment and also, they're put in place that they end up – some of them may or may not but if they end up reducing through things such as re-flows, water for the environment, then we take account of it within that project. So that's part of developing stronger governance, is we have conditions put in place that we understand all the implications of this variety of expenditure if we're trying to achieve improved environmental outcomes in the future.

40

45

MR BEASLEY: Right. I'm very nearly finished. I'm sorry I have taken more than I said I would. That's a very common thing for a barrister to do. We're just terrible

people like that. These criticisms you have made of the various pieces of work by the MDBA and other firms that we've discussed today are concerns you have raised with the Basin Authority. Correct?

5 PROF WHEELER: Yes.

MR BEASLEY: On more than one occasion?

PROF WHEELER: Yes.

10

MR BEASLEY: And how recently?

PROF WHEELER: Well, the most recent was last week with Phillip Glyde in Canberra.

15

MR BEASLEY: All right. I will come back to that. Before that, who do you discuss these, for example, the work that the Basin Authority has put out, whether by itself or through its consultants, in relation to the impacts of buybacks? Who do you discuss your concerns with at the Basin Authority?

20

PROF WHEELER: Well, a range of individuals within the socio-economic team.

MR BEASLEY: All right. Who leads that team?

25 PROF WHEELER: There has been a variety of people changing over time, so I would rather not say who I have had personal communication with.

MR BEASLEY: Do you have a concern about that or - - -

30 PROF WHEELER: No. It's more people have changing responsibility and have come in and out and I have had a number of conversations over time.

MR BEASLEY: All right. So there has been changing faces.

35 PROF WHEELER: Yes.

MR BEASLEY: But they're all within that relevant area of the MDBA that deals with these economic impact issues.

40 PROF WHEELER: Yes.

MR BEASLEY: And you have raised, as you have with the Commissioner today, all the concerns that we have discussed and that are in the submission?

45 PROF WHEELER: The key concerns.

MR BEASLEY: Let's deal with the fundamental issue of some proportionality between a reduction in water and a reduction in farm production.

PROF WHEELER: Yes.

5

MR BEASLEY: And saying, "That just doesn't make any sense at all to me." You have raised that.

PROF WHEELER: Yes, yes.

10

MR BEASLEY: And what's the response from the Basin Authority to that?

PROF WHEELER: They stand by their economic modelling.

15

MR BEASLEY: I understand that they would do that. But is there a more detailed response to you saying, "What about this, what about this, what about this?" And their response – is it – it may well be. Is it as limited as, "We stand by our work."?

20

PROF WHEELER: Yes and no. I mean, we get into lots of arguments. For example, if you bring up the re-flows issues, you will get arguments about saying it's not a – okay, it might be an issue but it's not a large issue so, hence, we don't have to worry about it.

25

MR BEASLEY: Right.

PROF WHEELER: Or you get into arguments saying it's dirty water, and by dirty water I mean it has nutrients and salinity loads in it so it shouldn't be in the river in the first place, which is totally incorrect. But – or you will get into an argument about reasons for choosing communities and modelling implications.

30

MR BEASLEY: Well, just pausing, though. In relation to what I said about production related to water reduction, or the positive and negative benefits of buyback as distinct from any negative impacts or positive impacts from efficiency measures, when you say you get into a debate, do you get into an actual debate that is detailed and refers to data in the way that you might with a colleague, or is it simply the response you get is an assertion and no more?

35

PROF WHEELER: It's more a general discussion assertion. Yes. You don't – I haven't been into specific detail.

40

MR BEASLEY: Have they told you you're wrong?

PROF WHEELER: No one has told me I am wrong on buyback versus infrastructure.

45

MR BEASLEY: Right.

PROF WHEELER: But I have been told I do not understand the political process.

MR BEASLEY: Right. So does that get back to your point that I think you mentioned very early in your evidence, that you've been told that this is a political
5 decision, not one based on socio and economic analysis, proper socio-economic analysis?

PROF WHEELER: Well, in my opinion. Yes.

10 MR BEASLEY: All right. You mentioned you had discussion with Mr Glyde recently. That was at some form of debate, was it?

PROF WHEELER: It was an ANU leadership forum kind of discussion debate.

15 MR BEASLEY: All right. And at that discussion, you raised similar concerns about all of the work we've been discussing.

PROF WHEELER: I raised general concerns. It was – we didn't have enough time
20 to go into all the specific details.

MR BEASLEY: No, no. But I take it you raised your concerns about the modelling we've discussed, impacts of buyback, impacts of efficiency measures. Was that the nature of the debate?

25 PROF WHEELER: Yes, yes.

MR BEASLEY: And did Mr Glyde – he spoke publicly?

PROF WHEELER: Yes, he did.
30

MR BEASLEY: And did he reject your views and put forward the Basin Authority's views and/or - - -

PROF WHEELER: I think he rejected my views that the economic analysis wasn't
35 good enough.

MR BEASLEY: Did he say why?

PROF WHEELER: No. Just that he thought it was good enough and they had taken
40 into account a whole lot of things.

MR BEASLEY: Right. So he asserted it's good enough and he asserted they had taken into account things and there was no more detail than that.

45 PROF WHEELER: No.

MR BEASLEY: All right. Absolutely last thing I wanted to raise. You said you were doing some new research in relation to the mental health of farmers. And the reason I decided I thought that was relevant is because I think, in part, it may have concerns about finances causing distress. It possibly has an impact in relation to perceptions about the Basin Plan.

PROF WHEELER: Yes.

MR BEASLEY: Can you just tell the Commissioner a little bit about the work you are doing there? I know you have got a paper but that's not ready for publication. So we're not going to tender that. But - - -

THE COMMISSIONER: Is this the water torture?

MR BEASLEY: It is. But I don't want to tender that because Professor Wheeler has – it's not ready for publication. And I - - -

PROF WHEELER: Well, it's not accepted yet. So I feel – because it, potentially, is quite controversial, I don't - - -

THE COMMISSIONER: No. I understand.

MR BEASLEY: But I think Professor Wheeler is quite comfortable, though, in discussing the research that's done in an area and why it's something that you should consider.

THE COMMISSIONER: Yes.

PROF WHEELER: So I think it helps explain – so when I talked about before the ongoing pressures on rural communities, why they're feeling quite upset, so there is – there is indications that irrigator mental health is worse in terms of higher distress than other areas, dryland farmers and farmers across Australia. And the other thing we find in our research is that it helps explain why farmers are getting so upset about the Basin Plan. So it's those who are under most distress and we know that distress is caused by financial problems predominantly, is those who are most distressed who are most angry about Basin Plan and reductions of water availability. And it becomes wrapped up in whole issues that affects them and what they think is wrong with their community and with government policy. So it's important from that perspective that it shows, well, the Basin Plan is blamed often for people's distress but the real drivers of distress is always financial and debt reasons, generally. But it's those who are under most distress who start blaming government and policy as a reason for their distress. So it's – it's – it provides a bit of understanding of why rural communities and why some irrigators are so upset in this situation.

THE COMMISSIONER: Thank you.

MR BEASLEY: Thank you very much for your evidence. I apologise that that went at least half an hour longer than I said it would.

PROF WHEELER: That's all right.

5 MR BEASLEY: I will accept responsibility for that.

THE COMMISSIONER: I add my apology on behalf of Mr Beasley. But, look, thank you very much for your patience.

10 PROF WHEELER: That's all right. Thank you for having me.

THE COMMISSIONER: And for trying to explain things to me. I hope – I and I much appreciate it.

15 PROF WHEELER: Thank you.

MR BEASLEY: I hesitate to ask, is there anything you want to add?

20 PROF WHEELER: No. I'm almost talked out.

MR BEASLEY: Very good. Thank you very much.

THE COMMISSIONER: Thanks.

25 MR BEASLEY: Commissioner, just before we adjourn, I'm also going to tender a letter to Dr Boyd Blackwell at University of New England from the Commission, 22 – from Ms Masters of the Commission, 22 June '18 and to Mr Andrew Metcalfe, AO of Ernst and Young, same date, exactly the same form of letters as to the others.

30 THE COMMISSIONER: Thank you.

MR BEASLEY: No response from the University of New England. Ernst and Young told us that they – perhaps there wasn't sufficient criticism of them to need to be here.

35 THE COMMISSIONER: Yes.

MR BEASLEY: So I will tender those two letters as well.

40 THE COMMISSIONER: Thank you.

MR BEASLEY: Thank you. That's all the evidence for today.

45 THE COMMISSIONER: And we adjourn till 10 am on Thursday, the 5th of July.

MR BEASLEY: Yes.

THE COMMISSIONER: At the Commission offices on the ninth floor of 50 Grenfell Street.

5 MR BEASLEY: Is that right? All right. So that will be Dr Lester, who is talking about the Coorong.

THE COMMISSIONER: Thank you. We will adjourn now.

10 <THE WITNESS WITHDREW [1.49 pm]

MATTER ADJOURNED at 1.49 pm UNTIL THURSDAY, 5 JULY 2018

Index of Witness Events

SARAH ANNE WHEELER, SWORN	P-356
EXAMINATION-IN-CHIEF BY MR BEASLEY	P-356
THE WITNESS WITHDREW	P-445

Index of Exhibits and MFIs