REPORT ON PROCEEDINGS BEFORE

PORTFOLIO COMMITTEE NO. 7 - PLANNING AND ENVIRONMENT

CLIMATE CHANGE (NET ZERO FUTURE) BILL 2023

CORRECTED

At Preston Stanley Room, Parliament House, Sydney, on Monday 30 October 2023

The Committee met at 9:15.

PRESENT

Ms Sue Higginson (Chair)

The Hon. Mark Buttigieg
The Hon. Jacqui Munro
The Hon. Peter Primrose
The Hon. John Ruddick (Deputy Chair)

VIA VIDEOCONFERENCE

The Hon. Anthony D'Adam

* Please note:
[inaudible] is used when audio words cannot be deciphered.
[audio malfunction] is used when words are lost due to a technical malfunction.
[disorder] is used when members or witnesses speak over one another.

The CHAIR: Welcome to the final hearing of the Committee's inquiry into the Climate Change (Net Zero Future) Bill 2023. I acknowledge the Gadigal people of the Eora nation, the traditional custodians of the lands on which we are meeting today. I pay respects to Elders past and present and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of New South Wales. I also acknowledge and pay my respects to any Aboriginal and Torres Strait Islander people joining us today.

I ask everyone in the room to please turn their mobile phones to silent. Parliamentary privilege applies to witnesses in relation to the evidence they give today. However, it does not apply to what witnesses say outside of the hearing. I urge witnesses to be careful about making comments to the media or to others after completing their evidence. In addition, the Legislative Council has adopted rules to provide procedural fairness for inquiry participants. I encourage Committee members and witnesses to be mindful of those procedures.

Mr SAXON DAVIDSON, Research Fellow, Institute of Public Affairs, before the Committee via videoconference, sworn and examined

Mr DANIEL WILD, Deputy Executive Director, Institute of Public Affairs, before the Committee via videoconference, sworn and examined

The CHAIR: Welcome to both of you, and thank you for making the time to give evidence. Would one of you or both of you like to start by making an opening statement?

DANIEL WILD: Yes, I'll make a brief opening statement. Thank you very much to the Committee for the opportunity to appear today. Legislating a net zero emissions by 2050 mandate would, in our assessment, be a policy mistake for New South Wales. It would negatively impact jobs, undermine energy security and reliability, and open up potential avenues for activists and litigation, without providing a discernible benefit to the environment. Our research has established that under a policy of net zero, at a minimum, all new coal, gas and oil projects in the construction pipeline would need to be cancelled. As a result, existing jobs in what are considered high-emitting industries—such as manufacturing, agriculture and energy supply—would be put at risk. Our research has established that up to 138,000 jobs across New South Wales could be put at risk by the policy of net zero, with around two-thirds of these jobs located in rural and regional parts of New South Wales.

By way of a demonstration, the 20 State electorates with the most jobs at risk from net zero are all located in rural and regional New South Wales. In comparison, the 20 electorates with the fewest jobs at risk are all in the inner city or inner metropolitan parts of the State, where the total percentage of jobs at risk is less than 1 per cent. The policy of net zero appears to be in conflict with the sensible position and decision of the New South Wales Government to seek to extend the lifespan of the Eraring Power Station. As members of the Committee would be aware, that announcement came soon after the Australian Energy Market Operator released their *2023 Electricity Statement of Opportunities* report, which established that New South Wales could experience energy reliability gaps for the 2025-26 summer. Reliability gaps are expected in all mainland States that are connected to the National Energy Market within the remainder of the decade. At a minimum, following the decommissioning of the Liddell Power Station earlier this year, no further baseload power stations should be allowed to close. However, this does not appear possible under the policy of net zero.

The removal of baseload power from the grid is also set to further increase power prices in New South Wales. IPA analysis found that households in New South Wales can expect to see their power bills double by the end of the decade because of the removal of reliable and affordable baseload energy sources. Of direct relevance to this Committee is in the legislation, as well as establishing a net zero mandate, the bill would also facilitate the creation of a Net Zero Commission. The commission would have the responsibility of monitoring, reviewing and providing evidence and recommendations to the relevant Minister on the progress towards achieving net zero. Section 11 of the bill specifies that the Net Zero Commission would not act under the direction of the Minister. The limited powers of the Minister would be to appoint members of the Net Zero Commission, provided that candidates have the skills, qualifications and experience pertaining to seven criteria that are set out in the draft bill—for instance, relating to climate science, climate change, renewable technologies and the interests of Aboriginal communities. There is no mention among the criteria of anything relating to energy security or the affordable and reliable supply of energy to New South Wales.

Of direct importance of matters being considered by this Committee today, in our assessment there is an open-ended question about the potential for abuse of legislated net zero targets by activists through the courts. In New South Wales, as members would be aware, standing for judicial review of a decision is based on common law principles and a person raising a challenge of a Government decision must demonstrate a direct material interest in the matter. However, there are also numerous open standing provisions in a number of environmental laws that allow any person to launch proceedings in the Land and Environment Court for an order to restrain a breach of a relevant Act—in essence, to stop the proceeding of a given project.

For instance, section 5.5 of the Environmental and Planning Assessment Act 1979 provides that a Government decision-maker is required when considering an action regulated by the Act. The Minister must "examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity". In addition, before a Minister is able to give approval to a State significant infrastructure decision such as roads, railways or electricity transmission networks, the Minister must first be presented with an environment impact statement provided prior to making an approval decision.

In our assessment, it seems more likely than not that formalising a net zero target in legislation will have a significant litigation impact. If a decision-maker is required to consider an activity "likely to affect the environment", then an activity that negatively contributes or detracts from the meeting of the net zero target is likely to fall within scope. The open standing provisions would enable green groups to challenge Government

decisions to approve projects on the grounds that they are incompatible with the attainment of a net zero target. Based on the research and analysis that we have submitted to the Committee, the IPA recommends that the bill does not proceed. Thank you again for the opportunity to appear here today. My colleague and I would be happy to take any of your questions.

The CHAIR: Thank you very much. Your submission is quite clear. You've just said that you think the whole thing should be abandoned: the targets, the legislation. Do you think that carbon, methane and other greenhouse gas emissions must be limited at all to slow the rise of the average global temperatures?

DANIEL WILD: I think there a couple of things there. There's no doubt that if, as a nation, we're able to reduce emissions, then that's a good thing, but that shouldn't be at any cost. Our concern is that the implementation of net zero mandates, whether it's at the State or Federal level, is often being done without due consideration to the cost that this may impose on society. We've outlined a number of those costs that we consider to be likely—for instance, loss of jobs, primarily located in regional areas; increasing electricity prices, which of course affect families and small businesses, in particular; and also the potential for those projects or potential projects to be stopped through litigation. The issue here is what the actual purported benefits are of legislating a net zero target, as opposed to, for example, having that as an aspiration but not necessarily mandated, and what the costs are of that. Our concern, as I say, is that the totality of the cost to society aren't being taken into account.

The CHAIR: Do you see any other consequences of not limiting greenhouse gas emissions or the continued rising of greenhouse gas emissions and costs on jobs et cetera? Do you see that as something that needs to be addressed?

DANIEL WILD: Can you just elaborate a little bit on what you mean, please?

The CHAIR: Do you think that there are any financial, social or environmental consequences for not limiting greenhouse gas emissions?

DANIEL WILD: There will certainly be consequences. There are consequences associated with any public policy decision that is taken or is not taken. I think the question before us today is whether legislating a net zero mandate for New South Wales would be a net benefit or a net cost to the State and the people of New South Wales. Our contention is that it would very clearly be a net cost, for the reasons that we have outlined in our submission. If there's going to be, for example, government subsidisation of certain projects then those projects would bring benefits, but you also need to look at the costs of the activity that's foregone as a result of these mandates.

The CHAIR: What would you say to the Insurance Council of Australia, for example, which is pricing the costs of current impacts of climate change? Actually, I will start by going back one step. Is it your premise and do you agree that it is human activity and rising greenhouse gas emissions that are causing global temperatures to rise and that we are seeing the impacts of that?

DANIEL WILD: There are a couple of things there. The first is that there is no doubt that humans affect the environment around us. The second thing is that the extent to which human emissions affect the climate and the temperature is a subject of debate. Again, of direct relevance to what's in front of us is, would New South Wales reducing its emissions to net zero by 2050 make any discernible impact on global emissions and therefore any significant impact or discernible impact on global temperature or climatic change? Now that's something that can be debated, but from the information provided, the extent of the contribution of New South Wales to global emissions is miniscule. Therefore, reducing New South Wales emissions to net zero is unlikely to provide any discernible environmental benefit, but it will impose very significant and direct and immediate costs.

The CHAIR: Can I just ask you to elaborate a bit more on the "subject of debate"? What debate are you referring to when we're operating on the fact that we are looking at scientific consensus? What debate are you referring to in that context?

DANIEL WILD: Are you suggesting there is not a debate about net zero? I don't quite understand the question, sorry.

The CHAIR: My apologies. I thought you were referring to a debate that we need to reduce our emissions and the ambition around that—i.e. the Paris Agreement. Are you suggesting that maybe the Paris Agreement is something that we shouldn't be prioritising the implementation of?

DANIEL WILD: Yes, we would suggest that we should not be prioritising the Paris climate agreement. We have been on the record on a number of occasions, saying that Australia should not be party to that agreement for a number of reasons. One of those reasons is, if you look at the global contributions to greenhouse gas emissions, as you are aware, Australia only accounts for a very small share of those emissions—something like 1.3 per cent of global emissions. The lion's share of emissions come from China, India and the US. Now, for

instance, if China is not going to be reducing its emissions and if you maintain the argument that this is a global issue and that it is global emissions that matter the most, then it is unclear why Australia should go ahead with these policies when our contribution to global emissions is small. It doesn't appear to be the case that a number of other nations—China foremost among them—is going to go ahead and reduce its emissions in the same manner. Obviously, that puts us at a fairly significant competitive economic disadvantage and, again, without delivering discernible environmental benefits.

The CHAIR: We heard pretty compelling evidence on Friday about China's incredible efforts to switch and decarbonise its economy and that they're likely to be much more on track than—I have just noticed that Mr D'Adam is asking a question.

The Hon. ANTHONY D'ADAM: Thank you both for your appearance today. I just wanted to establish the capacity in which you're making a submission. Mr Wild and Mr Davidson, could you perhaps tell the Committee what your academic standing is? Do you have some academic expertise in this area?

DANIEL WILD: As you know, the capacity in which we're appearing is through the Institute of Public Affairs. The Institute of Public Affairs is actually in its eightieth year, going back to 1943, when we were founded. What's interesting about the IPA is that we were founded with two objectives. The first was to maintain and enhance the Australian way of life and the second was to support freedom in all of its dimensions.

The Hon. ANTHONY D'ADAM: Can I ask you to bring it back to the question about your own academic qualifications? Do you have any academic qualifications, Mr Wild?

DANIEL WILD: Yes, I do have academic qualifications. The point that I would like to make here is that this is exactly what I'm talking about, which is the attempt to limit the prospects or the capacity of debate or the acceptable parameters of debate to those, effectively, that align with the certain view or a certain topic. For instance, before there was a question—

The Hon. ANTHONY D'ADAM: Mr Wild, I bring you back to my question.

DANIEL WILD: —pertaining to the consensus but, of course, democracy works by having a debate. I think the implication of your question is that there are certain views in society that are more or less legitimate than others. Of course, in a democracy—

The Hon. ANTHONY D'ADAM: No, that's not the case at all.

DANIEL WILD: That's the implication I took from it. I don't share that perspective.

The CHAIR: Mr Wild, if you were happy to answer Mr D'Adam's question, that would be really appreciated. Thank you.

DANIEL WILD: Can you repeat the question?

The Hon. ANTHONY D'ADAM: Can both of you elaborate on your academic qualifications?

DANIEL WILD: I have an honours qualification in economics.

SAXON DAVIDSON: I have a Bachelor of Arts.

The Hon. ANTHONY D'ADAM: I see. I note that in your submission you cite three reports. I'm assuming that that's the basis upon which you're making a number of fairly, I would say, dramatic assertions about the consequences of this bill. One in particular that I am interested in is about the impact on retail electricity bills increasing by 100 per cent, rising to $2,600 per annum in 2030. What's the source of that assertion?

DANIEL WILD: It's not an assertion; it's an analysis. That analysis was based upon—as you'll see in the relevant documentation that was provided to the Committee—the historical relationship between the removal of base load power, primarily coal-fired power stations, from the national energy market and the way in which the removal of that base load power has affected wholesale electricity prices.

The Hon. ANTHONY D'ADAM: Who conducted that analysis, Mr Wild?

DANIEL WILD: Pardon?

The Hon. ANTHONY D'ADAM: Who conducted that analysis?

DANIEL WILD: We conducted the analysis.

The Hon. ANTHONY D'ADAM: Yourself and Mr Davidson?

DANIEL WILD: And colleagues at the IPA. You seem to have an issue with the analysis. Do you mind letting me know what particular part of the analysis you take issue with?

The Hon. ANTHONY D'ADAM: I'm assuming the analysis is the three reports cited at the end of your submission. Is that correct?

DANIEL WILD: Yes.

The Hon. ANTHONY D'ADAM: Were any of those peer reviewed?

DANIEL WILD: All of our research is internally peer reviewed and through our academic networks that we use to peer review anything that goes out before it's published. Relatedly, I am just interested in, again, what particular part of the analysis you disagree with.

The Hon. ANTHONY D'ADAM: Well, I'm just trying to establish—

DANIEL WILD: I assume you've read the reports. What particular part do you disagree with? You mention the doubling of electricity prices by the end of the decade as a key finding of our research. Upon what basis do you disagree with that?

The Hon. ANTHONY D'ADAM: I'm just trying to establish whether they've been openly peer reviewed and so, in terms of the Committee's—

DANIEL WILD: So do you think that there's only certain kinds of research that's allowed to be in public debate, or that's legitimate? I'm just trying to understand the context of your question to be able to answer it.

The Hon. ANTHONY D'ADAM: The nature of my question is that the Institute of Public Affairs' research should be subject to open peer review so that the assertions that you're making can be given appropriate weight in the deliberations of the Committee. The purpose of my questions is really just to establish the credibility of assertions so that we know how much weight we can place on those assertions when we're debating on the evidence that's provided by you to this Committee.

DANIEL WILD: That's quite an astonishing insight that you can't make your own assessment. I mean, I would have thought an elected member of Parliament can review information and make their own assessment about the veracity of their analysis.

The Hon. ANTHONY D'ADAM: We can make our own assessment but it's a question of how we weight it at the end—

DANIEL WILD: That's quite an extraordinary admission that you rely upon external—

The Hon. ANTHONY D'ADAM: —as evidence before this Committee.

DANIEL WILD: —institutions to do that. I would have thought that you have the capacity to analyse and assess information and to form your own judgements. That's quite an interesting development.

The Hon. ANTHONY D'ADAM: Ultimately, it's a question of whether this is research with academic rigour, or whether it's just an opinion.

DANIEL WILD: I mean, you can read it. Have you read it?

The CHAIR: Can I just jump in, please, Mr Wild? I think the line of inquiry Mr D'Adam is legitimately making is is the material that you are relying on and making your assertions from in your submission, has that material been peer reviewed? You said yes, it has, and now I think there's a discussion about what your understanding of peer review is. Could you please just for the purpose of the Committee establish whether the material that your assertions are relying upon and that you've referenced in the material in your submission—has it been peer reviewed as we, as members of the Committee, understand that term "peer review"?

DANIEL WILD: Well, I don't understand what you understand by "peer review", and then the implication or the assertion in your statement is false. These aren't assertions. This is analysis. Again, this comes back to the point where we haven't got any questions so far about the nature of the analysis, how we went about the analysis, the findings, the potential implications, all of which I thought would have been of utmost importance for a Committee that ought to be seeking a range of information and views on this very important and consequential public policy matter.

The CHAIR: Mr Wild, can I ask is there a reason that you haven't put out your analyses for objective and external peer review as we understand the definition of what "peer review" of research material is?

DANIEL WILD: I don't—what do you understand? I can't understand what you understand it to be? I mean, from your assertions you appear to only want to accept information that's provided by a small cadre of those with whom you already agree.

The CHAIR: No, that's not correct. Mr Wild, what we understand is peer review is analysis and conclusions made based on analysis then being sent to other experts in the field to review that material. Generally speaking, that would be a range of experts from other institutions that can review that material, the methodology used for the analysis and there can be a rigorous process of how conclusions were drawn. I think Mr D'Adam's question was simply is that material peer reviewed? I'm not sure exactly whether the answer was yes or no. I think you said yes, but it was not clear.

DANIEL WILD: All of our work is peer reviewed. I mean, I said that before.

The Hon. JOHN RUDDICK: We've only got these gentlemen for a few more minutes. Let's not get bogged down on semantics.

The Hon. ANTHONY D'ADAM: I'm happy to.

DANIEL WILD: I'm not sure what the confusion is. I mean, all of work is peer reviewed. I said that before. I don't understand.

The CHAIR: But peer reviewed internally, I think, is the question.

DANIEL WILD: We have an academic advisory body. I don't understand what the confusion is. I mean, it appears to be the case that rather than actually asking a specific question about where the analysis is considered by those on the Committee to be erroneous, it seems that we're just going in these circles to discredit work that you don't agree with. I don't understand the confusion.

The CHAIR: Mr Wild, I really don't think that's what the Committee's doing here, and I have a good insight as to what the Committee's trying to do here. Can we finish on this point? Is it possible that the Committee can be provided some evidence about who is on that body and who reviews your analyses and conclusions drawn? Is that something you could provide to us?

DANIEL WILD: We're very busy. I don't want to be running in circles for documentation.

The CHAIR: All right. We've got some other questions.

DANIEL WILD: I've said we peer review it.

The Hon. JACQUI MUNRO: Thank you so much for appearing and also for putting together a submission at such short notice. I want to ask one question about something you mentioned in your opening statement, but that I couldn't find in your submission, about litigious green groups and their capacity and willingness to go after governments, essentially. I want to understand if there are any examples of that happening in other jurisdictions around Australia at the moment or historically?

DANIEL WILD: That's a good question. The area that we've looked at this most is at the Federal level, with section 487 of the Environment Protection and Biodiversity Conservation Act, which provides specific standing to green groups to challenge projects through a litigation process. Adani is the exemplar of that process. That's the area where that's happened most evidently.

The Hon. JACQUI MUNRO: Are there any other examples at a State-based level that you're aware of?

DANIEL WILD: I don't have that in front of me, but I'm happy to provide you with that on notice. We have done work on the lawfare, including in a New South Wales context. I just don't have it in front of me, so I'm happy to provide that on notice.

The Hon. JOHN RUDDICK: Thank you, gentlemen, for coming along and for providing us with the most rational presentation we've had so far. Other jurisdictions around the world have been more advanced on a "net zero carbon economy". I'm thinking of California, Germany and other parts of northern Europe. How has that unfolded in other jurisdictions? I see endless reports that electricity prices are going through the roof and that some of these jurisdictions are even reversing some of these net zero goals. I would be keen to hear your thoughts on that.

DANIEL WILD: There are a couple of things there. In the United Kingdom, for example, they went probably further down this road than other comparable nations under the Boris Johnson prime ministership. They've pulled back on a couple of key areas of their net zero commitments, particularly in relation to the phasing out of petrol cars, as an example. You mentioned Germany, which is a very interesting case, which is really a warning to the rest of us about energy security. As you'd be aware, they had a heavy reliance on importing their energy supplies, particularly from Russia. Given the conflict, they've been basically rebooting some of their coal-fired power stations in order to, essentially, keep the lights on and keep industry going. What we're seeing around the Western world is a reconsideration of net zero targets and mandates, particularly in the context of

energy security, because everything we have relies on our energy security and our sovereign energy sources. One of our main concerns is around that matter. As you know, a significant share of solar panels and wind turbines are manufactured overseas, which leaves us very vulnerable to supply chain disruptions, unlike, for example, if we use our own coal, gas or uranium sources, which we have sovereign control over.

The Hon. JOHN RUDDICK: What about electricity prices for consumers and businesses in those jurisdictions that have gone the furthest down the net zero carbon economy?

DANIEL WILD: We've seen prices go up. There's a clear relationship between the penetration of renewables into an energy system and increasing prices of that system. The reason for that is very straightforward: Solar and wind are intermittent and unreliable, and they need a significant amount of money spent to what's called firm them up. All of that, at the end of the day, is passed on to consumers in one form or another. We're seeing that in Australia, where prices have risen rapidly. As you rightly mentioned, other nations around the world that have gone down this path probably faster and earlier than Australia are seeing very negative consequences of what it is that they're doing and are actively reconsidering those policies.

The CHAIR: Mr Wild, I think there is contest around the idea of what is actually the cause of increasing power at the moment. My understanding is the majority view around that is that we are relying on declining, older, less reliable coal technology, and that is the actual cause at the moment for increasing prices. Is there something you would say to that?

DANIEL WILD: You say it's a majority view. What makes you say that?

The CHAIR: I think that is the view of the Australian Energy Market Operator and the Australian Energy Regulator. Their prediction is that it is because we're relying on this older, less redundant, very old technology. The understanding is that the reason our coal-fired power plants are coming to end of life is because they're literally coming to the end of their life—they're old, they're inefficient and they're not reliable anymore. Hence the industry's investment and desire to bring on more renewables to assist in driving prices down as the transition reaches that momentum. Is your understanding different to those operators in the field?

DANIEL WILD: I'm not sure it's the majority view. You've named two institutions. Look, there's no doubt that there's a lack of investment in coal-fired power. That's very clearly the case. We would share that assessment that we should be having more investment in base load power. One of the reasons you're not getting the kind of private investment into those energy sources is because of policies like this. Very clearly, it's the policy of a number of State governments and Federal governments to proceed with policies such as net zero, and they've made it clear that there's not a future for coal, or there's a very limited future for coal, in the energy network. So if you're a private operator, that's not an enticing public policy environment for you to invest in.

This is the fundamental cause of the problems we have, which is that for years governments have been actively discouraging—either through the direct subsidisation and public policy favouritism of wind and solar, or the active discouragement of coal-fired power through various regulations—base load power supply, and now we're seeing the consequences of that with rapidly rising prices and a deterioration to the quality of our energy infrastructure. So I share the assessment that's there's a lack of investment, and it is not quite an explicit objective of government policy, but it's certainly a direct consequence of government policy, which is one of the reasons why we don't recommend that this bill proceed.

The Hon. PETER PRIMROSE: In relation to clause 8, the guiding principles in the bill, are there any of those principles that you would support?

DANIEL WILD: Can you remind me what they are, please?

The Hon. PETER PRIMROSE: Clause 8 is a whole page. I assumed you may have it in front of you, given that we're commenting on the bill.

DANIEL WILD: I don't have it in front of me.

The Hon. PETER PRIMROSE: Can I ask then that you please take it on notice? Are there any of those guiding principles that you would endorse? I would appreciate that.

DANIEL WILD: Sure.

The CHAIR: We are out of time. Thanks so much for coming to give evidence today. I know it was a short time frame, so we are very grateful that you have accommodated it.

(The witnesses withdrew.)

Mr EDWARD CAVANOUGH, Chief Executive Officer, The McKell Institute, before the Committee via videoconference, affirmed and examined

Mr ROD CAMPBELL, Director, The Australia Institute, before the Committee via videoconference, affirmed and examined

The CHAIR: Would either of you or both of you like to start by giving a short opening statement? Perhaps, Mr Cavanough, we can start with you.

EDWARD CAVANOUGH: Yes. No problem. Thank you to the Committee for inviting The McKell Institute to speak today. This is an incredibly important piece of legislation. Albeit we put together a submission very quickly—I'll speak to that a little bit in my remarks—I thought I'd use my opening remarks to comment broadly on why we think this is important. I just want to take the Committee back to talk about, maybe, The McKell Institute a little bit briefly but then talk about some of the research that I've done previously that's led us to our position on this. The McKell Institute is a public policy think tank. We produce a broad range of research. We often engage with individual subject matter experts to do so, work closely with academia et cetera. We have done a bit of work on climate policy—in particular, the impact on costs and insurance costs and rising premiums, issues like that—which I'm happy to speak about in a bit more detail.

But I just wanted to talk about a project I did through October and November last year actually on a different issue, which was on regional skills and economies all across New South Wales. During the course of that research, I spent about three weeks on the road from Broken Hill up to Bourke and Gunnedah, down to Moama, all along the south-east coast, interviewing regional communities. It happened to be at the tail end, I guess, of the 2022 flooding crisis. What was remarkable about that period was that you could barely go through an individual community, in regional New South Wales, that was not affected in some form or another by this extraordinary flooding season. We saw communities cut in half by rivers. The Namoi, for example, in 2022 flooded nine times.

We were speaking to communities about regional skills crises, the challenge of getting workers into these communities. Effectively, one of the top barriers for attracting skills and attracting labour and even getting workers from A to B within a town like Gunnedah was the fact that the climate was becoming less predictable and more extreme. We saw entire communities cut off from one another and simply unable to engage in the day-to-day basic economic activities. The point of all of that is that regional New South Wales in particular—and, of course, Sydney—is uniquely exposed in many ways to the worst aspects of climate change. We know that that's going to get worse and worse. We think it's incredibly important that this type of legislation reflects that and addresses the needs of those communities.

I wanted to speak a little bit to the earlier testimony that was given this morning because often we hear arguments that any action on climate change will, effectively, disproportionately affect regional communities in New South Wales. We see doom-and-gloom arguments around job losses et cetera. Right now we're seeing impact on these regional communities. It's happening today. One of the most critical things that a State government can do is set the signals to ensure that, as this economy transitions, communities like that aren't disproportionately affected but that the day-to-day impact of climate change that we're seeing right now is addressed too. Obviously, New South Wales is not the only actor in Australia or in the world—it needs to be part of a broader global solution towards climate—but not acting is not an option. The question is about whether or not the targets that are actually set in this legislation are sufficient and the process of getting there is appropriate.

I'll just finish with the fact that I think it's incredibly important to set targets like we're doing—like is being done in this piece of legislation. Targets themselves, though, are not a panacea, and it is incredibly important that what targets are committed to by the State are met and that the New South Wales public actually sees them being met. I think there's a case for additional ambition, but there's also a case for arguing that the targets that are being proposed in this piece of legislation are sufficient and remain ambitious—and certainly remain open to further ambition.

I think the establishment of the Net Zero Commission is an important feature of this bill as well, because it's going to obviously allow the New South Wales Parliament, the Government—future governments, this Government in particular—to effectively be held to account to those commitments and to receive the adequate advice that importantly, as I was mentioning earlier, recognises the impact on those regional communities that I started my remarks with. I will leave it there, and I'm happy to take some further questions.

ROD CAMPBELL: The Australia Institute is an independent think tank based in Canberra. I agree broadly with what Mr Cavanough has just said, and we're broadly supportive of the bill. I would like to summarise our submission. We're concerned around some of the wording in relation to some of the guiding principles, and

we've got some concerns around the shape of the Net Zero Commission. We're concerned that without some changes to that aspect to the bill, the Net Zero Commission could go down the road of the Federal Climate Change Authority. We've got some ideas around how to avoid that. But I guess, big picture, we feel that it's really what is not in the bill that is important around climate in New South Wales.

It's widely known what governments need to be doing—and need to be doing faster—in relation to climate in general. They need to be eliminating fossil fuel subsidies, stopping the expansion of new fossil fuel projects and really working to decarbonise industries, not to be mucking around with offsets and creative accounting in the land sector. I guess we're not convinced that the bill, as it is written, is exactly going to accelerate action on any of those fronts. I understand it's not exactly the purpose of it, but we'd like to see getting on with tangible action on climate rather than a lot more time spent debating principles and advisory committees. And so, without further ado, let's get on with it.

The CHAIR: I start by asking you, Mr Cavanough—you said there is a case for additional or increased targets. We've heard quite a bit of evidence, particularly from climate experts, around more ambition or increasing targets. We also heard a case from legal experts about how that might happen. Do you have a view around that, and what are you referring to when you talk about additional targets or a case there?

EDWARD CAVANOUGH: In a perfect world, we could move immediately to extraordinarily low rates of carbon emissions. Ideally, that would be a fantastic outcome. I think it's very, very important though, particularly in this political climate—the political economy we're in—that governments are seen to be able to achieve what they commit to. I note that the bill doesn't necessarily preclude future ambition. It's not setting a ceiling on reducing emissions. I think it's setting a relatively appropriate ambition by 2030 of 50 per cent. It's not a long way away. By all evidence, it looks like the State is broadly on track to meet that, which is really important. My perspective is that in an ideal world, we would not be confronted with the challenge that we are. But it's important for governments to effectively put forward targets that they can achieve, and to show that they can achieve and ideally exceed those. That's my perspective on that balance between ambition and actually legislating targets such as in this bill.

The CHAIR: Just to clarify, it's important to your view that there is no ceiling in this legislation? You wouldn't do that in the design of well-placed, target-based legislation?

EDWARD CAVANOUGH: No, you wouldn't want to impose a cap or a limit on the ambition that can be achieved. It's a matter of making sure that what is legislated is achieved, and I think that's an important objective for a government to make.

The CHAIR: Mr Campbell, when you say "what's not in the bill"—I notice in your submission you refer to the relationship between rising emissions and fossil fuel development. What do you think we need to do in this bill to address that?

ROD CAMPBELL: I understand that it might not be the place for this bill. I realise that this bill has other purposes but, in New South Wales, New South Wales needs to put a moratorium on new coalmines, end fossil fuel subsidies such as the Coal Innovation NSW Fund. It needs to get the Hunter Valley and the Port of Newcastle ready for future industries such as by getting the Port of Newcastle ready for container exports. Decarbonisation of industry—even things like decarbonising the State-owned bus fleet. I think it might seem a small point, but State governments in general own or at least lease and have significant control over bus fleets.

If State governments aren't rapidly electrifying their bus fleets, which is something they entirely control, something where commercially available technology already exists—it's been rolled out in many jurisdictions. If State governments aren't doing that and doing it quickly, then to us it's a pretty big indicator that they're not serious about climate action. There are lots of things that could be done. I'm sure we can talk about it all morning. They're not in the bill. I understand it's not exactly the purpose of the bill. But to me it's the glaring problem that we're not talking about doing these things; we're talking about other things.

The CHAIR: Mr Campbell, in your submission you refer to some of the guiding principles. Can you comment on those and highlight any strengths and weaknesses and in particular whether you think, in this kind of design with those guiding principles, there should actually be a paramount guiding principle, like a paramount responsibility in there as to looking at the implementation of the Act and the targets?

ROD CAMPBELL: I don't have skills in drafting bills, so forgive any problems around wording, but the guiding principles, in my view, for climate action should be effectiveness, efficiency and equality. I guess we're concerned or disappointed around the guiding principles principally being framed around fiscal responsibility, economic growth and economic risks of delaying action. To us—and without skill in drafting bills—that seems to open the door for a lot of the usual suspect lobby groups, like the Minerals Council, like the carbon credit lobby group, lobby groups like the gas industry, to come in and argue that they're industries and the

interests of their members are fiscally necessary and promoting of economic growth and therefore in line with the principles of climate action in New South Wales.

I think it's high time that the interested lobby groups like that are explicitly ruled out and that effective climate action is ruled in. You know, it's time to stop joking around with clean coal or gas and carbon capture and storage and some of the obviously ineffective methodologies of carbon credit generation. I realise that's a Federal bit of legislation I'm referring to, although New South Wales once had a leading role in carbon trading and carbon credit creation. It's time to rule these things out, rather than wording that seems to allow them to wriggle back in.

The CHAIR: This question is to both of you. I'll go to you first, Mr Campbell. The current policy has as an interim target written into it through regulation that we'll hit 70 per cent reduction by 2035. Do you think, from where you sit and your analysis, that those interim targets are good from an investment confidence perspective?

ROD CAMPBELL: Yes, I think they're good. Perhaps I might take on notice exactly the size of them; I haven't looked at that in detail. It probably provides some kind of confidence, but I think it would provide a lot more confidence for investment to see real action and to see a government leading by example in terms of what it's doing on the ground rather than just the target being there. I don't see it as a bad thing, but I'm not sure that it's enough. Looking at Australia's national targets, we're in no way on track to meet them. Progress towards them so far has been achieved either through creative accounting in the land sector or by the relatively easy task of closing down coal-fired power stations. At a national level, it'd be much clearer that we were going to achieve our targets if we started stopping the things that are expanding Australia's national emissions, like stopping LNG developments and new gas fields. Of course, New South Wales has its own new gas projects that it could be ruling out. Things like taking action to avoid the development of the Santos Narrabri Gas Project would show that the New South Wales Government is serious about climate in a way that targets cannot.

EDWARD CAVANOUGH: Targets, as I said earlier, aren't the panacea to everything. You need to couple that with meaningful action. They're also relatively preconditional to attracting investment into any jurisdiction. I again note that some of the commentary around action on climate change has been that it's all going to cost jobs and all this sort of stuff. That has completely flipped in the last decade, in particular. It's very difficult for a jurisdiction to attract the type of investment that it wants to from global capital et cetera without having both meaningful targets and practical pathways of getting there. There's certainly not a barrier to investment. In fact, I'd argue that it's the opposite: It's preconditional to attracting investment into the State.

The CHAIR: Finally, Mr Campbell, are you aware how much New South Wales is currently spending on fossil fuel subsidies? Is that available?

ROD CAMPBELL: The Australia Institute's *Fossil fuel subsidies in Australia 2023* report has an estimate; I don't have it in front of me. The big ticket items in there are the Coal Innovation NSW Fund, which has a balance of about $65 million. There are a couple of programs within the resources department of the Department of Regional NSW that are identified in there that we see as promoting of coal and gas rather than just administering. I think that while the Australian Rail Track Corporation is owned by the Federal Government, the New South Wales Government could certainly do a lot to move its investment. It continues to put $100 million to $130 million a year into new capital investment in the Hunter Valley rail network. Obviously that rail network needs to be maintained, but we think new capital investment should be moved to other purposes.

The Hon. JACQUI MUNRO: Thank you so much for coming and for your submission. Were you aware of the previous Government's target in regulation that set the 70 per cent target by 2035? Was The McKell Institute aware of that?

EDWARD CAVANOUGH: I'm aware of the ambition of the 70 per cent with the previous Government, yes.

The Hon. JACQUI MUNRO: I suppose, from what you've said so far, you'd be supportive of a ban on offshore oil and gas?

EDWARD CAVANOUGH: We don't have an official position on that, to be honest. I'd probably take that on notice.

The Hon. JACQUI MUNRO: From what Mr Campbell has said, that seemed like it would be in line with what you are—

The CHAIR: You've got McKell and The Australia Institute.

The Hon. JACQUI MUNRO: My apologies.

ROD CAMPBELL: We're certainly supportive of a moratorium on all new fossil fuel development.

The Hon. JACQUI MUNRO: The important point to draw out with The McKell Institute's submission around the "floor, not a ceiling" is that, in clause 9 (3), there is a line embedded that, in fact, does set the ceiling. In that section, it says specifically that there should be no regulation or change to the legislation that reduces the emissions target of net zero by 2050 to an earlier year. Were you aware of that, Mr Cavanough?

EDWARD CAVANOUGH: Not specifically, but my point still stands. I think it's important to have a practical target in the interim, and then also opening the door to further ambition. Particularly if the Net Zero Commission is providing the adequate advice and demonstrating there is meaningful progress, then, in my view, and The McKell Institute's view, there should be an open-mindedness to increasing ambition, absolutely.

The Hon. JACQUI MUNRO: So, essentially, you wouldn't support that part of the legislation?

EDWARD CAVANOUGH: If that's the specific outcome of it—that it does absolutely not allow for an increase in ambition—I wouldn't support that.

The Hon. JACQUI MUNRO: One of the things that we've heard about is the difference in usefulness of legislation and regulation working together or not working together, as it were, and that, because this bill suggests that there should be a complete removal of regulations as part of the targets that continue, we have a less effective framework for change because everything has to go through legislation every time there is a change or the commission suggests that there should be a different target. That was something that I was keen to draw out in this. The Australia Institute has a view on Eraring and offshore oil and gas, but The McKell Institute will take that on notice?

EDWARD CAVANOUGH: Yes. We don't have a formal view on that. We haven't done any specific research on Eraring or on offshore oil and gas. We just don't have a formal position on that that I'd be able to enunciate.

The Hon. JACQUI MUNRO: If you could, on notice, provide your thoughts on that, that would be very helpful.

EDWARD CAVANOUGH: Yes. I'm happy to do so.

The Hon. ANTHONY D'ADAM: Mr Cavanough, I want to draw your attention to point 6 of your submission. You make a pretty bold statement around trying to depoliticise the climate discussion. I wonder whether you might be able to elaborate a bit more on that point and how you think the climate commission might be able to facilitate that process.

EDWARD CAVANOUGH: That's an important point. Probably most of us who support meaningful action on climate change have been frustrated with the state of the debate—not so much in New South Wales in recent years; it has been more healthy than others—across the country more broadly. I think that has been a frustration. In my view, the establishment of an entity like the Net Zero Commission is an important way of providing independent, rigorous advice on the way through to meeting these somewhat complicated transitions in an economy. That was really the point of that. You can't click your fingers and depoliticise big, complicated policy change, but the establishment of something like the Net Zero Commission is an important feature of the architecture around the transition to net zero.

The Hon. ANTHONY D'ADAM: In your submission at 7, you talk about the commission's role in terms of the State's emissions budgets. Could you perhaps elaborate a bit further on that point—why you think that's important?

EDWARD CAVANOUGH: Yes, it talks to this idea of basically an emissions budget—a carbon budget—and being able to kind of specify that, which I think is an important, novel aspect of the Net Zero Commission, effectively. In my understanding, that hasn't been established, necessarily, in all other jurisdictions. Being able to kind of provide specific advice on carbon budgets is a useful contribution that the Net Zero Commission will be able to make. It's something that we think is novel but also pretty important. It could be potentially quite impactful.

The Hon. ANTHONY D'ADAM: Are you able to elaborate more on the question of viewing climate through an economic lens? There are a lot of negatives in the debate around the shift to zero carbon emissions. Can you perhaps talk about some of the economic benefits that might flow on?

EDWARD CAVANOUGH: Yes, there are a couple of aspects. I spoke before about the fact that, going back to your point, there has been historically this argument that basically we shouldn't do anything because Australia is too small, or whatever, which is nonsense in my view. That argument basically says that any action on climate will come at an economic cost. I'm dialling in this morning from South Australia, a State which had 70-odd per cent electricity generation each day from renewable energy sources. It also has an unemployment rate

that's its historic lowest, so there's just not a correlation between meaningful transition and job losses and this doom and gloom. That's one point to make. But also, the reality is most investors, most new industries, are recognising this challenge. Capital wants to be parked in jurisdictions where there is a meaningful climate policy in place. That's becoming conditional, as I said before, towards investment and new opportunities.

Without taking meaningful steps forward on climate, the State will be left behind. New South Wales can't solve the climate challenge alone, but if it doesn't meaningfully step up to the problem then it's also going to miss out on a whole range of economic opportunities. I started my remarks with a discussion around regional communities because sometimes I feel an unhealthy part of the debate is that regional communities get stereotyped or something, or maligned in some ways, saying that these communities don't want any action on climate et cetera. As I said, there are day-to-day impacts on local economies all across the State because of the increasing peril, effectively, from climate inaction or a lack of climate action. So we need to take meaningful action to stabilise economies and then to bring in new opportunities as well.

ROD CAMPBELL: Could I add, on the other side of that, the relatively small contribution of fossil fuel industries to the economy of New South Wales. There's a perception that coal royalties are important in New South Wales, whereas in reality they tend to make up less than 2 per cent of the State Government's budget. So 98 per cent of schools, roads and hospitals are not funded by the coal industry. Zero per cent is funded by the gas industry. Jobs in coalmining are less than 1 per cent of New South Wales employment. Even within the Hunter Valley, 95 per cent of people don't work in coalmining. I agree with everything Mr Cavanough has just said about there being a lot of opportunity and about the success of areas that have had a lot of renewable generation go in, but I think the other side of it is New South Wales really doesn't have a lot to lose here. The perception that the coal industry is a significant part of the New South Wales economy comes more from years and years of advertising and dodgy economic modelling coming out of the mining lobby groups rather than the actual fiscal reality of the New South Wales Government in 2023.

The Hon. PETER PRIMROSE: I'm asking a similar question of most witnesses, and that is purely in terms of clause 8, the guiding principles. Are there any of those guiding principles that you would disagree with?

EDWARD CAVANOUGH: I'm happy to jump in. I, maybe, just have a slightly different view from Mr Campbell on the guiding principles. I think there are some really important statements in there. In particular, I have highlighted point (8) (a) through (c) and then (c) (i) through (iv). These are really important statements to formalise. It states:

> … to address climate change should take into account the following—
>
> (a) the knowledge and perspectives of Aboriginal communities,
>
> (b) the best available science, …

These are important statements, I think, to specify. I also note that in 8 (9) the use of the word "urgent" recognises, I think, the threat and the challenge. From my perspective, I think I'm generally supportive of the principles that have been put forward.

ROD CAMPBELL: As am I, with the exception of subsection (4) around fiscal responsibility, promoting of economic growth and risks of delaying action. The rest of that section, I think, is difficult to disagree with.

The Hon. JOHN RUDDICK: I have a question for Mr Cavanough. In your opening statement, your very first sentence states:

> Climate change is exacerbating and amplifying a variety of destructive extreme weather events across Australia, contributing to more intense bushfire seasons, severe heatwaves, stronger cyclones, sudden floods, and prolonged droughts.

I believe this is delusional and alarmist. Can you please tell us what data was used to make this statement? We've got very good records across this continent for 200 years, and everything that is happening is—same things were happening 100 years ago; same things were happening 200 years ago. You've actually mentioned cyclones. Everybody knows that cyclones—just because it's a random thing—have been declining in the past 20 years, but you've said we're having much stronger cyclones. The people who believe in global warming are saying, "We're having less cyclones now because of global warming", but you've said we're having more stronger cyclones.

EDWARD CAVANOUGH: Yes. So the submission that we put forward cites established climate science, effectively.

The Hon. JOHN RUDDICK: I would like to see it. You're saying we're having more severe weather events across the board.

EDWARD CAVANOUGH: Yes, I think that's relatively—

The Hon. JOHN RUDDICK: You're saying that's accepted. Could you give the Committee that data that was underpinning that?

EDWARD CAVANOUGH: I'm happy—there are citations in the submission, so you can look at those.

The Hon. JOHN RUDDICK: There's no footnote with this opening statement. If it's true, there will be plenty of data. You would be easily able to get it to us, I'm sure.

EDWARD CAVANOUGH: I can guarantee we could do that, actually. We're more than happy to do so.

The Hon. JOHN RUDDICK: Thank you. Terrific.

EDWARD CAVANOUGH: It's an interesting comment. I think it speaks to, I guess, the approach that we were discussing earlier. There's an argument to do absolutely nothing on climate, which is one that I assume resonates with the question that you put forward, and that's based in this sort of antiquated denialism, a debate that we have been having for—I mean, I remember watching *Q+A* and stuff when I was 12, 13 years old and people were making the same arguments that you're making now. The reality is just different. I think the vast majority of your colleagues would agree that the position you're taking and the question you're asking is fringe and based in ideology and opinion, rather than observable fact of what's happening.

The Hon. JOHN RUDDICK: All I'm asking for are the facts. I would like to see that you can prove that there has been an increase in floods, an increase in droughts and an increase in cyclones.

EDWARD CAVANOUGH: We're happy to take it on notice and put together something.

The Hon. JOHN RUDDICK: So you do believe that a parliament can change the law and that will change the weather? You think that mankind is that powerful? There are all these other factors that affect the weather, but a parliament is the most important thing?

EDWARD CAVANOUGH: I believe that parliaments and that governments around the world and jurisdictions, whether in New South Wales or elsewhere, do have some material impact on the outcomes in the real world. As I said early on, New South Wales is not alone; you can't only—no-one is asking New South Wales alone to take meaningful action on climate; it's a collective challenge across the world and across Australia. I'm not a scientist, but scientific evidence does suggest that reducing emissions is important to stabilising global climates.

The Hon. JOHN RUDDICK: So changing the laws is important, but then you have a paragraph saying how it is important to depoliticise this debate. We need the parliaments to change the laws to save us from global warming. This is what we do in parliaments: We have a robust debate. You called people who are sceptical of the settled science a "fringe view". Now, I accept that. That is the case. It is definitely a minority view. There have been lots of examples in history, haven't there, of small views—fringe views, in your words—that have proven, with time, to be correct, and we needed debate to get to the bottom of it? If the science is overwhelmingly on your side, shouldn't you welcome debate?

EDWARD CAVANOUGH: I'm happy to welcome debate. My point around—

The Hon. JOHN RUDDICK: But you're calling to depoliticise a debate. You want to re-engineer our energy supply and our whole economy, but you don't want to have a political debate about it?

EDWARD CAVANOUGH: Part of the point around depoliticisation doesn't mean there is absolutely no political debate, it means that you're—I'm supportive of there being, effectively, an independent entity that is providing ongoing scrutiny and advice towards the targets that have been set. I think that's a useful addition. It doesn't mean that individual members of New South Wales Parliament can't express their views, whether grounded in the advice of that independent and scientific rigour or not. So everyone is still welcome to have their opinion. I do have an undergraduate degree in history but, I've got to say, I'm not a scholar on the history of fringe political views or thoughts, so I'm not going to wade into that.

The Hon. JOHN RUDDICK: No, science.

The CHAIR: On that point, in terms of regulating and markets, the Premier has said that there must be a market solution for carbon accounting. But am I understanding from both of your evidence that regulation is fundamental to that and that the direction of the carbon market and accounting requires leadership and direction setting at the moment? Is that your understanding?

ROD CAMPBELL: I'd say, unequivocally, yes, except that I'm not familiar with exactly what the Premier's comment was and what kind of market we're talking about. But the idea that markets can be useful in achieving emissions reductions—I don't think that is a controversial statement. But that market has to be set up

very carefully, and it doesn't mean that it's the fastest, most efficient or most effective means of emissions reduction either. To start sounding like a broken record, I think we should start with eliminating fossil fuel subsidies and stopping the expansion of the coal and gas industry before we needed a particular market mechanism. That doesn't mean that a market mechanism that is well designed couldn't also be a part of that solution.

The Hon. PETER PRIMROSE: In relation to that comment, if I go to clause 14 (2) (g), in terms of functions of the commission, it states:

> … the Commission may provide advice and make recommendations to the Minister about the following—
>
> …
>
> (g) greenhouse gas emissions and action to address climate change relating to specific business or industry sectors …

Can you just comment on whether you think that is something that is appropriate?

ROD CAMPBELL: That seems appropriate. It doesn't seem problematic.

EDWARD CAVANOUGH: I would agree with that. It is, of course, not mandating something, but industry-specific advice is certainly useful.

The CHAIR: Can I also ask about the set up of the commission and criticisms around its establishment and who sits on that body? I think your point went to this earlier, Mr Campbell, and I think I read that you have a view that people with vested interests in fossil fuels should be excluded. Can you elaborate on that?

ROD CAMPBELL: Yes. The Australia Institute has published quite a lot on the Federal Climate Change Authority. I think the Federal Climate Change Authority was set up under the Gillard Government and, initially, I think, provided good, robust advice broadly in the manner which we're all talking about and hoping for here. Of course, particularly through the Abbott years, but then, generally, under the Federal Coalition Government, they initially tried to abolish the Climate Change Authority, and then it was just hollowed out and starved of resources.

Now, in more recent times, possibly more troubling still, is that it's riddled with conflicted members. Its chair is Grant King, who is famously from the Business Council of Australia and LNG exporter Origin Energy. More problematically still, he's the chair of GreenCollar, one of the largest carbon offset developers and advisers. There are a number of other members of the Climate Change Authority who have backgrounds in either lobbying for the fossil fuel industry or have significant interests in and advise on carbon credit industries, particularly in relation to land-based methodologies.

It doesn't seem to be an accident, therefore, that the Climate Change Authority's advice and research output in recent times has focused on new ways of generating carbon offsets in Australia, the integrity of overseas carbon offsets and the ability to integrate them into the Australian system. I don't have it in front of me, but I think three out of the last four significant written outputs of the Climate Change Authority have been all about carbon offsets and generally about how great they are. That comes as no surprise, when you see how many of the members have financial interests or organisational links to the carbon credit industry.

I worry that a commission that is set up here—while we're all on the same page at the moment and it all looks great, I worry that there's not enough thought been put into how to stop it going down the same direction as the Climate Change Authority. How do you keep vested interests off it? It is not only how do you make sure people on it have good expertise but also how do you keep vested interests out of it? I think a little bit more thought needs to go into that.

The CHAIR: I think we've run out of time. Are there any final things that either of you would like to add to your evidence today?

ROD CAMPBELL: No, that's fine.

The CHAIR: Thank you very much on behalf of the Committee. As I have said, I know the time to respond has been short and limited. We are incredibly grateful for your efforts and for coming along today. It has been incredibly helpful.

The Hon. JOHN RUDDICK: I am looking forward to that data, gentlemen.

The CHAIR: I should make clear that the secretariat will be in contact with you about how to respond to any questions that were taken on notice, and the time frame. Again, I apologise that the time frame is tight.

(The witnesses withdrew.)

Mrs ALISON SENTANCE, Managing Director, Aboriginal Biodiversity Conservation Foundation, before the Committee via videoconference, sworn and examined

The CHAIR: We will commence our next session. I welcome Mrs Alison Sentance. Would you like to start with making an opening statement?

ALISON SENTANCE: Firstly, I would like to acknowledge that I'm speaking today on the lands of the Kaurna people in South Australia and I pay my respects to their Elders past, present and emerging. We established the ABC Foundation in Western Australia. However, it is a national foundation, and our mission is to ensure Aboriginal people are leading the growth of a sustainable land and sea economy. As a social enterprise, we want to see Aboriginal and Torres Strait Islander people at the decision-making table as we adapt to climate change. Our focus is to ensure we recognise their inherent connection to the environment as custodians. We need to develop innovative solutions like coming up with Indigenous carbon banks to future fund Indigenous ranger programs in collaboration with government.

Aboriginal and Torres Strait Islander people are especially vulnerable to the impacts of climate change, which can limit their access and disconnect them from country, and which can have negative impacts on their overall health and wellbeing. While I strongly support government's initiatives to align with the global efforts to reduce greenhouse gas emissions, my concern is how will these initiatives create positive change for those most vulnerable living in remote and regional areas? How will it benefit people already that have inadequate housing and limited energy supply? Aboriginal and Torres Strait Islander people are also not well represented and do not have a seat at the decision-making table on these matters.

Therefore, I need to ensure the proposed bill and advice provided to government includes Aboriginal views, provides recognition, and values their traditional ecological knowledge as a real source to combat climate change, as well as addressing socio-economic needs, including understanding the impacts in Aboriginal environmental health, overall impacts to their health and wellbeing, and the devastating impacts to country because of climate change while ensuring these communities have accessibility to affordable renewable energy solutions long into the future. Thank you.

The CHAIR: I would like to start by asking this: I think from your opening statement what you're indicating there is that there are likely big opportunities for Aboriginal communities around New South Wales to be leveraging attempts to reduce and decarbonise the economy—that there are big opportunities there. Can you elaborate on what you see those could be?

ALISON SENTANCE: I think, especially when we're thinking about carbon impact areas, those more remote or regional, that's where we tend to focus a lot of our services and efforts. At the moment there are massive opportunities to work with government on land that could be accessible to create carbon banks or the ability to capture carbon and really use that money much more innovatively to fund ranger programs, fund initiatives in remote areas. One of the complex issues I see in front of government right now nationally is how do you keep funding ranger programs?

It is a continual cost to the government, both on a State and Federal level, and I feel like there's significant opportunity to come up with innovative ways around how do you use carbon revenue and how do you use it wisely to potentially re-fund those initiatives so it reduces the financial burden already allocated within budgets but coming up with innovative ways? These are the things that we would really like to see government do to not only create jobs for Aboriginal people in remote areas, but to do what's most important for their health and wellbeing, which is to connect them to country.

The CHAIR: Just on that point, are you suggesting as well that Aboriginal communities across the State are perhaps more impacted by the impacts of climate change? Could you just elaborate on that a little bit?

ALISON SENTANCE: Yes. One of the main areas I see—and I live across a number of remote communities as I travel around and we deliver our programs. One of the things I think that is never really talked enough about is the impact to environmental health. We've got diseases in this country that shouldn't be here, like trachoma et cetera that exist in Aboriginal communities. Even when I read this bill, I'm not seeing the importance around environmental health in Aboriginal communities. We see the overall health and wellbeing as what's being mentioned, but we're talking significant environmental impacts in remote communities. As climate change becomes a bigger problem, these issues are going to get a lot larger.

The CHAIR: On that, if we understand that every fraction of global warming makes the impacts much worse on the ground and on communities, and that faster action is better action, do you think we should be looking at more ambitious targets than what the legislation is proposing?

ALISON SENTANCE: I think it needs to be more ambitious versus it needs to have targets within the target. I'm concerned that when we see things that are set too far apart, I think, "What's going on between that?" I would have thought there need to be five-year targets. How we actually going to achieve this? My concern also is: Is this mandated and what role does this proposed bill have on influencing the other important legislation? When you've got things like more fossil fuels or more coal plants being proposed and then you've got a bill like this, how do they align to make sure these targets are going to be mandatory across a number of key areas?

The CHAIR: Am I hearing there that, in your view, it would be important that we have clear reviews and ratchet mechanisms to make ambition more if we can achieve that, but also that there needs to be some kind of obligation imposed to make sure we're doing this, not just having targets and hoping for the best? Is that what you're suggesting there?

ALISON SENTANCE: Yes, because otherwise it's like an MoU. People sign them but do they stick to them? I feel like this is a little bit weak. It's not strong enough. It needs to be a lot stronger to make sure it's across all of the governments, not just this one bill, this one part of legislation.

The CHAIR: Finally from me, the bill is proposing a Net Zero Commission and one objective is how we appoint relevant people with expertise. One of the clauses requires the Minister to have regard to the skills of those people and that they have experience or qualification in relation to the interests of Aboriginal communities. Do you think that is strong enough or appropriate? We heard some evidence on Friday that to do that, you need to have somebody who is an identified Aboriginal person with connections and cultural authority who can speak to the issues of reducing emissions.

ALISON SENTANCE: Yes, I'd agree with that statement. I'm looking under part 2, guiding principles, 8 (a). "Traditional ecological knowledge" is how it's referred to, and the perspective of Aboriginal communities. That was the first question I asked, "How would this be?" I think there's something else more important here that's not identified. You've got Aboriginal communities but then you're going to have communities that are much more impacted. You're going to have more vulnerable communities in remote and regional areas that are going to be much more significantly impacted, like your rural communities and your farming communities. They're going to be a lot more impacted than those in the cities, right? When you say the words "Aboriginal communities", that's quite broad. My concern was that it's not broken down enough to acknowledge that you're going to have communities that are living urban but then you're going to have much more climate-impacted communities in remote areas. How are their voices heard and included into this as well?

The CHAIR: I was going to mention 8 (a), so thank you for answering that as well.

The Hon. JACQUI MUNRO: Thank you, Ms Sentance, for coming today and for providing that background and submission. One of the questions I want to ask is in relation to what you just spoke about. I also want to understand, in a really visceral way, what are the impacts of climate change that communities in remote and regional areas—particularly in New South Wales—are experiencing? What does that look like?

ALISON SENTANCE: Well, I think the impact to land is obviously one of the most critical issues. As we know, as the trees are starting to die away and the plants are dying away, connection to country, connection to animals, connection to plants are going to have a significant impact. When Aboriginal people have such an inherent connection to the environment—like, that is their connection—that is such a big impact that a lot of people will never really understand. So that is obviously the critical one. My concern, though, is more than that. It's around environmental health. I see that as a huge issue. I mean, we're not even, in Australia, tackling some of the largest environmental health issues now, and we haven't done a good job at it. So what is that going to look like moving forward? Then when you think of the cost of energy—I live and work a lot in remote areas, and even if you go to some of the communities in the Far West like Broken Hill and surrounding Aboriginal communities, most of those houses don't even have access to aircon or energy supply now.

What is going to happen when the renewable markets come in and you're going to have this inability for Aboriginal people to afford that? They can't even afford it now because they are living in conditions or controlled financial conditions that don't allow them to have that. So I do feel like still the biggest issues are going to be Aboriginal environmental health, it is going to be housing and access to renewable energy supply. They are more on the western side, but then when you look at the traditional side it is about connection to country, and that is going to have the overall impact to health and wellbeing. I think there are going to be a number of issues that we're going to be facing.

The CHAIR: Distributed power systems—so those less centralised ones like domestic solar and batteries—have shown big potential for community-scale generation and profit making for the owners. Are there any current programs that you're aware of? Do you see that having strong ambition to reduce emissions and bring

on the renewable and decarbonised economy presents opportunities for Aboriginal organisations and communities?

ALISON SENTANCE: This is what we as a foundation are constantly looking for: opportunities in this space. We do see it as a primary example—battery-based systems, having communities off grid, bringing them back to sources of renewable around solar, around wind. I think it's all there. My concern is cost. I've been providing some information around a CRC group at the moment that is looking at battery solutions in remote communities, and it's so expensive. How are we going to address that? That's the missing part in the bill. All the way through I have scribbled notes saying, "Where is the climate budget?"

Where is the budget that has been allocated so that we can ensure there is funding for start-ups and innovation in this space—separate from the actual renewable market? Because the renewable market has to play with all other markets, so you're going to have to invest in it. You guys make comments here at section 8 (4) (a) and (b). I read "promotes sustainable economic growth" and "fiscally responsible". That really concerns me because at the moment those things are basically saying that if it's not going to measure up against coal, it's going to have a back seat. So where is the actual climate budget, and where is it made available for funds and grants that are going to be coming and made available for these communities to invest in these ideas? That is something that is really missing.

The Hon. PETER PRIMROSE: In relation to that—because we're talking about a bill, not a budget—I noticed that, for example, in the guiding principles that you've outlined, after we go through subparagraphs (a) to (e) of section 8 (8), section 8 (8) (f) refers to "the impact of the action on consumer costs in New South Wales, including energy costs". What additional things do you think would need to be put in there to clarify your concerns?

ALISON SENTANCE: That's good because I highlighted (e), (f) and (g) as all ones that need a slight rewording. The impact of the action of—

The Hon. PETER PRIMROSE: Please feel free to take it on notice if you wish.

ALISON SENTANCE: I will because I was trying to think through that one. I would like to take that on notice because that is—I'm glad you raised that (f). I think that's a really important one there. It does need a little bit more rewording to include the things that I've just mentioned.

The CHAIR: Just building off that point about the budget, where the budget is—thank you for taking that on notice. Basically, infrastructure, maintenance and installation is going to have to expand, and we're going to have to do this. Should there be dedicated training programs and positions made available for communities—is that where you're heading with that?—so that communities can actually be made more self-sufficient? Is that part of that thinking about those opportunities for more remote and regional communities here, rather than just focusing on the mega-grid? Is that something that you're looking for?

ALISON SENTANCE: Yes, and more around capacity building. I think sometimes, when we just focus on training and employment, we're missing the key link, which is community-based business models. There needs to be that ability to look at regional areas as a whole ecosystem versus just ad hoc training and employment in industries to build skills, because it's the whole mechanism that requires community-based businesses to elevate themselves for this market. That's the concern I have. I worry sometimes, when we just invest in training and employment and not looking at the overall regional impacts.

The CHAIR: Thank you. Just going back to some of the earlier points we started, in terms of climate impacts, we're hearing evidence a bit later, in particular to the Murray-Darling Basin and the fact that it's suggested that we're going to be seeing, in the near term, 20 per cent less inflows into that system. I'm just recalling some evidence we heard on Friday, from Ms Dennis from the Walgett community and speaking about environmental health. One of the issues there is the decrease in rainfall water and the significant health impacts that's having on the community of Walgett, without access to fresh water. Is that a driver for your organisation in trying to work out solutions to that through this very program of reducing emissions and addressing climate?

ALISON SENTANCE: Yes. I think water's one of the biggest issues, especially in remote areas. Renewable solutions for me—I think we're going to have an issue with food, water and, obviously, energy. As a foundation we're trying to look at innovative solutions around all of those areas because water has such a significant impact not just to the environment but to overall health and food sources. How are we going to ensure that those innovative ideas are going to be supported from a community level? Again our focus is that really remote and regional communities have to be seen as their own smaller ecosystems feeding into the bigger grid, if you like. How are those communities allowed to come up with placed-based solutions that might not be a cut-and-paste model across all areas? How are they going to have that ability to design things suitable for their area, to address food, water and energy supply? These are the big questions we're all trying to work out, right?

The CHAIR: Absolutely. Thank you.

The Hon. PETER PRIMROSE: Just following on from what you said, I note that for the first time a UN-recognised right is actually incorporated in New South Wales legislation. That's under the guiding principles. Clause 8 (5) states:

> Action to address climate change should be consistent with the right to a clean, healthy and sustainable environment.

Could you comment on how you feel about that clause?

ALISON SENTANCE: I think we've got to determine what we deem a clean and healthy environment. I think the challenge we've got here, and what I see a lot, is we're separating the environment from the people. We do this naturally. I wonder what is deemed a clean, healthy environment when it is not led by people so connected to country? I'd like to see that there has to be something where we're incorporating human need from it, and how they will sustain the environment. Does that make sense? This is the challenge I'm always up against, especially with our foundation: the environment and conservation around the environment is not aligned to how people look after that environment.

The Hon. PETER PRIMROSE: If I take that and read it in accordance with paragraph 8 (a), where it states:

> Action to address climate change should take into account the following—

And then it particularly says—

> (a) the knowledge and perspectives of Aboriginal communities,

I think you probably need to read the two together, but I take your point.

ALISON SENTANCE: For me, I write, "the traditional ecological knowledge and perspective of Aboriginal communities," but then, in brackets—it's about the different type of communities, right? So you're going to have urban communities, and then you've got remote and regional communities, and all of those need to be included. You can't have just one group of Aboriginal communities representing all.

The Hon. PETER PRIMROSE: I acknowledge that.

The Hon. ANTHONY D'ADAM: Ms Sentance, earlier in your evidence you talked about the role of Aboriginal communities in carbon banking. Could you perhaps talk about what that looks like on the ground?

ALISON SENTANCE: Yes, sure. One of the things we've been looking at—and we did a fair bit of study into this a few years ago. What we want to see is both private and public land that is getting into carbon farming, whether that is environmental planting and/or other forms of carbon farming. How can we establish what we see is critical, which is called Indigenous carbon banks? How can the Government play a role that allocates revenue from either private and—ideally, first up—public land, and put money aside into carbon banks that can be both State or Federal designed, so that revenue is additional revenue that can future fund initiatives led by Aboriginal people? You know, things like ranger programs, things around Aboriginal environmental health, things around improved funding available for renewable energies, things around different biogas methods or different things that can come up with different energy supplies in communities. I think we've got the ability right now to look at carbon, and how carbon can future fund things that are becoming an economic burden already.

The Hon. ANTHONY D'ADAM: Some of the evidence that we heard on Friday casts significant doubt on using carbon offsets. But that would really close off those opportunities for Aboriginal communities, wouldn't it, if the carbon offsets weren't part of the equation in terms of the pathway to net zero in New South Wales?

ALISON SENTANCE: I agree. When I was seeing those changes, especially across Europe and the changes they are making in not supporting carbon offsetting and looking more to obviously eliminating carbon, that has even had us go back to the drawing board, going, "Well, what is that going to mean?" Because, obviously, yes, carbon offsetting is basically saying to polluters, "Here, you can keep polluting, but let's offset it." But what we were looking at was the economic opportunity of what you can do with that revenue to invest it back into areas requiring money to come up with solutions on the ground.

The CHAIR: I've got two final points. One arises from that, in terms of carbon offsetting. I think what seems clear from the science is that we're going to need more than carbon offsetting; we're going to need carbon drawdowns. There will be plenty of opportunity in terms of carbon banks, in distinction to carbon offsetting. The idea of sequestration and storage is—the drawdown is what we're ultimately going to need to be significantly investing in.

ALISON SENTANCE: Yes, 100 per cent.

The CHAIR: This is a very important consideration: What do you consider would be a model for culturally suitable or appropriate consultation for a bill like this? Or perhaps, if regulations are generated from this in terms of the implementation—I know it's a massive question—but even perhaps touching on places the Government could be looking, what is culturally appropriate consultation for something of this scale or this direction?

ALISON SENTANCE: That's really hard to answer and I feel like I probably am not the most experienced to answer it from a cultural perspective, definitely. But I think more just making sure that all groups are consulted—I think that is key. It's hard to say that, right? When you've got so many groups, even just in New South Wales, how do you get everybody's voices to the table? For me it's about just breaking it down to urban, remote and regional. Then there has to be a scale of what communities are most impacted by climate impact, because, the way I see it, remote and regional communities are going to be the ones that are most significantly impacted, just like the farmers, just like those out in remote areas. How are their voices brought to the table so we're not just clouded by voices in the city? You've got to make sure there's a way to do that—that those voices in remote areas are heard.

The CHAIR: Ms Sentance, is there anything you would like to say in conclusion?

ALISON SENTANCE: Yes, if I go to the actual commission—so the Net Zero Commission, part 3, members of the commission—if these positions are appointed by the Minister, how are we going to make sure that they are independent and they are not politically influenced or aligned? How are we going to make sure that there is a process for those that sit on this group? Especially when I see 12 (1) (c), "the Chief Scientist", how are we going to make sure that person is completely independent? That was the thing that just came to—my concern was how are we going to make sure that the climate-affected communities are well represented? For us that's remote Aboriginal communities. What process are you guys going to be putting in place to not only think of the skills and the qualifications but how independent they are?

The CHAIR: A very important point to note. One of the participants in the earlier session raised where we've seen problems, or potential and perceived conflicts, or non-independence on a similar Commonwealth body and what we could perhaps be looking at to try to increase the integrity around that. One of the participants was suggesting that you need to make sure that there's non-alignment to the fossil fuel sector if what you're trying to do is—

ALISON SENTANCE: Exactly.

The CHAIR: Yes, that's a very important point. We take that as evidence before this Committee.

ALISON SENTANCE: Fantastic. Then just on that, though, when we go to division 4 under "Other", "Advisory Committees" in clause 21, just referring back to that question you were saying—how do we make sure people are well represented?—I recognise here that the commission can establish committees to give advice but maybe that's where you can start to consider whether there's some mandated groups that you really want to be including in there so it's not just assumed that they can establish sub-committees but there's going to be some minimum expectations. Because, if you don't have Aboriginal people well represented in the commission group, you need to think about how they can have a place in subcommittee roles that can then feed up to the commission. Obviously, I would like to see that you're at least getting a representative on the commission. But, again, you're asking one person to represent lots of people. Potentially it's actually more strategic to put those subgroups in that can look after urban, regional and remote areas.

The CHAIR: Thank you so much for your engagement with this bill. Clearly, you've gone through it with a fine-tooth comb and had a good look.

ALISON SENTANCE: Not a problem.

The CHAIR: We're so grateful for that. We recognise the short period of time that participants have had. We're very grateful for your time and your evidence today. The secretariat will be in touch with you in relation to anything taken on notice.

ALISON SENTANCE: Fantastic. Thank you. I appreciate it.

(The witness withdrew.)

(Short adjournment)

Professor PENNY SACKETT, Distinguished Honorary Professor, ANU Institute for Climate, Energy, and Disaster Solutions, before the Committee via videoconference, affirmed and examined

The CHAIR: We now welcome Professor Penny Sackett to the hearing. Can you hear us, Professor?

PENNY SACKETT: Yes, I can hear you. Can you hear me?

The CHAIR: Yes, we can hear you. Would you like to start by making an opening statement?

PENNY SACKETT: Yes, I would, thank you. I'm not sure if you can see me.

The CHAIR: No, we don't have your vision there.

PENNY SACKETT: I'm not sure why that's the case, but my voice is probably the most important part of the experience. Let me give my opening remarks as follows. I first thank the Committee for this opportunity to speak to you in relation to the New South Wales climate change bill 2023. My written submission provides details about my work over the past decade on greenhouse gases, the current climate disruption and its impacts, particularly those in Australia. I applaud the enshrining of greenhouse gas emission targets into New South Wales law. Doing so enables binding climate legislation and policies to be enacted and pursued by this and subsequent governments, and sends a clear signal to industry, investment agents and the populace of New South Wales—indeed of the whole world—that New South Wales is serious about climate action.

I also commend the establishment of the independent new Net Zero Commission; the breadth of its remit, which includes the ability to provide reports, information, advice and recommendations on its own initiative; and the public nature of its reports and the response to those reports by the Government. I also note the positive indication that the commission will be able to advise on emission budgets and interim targets for New South Wales. However, the bill could be strengthened in a number of ways. I have made seven specific recommendations in my written submission, some of which relate to streamlining the guiding principles of the bill and the appointment of commissioners.

But this morning I would like to focus on recommendations that would strengthen the bill in its direct response to reducing greenhouse gas emissions caused by activities in and sanctioned by New South Wales. These emissions cause significant harm to the people and environment of New South Wales. Furthermore, they do so against the background of a climate crisis that threatens to push the Earth system beyond several essentially irreversible tipping points, potentially as soon as a decade from now, when global heating will surpass 1.5 degrees Celsius compared to pre-industrial times on our current trajectory.

The consequences of crossing such tipping points would be catastrophic and remove much of our ability to slow the acceleration of further heating. Given this, I recommend that the 2030 emissions reduction target be increased from the current 50 per cent reduction on 2005 levels; that the net zero emissions target be brought forward in time from the current 2050; that the New South Wales commitment to a 70 per cent reduction target by 2035 be enshrined in this bill; that one clause of the bill be removed—that being clause 9 (3) of the bill—which restricts regulations from setting an interim target to reduce net greenhouse gas emissions before 2050; and, finally, that the bill be amended to place a moratorium on new coalmines, coalmine extensions and the exploration or exploitation of new gas fields in New South Wales, as recommended by the International Energy Agency in *Net Zero by 2050: A Roadmap for the Global Energy Sector*. I am happy to take questions from the Committee on these points and expand upon the magnitude and urgency of the climate crisis in Australia, including in New South Wales.

The CHAIR: The Committee will have a few questions. We will start with Mr Ruddick because he has some very deep questions about the actual science.

The Hon. JOHN RUDDICK: Professor Sackett, you did just say that you think that if we don't make drastic changes in the next 10 years, the damage will be irreversible. This is an apocalyptic forecast. Do you agree it would be fabulous if you are wrong?

PENNY SACKETT: Of course it'd be fabulous if I'm wrong, but I'm not. My opinion is based on not just my own work but the work of thousands and thousands of scientists around the world. It is considered and concluded scientific opinion that climate change is on a very dangerous track. We don't know precisely where these tipping points may lie in temperature, but the best scientific evidence is that many of them lie between 1.5 and two degrees of warming. It is also considered and concluded scientific opinion that we will reach 1.5 degrees probably sooner than was thought a decade ago. It is now thought that that baseline warming temperature globally will be met by 2035 or sooner.

The Hon. JOHN RUDDICK: Other people have given these ten-year forecasts. Al Gore did it in 2007, and it didn't come true. The earth has had an atmosphere for three or four billion years. It is true that the temperature variability of the atmosphere is in constant change, and that has helped spur our evolution. Do we agree with that statement?

PENNY SACKETT: The evolution of the atmosphere has been in constant change, but nothing of this magnitude and speed in several hundreds of thousands of years. There's nothing even comparable to this rapid change that we're seeing now, which is a change that is about one-quarter of the change, but in the opposite direction, that would throw, for example, the earth into an ice age. And 1.5 degrees is not a minor change for the average temperature of the earth. It's actually a huge change.

The Hon. JOHN RUDDICK: I would think that 1.2 degrees—I think that's the upper range of the estimate, but let's say you're right—in 200 years, it's quite possible that is simply within natural variability limits. If there were no humans on this planet in the last 200 years, it's quite possible that exactly the same thing would've happened, isn't it?

PENNY SACKETT: No, it's not. We know about the natural variability going back hundreds and thousands of years. That natural variability, long before the industrial evolution, was nothing like an increase of—you're right, it's 1.2 degrees now, but rapidly approaching 1.5—1.2 degrees Celsius. Frankly, most of that has occurred in the last 100 years, but I'll give you 200. There's nothing even comparable. We know that because we have measured the variability for hundreds and thousands of years. This is completely outside the variability in terms of its speed and would not have happened if humans were not on the earth and generating greenhouse gases, placing them into the atmosphere.

The Hon. JOHN RUDDICK: You stated:

> Many coastal areas in Australia will experience what are now considered 'once-in-100-years extreme-sea-level events' *at least once a year* by 2100.

We were told 30 or 40 years ago that we would imminently face rising oceans. I don't think that's happened. Other people have appeared before the Committee and claimed that it has. I am pleased to see that you're saying that it is something that will happen, but are you in agreement that we have not yet seen oceans rising as was predicted?

PENNY SACKETT: No, I don't agree with that point. Oceans have risen; the evidence is very clear on that. It's also clear—and this is rather recent science—that that rate of increase in the ocean is now accelerating. That is, it's rising faster and faster. So the oceans have already risen, and they will definitely rise further. How much further lies currently under our control, partially, by how much we limit greenhouse gases.

The Hon. JOHN RUDDICK: How much have oceans risen in the past 100 years?

PENNY SACKETT: I'm talking now about an average, and I would like to take this on notice, if I could, so I can get you a precise answer.

The Hon. JOHN RUDDICK: Thank you.

PENNY SACKETT: If you'd allow me, I'd like to take that on notice, and I will return that answer very quickly to the Committee.

The Hon. JOHN RUDDICK: It might have gone up a centimetre or two, but it's not having any impact. Demand for real estate on coastal properties continues to soar, so I don't think it's actually having any real-world impact. I mean, a one- or two-centimetre rise will be negligible for all communities.

PENNY SACKETT: It is more than that, and I would disagree that it's not having an impact. There are many companies, for example, that are already working, quite worried about the infrastructure that they have built next to coasts. There are already airports considering how this might affect their runways and so forth, so I would not agree that it has not had any impact. I'm not a real estate specialist, I admit.

The CHAIR: We're very grateful that you would take that on notice for Mr Ruddick. Through your expert lens on agriculture, water, communities and the environment, could you please explain some of the consequences that you can foresee if our target is net zero by 2050?

PENNY SACKETT: Before I do that, I want to talk just a little bit about what net zero by 2050 means and what it doesn't mean. What's actually important for what the levelling point of global heating eventually will be is not so much when we reach net zero, although that is an important factor. But the most important factor is how much carbon we put into the air, and methane—those two particularly—into the air before we reach 2050. What I'm trying to say is that there are many different ways to get to zero by 2050. Some of them put a lot of greenhouse gases into the air, and some of them put less.

One of the reasons why it is very important to set near-term targets like 2030 and interim targets like 2035 and after is to make sure that that trajectory is a trajectory that does not place so much greenhouse gas into the atmosphere that, in fact, although we might reach net zero by 2050, we have completely blown our chances, for example, of having an earth that has warmed by less than two degrees. I want to start with that caveat that net zero by 2050 is just one piece of the puzzle and, arguably, not even the most important one. Some things that we can expect, which I've put into my report, we can expect that peak heatwaves—and, by the way, this is just at 1.5 degrees of global heating. These are things that we are highly likely to see: peak waves occurring less than every three years that used to occur every 30 years; Mr Ruddick mentioned many coastal areas in Australia will experience what are now considered extreme sea level events that only would have happened once every 100 years, now happening every year by 2100. I'm sure we can't all forget the summer of 2019-20. That won't be a hot summer; that will be an average summer. Most concerning for me is the likelihood of crossing some of Earth's tipping points.

In terms of agriculture, especially in New South Wales and the Murray-Darling Basin, real concern there about decreased levels of water for agriculture. The higher the eventual global warming, the more severe droughts will certainly be. Yes, in fact, I had a look at the IPCC report, their special report, on Australia and its region. If I could quote from that report, noting that the Murray-Darling Basin supports agriculture that's worth $24 billion a year and 2.6 million people in diverse rural communities, climate change is projected, as I said, to substantially reduce water resources in the Murray-Darling Basin, with a median projection of a 20 per cent decline—by the way, it has already declined, so this is on top of the current decline—in average run-off if we reach something like 2.2 degrees of average global warming.

Certainly, the climate risks are projected to exacerbate existing vulnerabilities and social inequalities—the inequalities that already exist between generations, between Indigenous and non-Indigenous peoples, between rural and urban areas, between those with high incomes and high health status and those without. Climate change will make all of those things even worse than they currently are. The report concluded that reducing those risks would require significant and rapid emission reductions to keep global warming in the range of 1.5 to two degrees Celsius. As a reminder, again, we will reach 1.5 by somewhere between 2030 and 2035.

The CHAIR: Just on that, Professor, some people talk about runaway climate change, and I suspect that's what you're referring to there; that we will reach 1.5. You're referring to tipping points. What are those likely tipping points that we will see or that we need to avoid? Just on that, we have heard evidence about the absolute fundamental importance of frontloading the reduction in emissions. If you could give us some advice around the effectiveness or the desirability of interim targets.

PENNY SACKETT: First, let me say I don't want to leave the impression—it would be an incorrect impression to suggest that runaway climate change will happen at 1.5 degrees of warming. That is not what the science says. What the science says is that certain tipping points will likely occur—we can't say precisely where but in the range between 1.5 and two—and then, as currently thought, there will be others that then could tip between two and four degrees and so forth. Having said that, what we are now seeing that we didn't see even just 10 years ago is that some of these tipping points are already starting to move. That is to say that Earth subsystems—and I will talk about which ones—are beginning to become altered in a direction that is leading them towards their tipping points, even ones that we thought would not actually cross tipping points until much higher temperatures.

What are some of these? I refer, in my written submission, to a summary paper by Armstrong McKay et al, and in that paper they talk about the tipping elements that are likely to tip somewhere below two degrees of warming. Those include abrupt permafrost thaw in northern forests. Now, why is that important? Because that permafrost thaw will release methane that has been sequestered for thousands and thousands of years—natural methane, for sure—into the atmosphere, and that will accelerate global warming. It is generally concluded that low-latitude coral reefs will simply be destroyed at two degrees of warming and at perhaps less than that. The Greenland ice sheet is predicted to collapse. Why is that important? Because that will irreversibly and rapidly accelerate sea level rise, and I could say the same for the west Antarctic ice sheet here in the Southern Hemisphere as well.

So those are some of the ones that we are most concerned about, urgently. That is to say that, on current knowledge, they are likely to tip somewhere between 1.5 and two degrees. And that brings me to interim targets. What we want to do is prevent all of this from happening, and that means that we want to hold global warming as close to 1.5 degrees as we can. The longer we delay strong targets, the more greenhouse gas will enter the atmosphere and therefore create a rise in global temperatures beyond 1.5 degrees, putting higher risk on the tipping elements that I've already described as well as increasing the risk for things that I haven't mentioned, like complete dieback of the Amazon rainforest, for example. I guess some people would say, "Go fast. Go hard. Make all the

reduction that you can as soon as possible," because that's what gives humans and all the life on earth the best chance to avoid these irreversible tipping points.

The Hon. PETER PRIMROSE: Clause 14 (2) (e) of the bill talks about the fact that the commission may provide advice and make recommendations to the Minister about emissions budgets for New South Wales. Can you tell us what emissions budgets are and how important they are?

PENNY SACKETT: Yes. So my interpretation of that would be to say that it means greenhouse gas emissions, and the word "budget" is used scientifically here. So it's not a dollar amount. It's called a budget because, if we think of emitting greenhouse gases into the air as sort of "spending" those gases, then there's a certain amount of greenhouse gas that we can spend before we reach a certain level of global warming. So the more you spend, the higher the warming. You might have heard the word "carbon budget". This is basically the same concept as carbon budget, although the word "emissions budget" then also allows for budgets to be placed on other greenhouse gases, of which methane is, very definitely, an important one. On 20-year timescales, it has more than 80 times the effect tonne for tonne that CO2 does. Given that we're talking about the possibility of crossing some of these tipping points in the next 10 to 15 years, what methane does on a 20-year timescale is very, very important.

The Hon. JACQUI MUNRO: Professor, thank you so much for your submission. I found it very helpful, particularly that your recommendations were so clear and so clearly linked to the bill. On that methane question, are there countries around the world or other jurisdictions that are putting limits on methane emissions?

PENNY SACKETT: Yes. Again, for a more fulsome answer, I would like to take that on notice. But I can tell you here today that it's actually been several years ago, for example, when the state of California put limits on its methane emissions, recognising that the state of California has a much larger economy and a much larger population. I recognise it's not a nation, but in terms of the number of people and the industries and so forth that it had to consider, it's every bit as complex as Australia. Many other countries are taking a variety of actions on methane. I would have to take on notice how many of those actions include targets or targets in law. Australia has signed up to the Global Methane Pledge, but that pledge doesn't actually require any of the many countries that have signed it, quite frankly, to individually do anything. It is simply a commitment to try and lower methane emissions, but there is no commitment that's required of any given nation. I think that New South Wales would be a leader, definitely, if it made specific methane targets as well. I'm happy to take that on notice to give you a more fulsome answer to that question.

The Hon. JACQUI MUNRO: The second question I want to ask is around the reality that we're facing. Your submission states that the targets that are currently suggested to be enshrined in law—the 50 per cent by 2030 and zero by 2050—are insufficient for consistency with holding heating as close to 1.5 degrees Celsius as possible, or with holding it to well below 2.0 degrees. Essentially, you're saying we are writing cheques that we can't cash. Either we have to increase the targets and take action to those targets or we have to change the language around what this bill is likely to help achieve in terms of a heating target.

PENNY SACKETT: That's an interesting way to put it. Yes, it is true that, as written, the targets in this bill are not strong enough to ensure the outcome that I mentioned. I recognise that these targets are said to be floors, not ceilings. I recognise that. Nevertheless, if these targets were just met—even if they were met but just barely—and we just got to zero emissions by 2050, only reduced greenhouse gases by 50 per cent and then continued on a trajectory of emitting at that level for quite some time before eventually dropping to zero, then, yes, this bill would not have achieved protecting the environment and peoples of New South Wales as I feel its writers intended, by reading the language.

The Hon. JACQUI MUNRO: That links to one of the next things that you've pointed out, which a number of witnesses to the Committee have mentioned. We essentially do need interim targets like the existing target that we have of 70 per cent reduction by 2035 to be enshrined in this bill.

PENNY SACKETT: Yes, I think that's a very important point. I would like to see it enshrined in this bill. I know that New South Wales has stated that it does have that ambition. It appears in many Government documents, so I have no reason to doubt that that is a real ambition or commitment.

The Hon. JACQUI MUNRO: Although I will say we have heard from some legal experts that the introduction of this bill into legislation would actually supersede the existing regulation due to that clause that you also pointed out, which restricts regulation from setting essentially interim targets or anything below zero by 2050.

PENNY SACKETT: I see. Well that would be a pity. I would say that one of my recommendations that stands alone from all the others, irrespective of whether any of the other recommendations are taken on board, is to remove that clause. I don't see a positive reason for that clause. Now, the bill does say that the commission

could advise on interim targets, and so it may be that one path forward would be for the commission to do so and for the Government to take that onboard and then at that point enshrine it in law or amend this bill, should it pass. But of course that level of certainty that that approach might be taken is not spelled out in the bill as written.

The Hon. JACQUI MUNRO: Thank you so much, and thanks again for your submission. It's very, very helpful.

PENNY SACKETT: Thank you.

The CHAIR: Thank you, Professor. Based on your work and particularly with governments around this work, is it reasonable to expect that the guiding principles would actually have a paramount principle to reach the targets that are set? Is that something that you would have considered appropriate in this sort of legislation?

PENNY SACKETT: I'm not sure I'm well placed to answer that because there may be some legal points around that that I wouldn't be necessarily across. It certainly makes abundant sense that a guiding principle would be to make sure that the targets that are set are at least met, if not better. In reading the guiding principles as well, and you can see this in my submission, I think that they could be stronger in stating the principles that tie back to the reason for the bill itself. One of the reasons for the bill is the target; the other is to set up the commission. But the overall goal, as I would read it, is to safeguard the health and wellbeing of both the peoples and the environment of New South Wales. That was one thing that I sought to see highlighted more clearly and more in the forefront of the guiding principles.

The CHAIR: Thank you, Professor. We have run out of time. As Ms Munro said, your submission is extremely helpful and is clearly something now in the evidence. The secretariat will be in touch with you about the matters you've taken on notice. We're very grateful because we know the short turnaround time that participants have had to comment on this very important bill. Thank you very much, Professor.

PENNY SACKETT: Thank you.

(The witness withdrew.)

Mr IAN DUNLOP, Chair, Australian Security Leaders Climate Group, affirmed and examined

The CHAIR: Mr Dunlop, would you like to make an opening statement?

IAN DUNLOP: Yes. I chair a small group called the Australian Security Leaders Climate Group. The group is comprised of former senior military, intelligence and risk management specialists who have been concerned that the security implications of climate change are not understood properly by Australia's leaders and institutions. Here we're talking about not national security in the narrow militaristic sense, but human security in the broader sense. My own background is in the management of high-risk ventures, initially in the international oil and gas industry and then the coal industry. I left that industry in the early 1990s, since when I've been concentrated on climate issues, particularly on climate risk. Our group is particularly focused on risk and the understanding of the difference between risk and uncertainty where climate is concerned. Risk is something that you can generally quantify; uncertainty is something that you know is there but you can't really quantify. The importance of that in the context of climate is extremely high.

Our concerns are that climate change impact has been continually escalating for the past 40 years. All of a sudden we are starting to see a quite astonishing acceleration in the rate of change, which is not unexpected but it's occurring rather faster than people thought. The problem, quite simply, is that we have spent 40 years trying to address the question of climate change and reducing emissions and, unfortunately, we've achieved precisely nothing. Emissions continue globally to go up at worst-case rates, and there is no sign at the present of that changing in any short-term context. The result is that what we're faced with now, in our view, is an existential threat to the future of human civilisation. I don't say that lightly. That is the considered opinion of many people around the world who are in a position to know. The problem is that the threat is immediate in the sense that our actions today are locking in events that will become irreversible, and we won't necessarily see the full effect of that for some years to come. What we're seeing today already is the result of emissions we put into the atmosphere 10, 20 or 30 years ago.

Specifically in relation to the bill, and in the context of the targets that have been put up, our view is that the bill has to be looked at in the context that I've just talked about. If you're doing that, then 50 per cent emission reduction by 2030 and net zero by 2050 are totally inadequate to address the challenge that we now face. This is not just a problem for New South Wales; it's a problem globally. The target, as we read the science, based on our interpretation of the risk and using peer-reviewed scientific knowledge around the world, is that we have to strive to get to zero emissions—not net zero, but zero—as close as we can to 2030. That is a massive task, which is far greater than anything that has been accepted officially—certainly in this country and globally. To understand that, you really have to assess the full risks of climate change, and that assessment has never been done in this country. We have spent 30 or 40 years developing policies without any understanding of what it is we were trying to achieve.

Now, you cannot normally put any sensible policy together without understanding what is the objective. We have not done that; we have to do it. So we believe there needs to be a proper assessment of those risks as a matter of great urgency, not just in New South Wales but right around the country. We are a country that has obviously benefited greatly from our endowment of fossil fuels. Our wealth has basically been created on the back of that, and nobody is seeking to deny the fact of the importance of that. But the fact is that you can have too much of a good thing, and the downside is that we are now facing the climate risks that I've outlined. On the other hand, we have some of the best renewable capacities in the world, and we have not been using them because of, essentially, inadequate and incoherent policies over that 30-year period. Our view is that, quite simply, we cannot afford to develop any new fossil fuel projects. That has been clearly outlined internationally for good reasons. I can talk further about that. We will have to continue with existing fossil fuel use for some time to come to build the zero carbon economy.

We believe the idea of net zero emissions, as included in the bill, is not defined. It should be because we cannot afford to use offsets as an excuse to continue the expansion of the fossil fuel industry, which is actually what's happening. A lot of those offsets, in fact, are not valid; they don't work. The evidence is becoming clearer and clearer, month by month. Finally, I think there needs to be a much better understanding amongst our leaders, whether political, business or institutional, on what these risks and uncertainties really mean, because that doesn't exist at the present time, in our view. That is a major impediment to the future security and prosperity of the Australian community, which, in our view, is the primary responsibility of the political and corporate system. I think I might leave it there, Chair. I'd be very pleased to answer questions.

The CHAIR: Thank you very much for the very detailed submission. It's incredibly helpful. Again, I acknowledge—as I have throughout this inquiry—the short time frame people have had to participate, so thank you. I'm sure you're aware, but the Office of National Intelligence has actually produced a confidential report

about the security risks of climate change. I know we haven't seen it; we've been pressing to see whether there are parts of it that are capable of transparency, to assist us at all levels of government and policy. What do we expect might be some of the things in that report? Do you think they are parallel to some of the things that you've been giving evidence about?

IAN DUNLOP: Well, we have not seen that report. We would certainly hope that what I've just been outlining is very clearly stated in it. The reason we have been heavily involved in trying to initiate this sort of risk assessment originally is that if you are trying to define the policies, the real policy we need to take, then you have to understand those risks. Climate risk is not something you can look at, firstly, on the basis of historic evidence or historic experience when you're talking about climate change because we have never seen this before. Secondly, you cannot do it based purely on Australian experience. You have to look at the global perspective and take the best global view on the risks that are involved, as Professor Sackett has been indicating, and then you have to assess the risk of that against that global perspective, because that's what's going to hit us. It's not going to be anything to do with historic experience in Australia. It's going to be far worse than that. We have just been sweeping that aspect of it under the table.

Coming back to the question of the ONI report, we would hope that has been properly assessed in starting that report because any sensible risk assessment must do that. It must define the strategic framework within which those risks are developing—in other words, what are the big drivers of those risks—which comes back to the climate science. The report should contain that if it's been done properly. I would hope it has been. The Federal Government has chosen not to disclose that report, even in a redacted form. In our view, that is extremely dangerous because, all around this country, we have people who are striving to address the challenge of climate change.

If you look in a New South Wales context, people in the Lismore region and the South Coast are still traumatised from what happened to them two or three years ago. We still have not solved the problems that they're faced with. Community organisations, from my own experience, are taking up that task themselves and trying to fill the gap where governments have not provided the services that were required. They cannot do that work sensibly unless they know what is coming down the track. They must know what the risks are going to be and the potential size of the threat, to structure their activities sensibly. So must, I would suggest, politicians if you are sensibly debating things like climate bills. So must the business community and so on.

So that sort of analysis needs to be public. It is absolutely critical that it's made publicly available. We, frankly, don't understand why that is not the case. There may be components of that report which are sensitive, which may have just reasons that they're kept secret, but the basic, fundamental framing should not be, because the major problem this country has experienced for the last 30 years is that nobody officially has been prepared to assess the risks and make it public. The net result is we are in the mess we're in today, which is extremely serious, because we've never been able to structure policy against that proper risk framework.

The CHAIR: Just on that point, then, this leads me to asking whether you think getting this legislation here and now, getting it wrong or too weak, i.e., legislating a target of 50 per cent reduction by 2030 and net zero—I really accept and hear that the definition of "net zero" could be problematic, but net zero by 2050—is there a risk, therefore, of enacting that and it being too weak? Is there a risk to doing that at this point in time, as opposed to, say, delaying this legislation and getting it stronger and better and clearer and more understood in terms of what the ambition according to the risks would be?

IAN DUNLOP: Yes, absolutely. Net zero by 2050 is, essentially, kicking the can down the road. We know that. It was a political subterfuge to push off the challenge to the future and let future generations deal with it. We've done it time and time again over my experience, over the last 50 years in trying to address climate change. The problem is that what it does is institutionalise failure. The Minister, in her second reading speech, I noticed, referred to the Taskforce for Climate Risk Disclosure and was, I think, complimenting companies that were picking up on the recommendations of that, which is also built around net zero by 2050. What this means is that, all around the world, you've got organisations that are now saying that is an acceptable target because the directors of those companies are saying, "That's what the TCFD says. If we do that, that's fine." My view, personally, is that that is a complete abrogation of a director's corporate governance responsibilities, because their real responsibility is to honestly look at risk and to structure their organisation to manage that risk. If you are just picking up on a number that is plucked out of the ether because a major institution says it, that is not acceptable conduct.

The same thing is happening with the central banks. There is a thing called the Network for Greening the Financial System where the banks have locked in to the same idea, but it means that everybody—like lemmings, they're all following the same path, because we're more comfortable in packs than we are standing out individually and taking action. That's been a problem for the climate change debate all the way through, and we can't afford to

do it again. We are now at the point where the situation is so serious—and I would argue it is much more serious than Professor Sackett is actually saying, because a lot of the risks and uncertainties inherent in climate are not included in the formal analysis of organisations like the Intergovernmental Panel on Climate Change. We now have to take precautionary action rapidly to get emissions down as fast as we can, which is why we have the view that we have to get to zero emissions—not net zero, but zero—as close as we can to 2030.

The CHAIR: They are strong words, this idea of institutionalising failure. If we have, which we do in New South Wales, a target in regulation that is based apparently on programs that we have within the New South Wales regulatory system to reduce emissions by 70 per cent by 2035—if this legislation was to miss that, do you think that would be entrenching less ambition as well, if we were to miss that and only go with a target for 2030 and 2050?

IAN DUNLOP: I think the point is that we are now in a genuine emergency where the focus has to be to get emissions down as fast as we possibly can, wherever we can do it. Now, different States may have different ways of doing that. Anything that I think weakens the idea of getting to zero by 2030 is a weakening of the ability. We can play games with the numbers, but what people have to understand is that everybody now has to get behind a process of working together, cooperating to find every possible way of making that change. I mean, I do get concerned with numbers being locked in to legislation, because you've seen it year after year after year in this exercise—that people end up focusing purely on the numbers and the arguments about whether we are or we aren't close to it, missing completely the big picture.

The CHAIR: With those numbers in legislation—if they are going to be there and they are going to play a role, do you think a net zero by 2030 could actually stimulate investment, as well, into the decarbonization of the entire system?

IAN DUNLOP: Yes, there is absolutely no question. You've only got to look around the world at what's happened with solar panels and so on. The moment you lock in a clear, strong commitment, essentially, to do something really serious, then you find the money comes in behind it. It's this fluffing around, where people are not convinced you are actually going to do anything, where the money just floats around and doesn't come. We've got to get the investment moving. In countries where it's been done, it's moved extremely quickly. You can see it here, even, in solar panels on roofs in Australia. The fact is the impact of that is now providing a far greater proportion of electricity than we had expected. There is probably a lot more potential there that is not actually being used, where people have actually done this and suddenly discovered it reduces their bills, because renewables are by far the cheapest energy source.

People talk about the fact that you have to firm up renewables and it's a far greater cost and so on. You just have to go back and remember history. You had to firm up fossil fuels at one point and build all this infrastructure. It took years and years to do that. All you're doing with renewables is the same sort of thing. You're putting the infrastructure in place for the eons to come in the way that you used to do it with fossil fuels, but the cost of that is actually going to turn out cheaper. That's what's happening in many parts of the world. The problem we have about increasing prices is because there's not been the political commitment to actually do it. It's enabled the fossil fuel industry—and I came out of the fossil fuel industry, which is frankly still the biggest barrier to sensible climate action—to play all sorts of games to stop things happening. Now it's costing us an absolute fortune.

You only have to look around the world at what's been happening in the last few weeks. Anybody look at what happened to Acapulco? That might actually occur in the Gold Coast in the not-too-distant future. You talk about sea level rise. If you go to south-east Asia, 30, 40, 50 per cent of Vietnamese rice crops are within half a metre of sea level rise. Thirty or 40 per cent of China's economic export income is within half a metre of sea level rise in the Pearl River Delta. These things are now happening, but we sit here pretending they're not and fussing around the questions of "Well, is this or is this not a problem?" It's an absolutely major problem. It's the biggest challenge we face. It is far greater than any threat from China. We really have to get our act together and start to focus on it in that way.

The CHAIR: Drawing on your expertise, having come from the fossil fuel industry, do you think that there is a risk to the Net Zero Commission in giving frank, fearless and appropriate advice to the Government if there are people with fossil fuel industry interests on that commission?

IAN DUNLOP: Yes, absolutely, because it's happened time and time again. If you look at the COP meeting coming up in Doha in November, it's been hijacked by the fossil fuel industry. Very little good will probably come out of that, unfortunately. It's going to cost everybody an awful lot of money because of that. Because this is ingrained in the system. We have an economic system that is dominated by vested interests, particularly of fossil fuel industry, which has stopped things happening. They do not carry the full cost of their operations; they never have. We're still subsidising those industries to a vast amount of money because of a lack

of carbon pricing and you still come back to these arguments where people are saying, "This is just not happening." This is the worst thing we're facing—the mass delusion that these issues are not real. They are real. They're in our face right now. Hundreds of thousands of people are dying because of climate change every year.

The Hon. JOHN RUDDICK: More people die of cold than hot. Everybody knows that.

IAN DUNLOP: Sorry sir?

The Hon. JOHN RUDDICK: More people die every year from the cold, not the hot. It's unequivocal.

IAN DUNLOP: You get cold in both directions. Have you looked at North America recently? Because of climate change, it gets very cold in places that people never expected.

The Hon. JOHN RUDDICK: Because of global warming?

IAN DUNLOP: I'm sorry, but I've heard all this for 50 years. And I'm, frankly, a bit sick of it. It's clear that these things are happening. You can't deny it any longer.

The Hon. JOHN RUDDICK: Well, I'm sorry, Mr Dunlop. You are here to answer questions and I'd like to ask you a few.

IAN DUNLOP: Certainly.

The Hon. JOHN RUDDICK: I do give you the award for giving us the most strident submission that we've received so far, and that was quite a competitive field. On this page alone you've referred to the "death spiral towards societal collapse", you've referred to the "existential threat to civilization as we know it". On the next page you talk about the annihilation of intelligent life. For 5,000 years we've had history documented. In every generation there have been prophets of doom, whether the witchdoctors, political leaders, religious leaders, who are absolutely convinced—I'm sure you're convinced. I'm not saying you're not being sincere. You do believe it. But what you're saying is that every other prophet of doom was wrong, because the world is still here, but this generation's prophets of doom—and that's what you are. You are predicting doom. You're saying they were all wrong but we're right?

IAN DUNLOP: No, I'm not saying that at all. I'm not a prophet of doom. What I'm saying—

The Hon. JOHN RUDDICK: Well, you are. You're talking about the annihilation of intelligent life. You are a prophet of doom. There have been many, many figures—

IAN DUNLOP: If I could answer the question—

The Hon. JOHN RUDDICK: —saying the same thing that you're saying.

IAN DUNLOP: I learnt very early in my career that if you're operating high-risk ventures, the first thing you have to do is to be brutally frank about the facts you're faced with. Otherwise, you never come up with the right solution.

The Hon. JOHN RUDDICK: Okay.

IAN DUNLOP: If you look at something like climate change, it is the most scientifically studied issue probably in world history. The evidence of this goes back to the 1800s. Even if you take the last 50 years that I've been involved with it, every year—year after year, monotonously—the predictions that have been made have turned out to be underestimated.

The Hon. JOHN RUDDICK: Like what?

IAN DUNLOP: And things have got worse.

The Hon. JOHN RUDDICK: So every prediction has been materialised? We were told oceans were going to rise. We were told cyclones were going to increase—

IAN DUNLOP: If you at look at the general trend—

The Hon. JOHN RUDDICK: Nothing's happened.

IAN DUNLOP: If you look at the general trends—

The Hon. JOHN RUDDICK: In what field?

IAN DUNLOP: Pretty much anywhere you look, in terms of both temperature and sea level increase, and what have you.

The Hon. JOHN RUDDICK: Okay.

IAN DUNLOP: You will find that if you're taking the real scientific estimations, not the media commentary, those things have been underestimated, and so it goes on, year after year.

The Hon. JOHN RUDDICK: Okay. Well I have a more specific question.

IAN DUNLOP: Professor Sackett mentioned the 1.5 degrees. Professor Jim Hansen came out with a paper two days ago that says, for all intents and purposes, 1½ degrees Celsius is here now, and next year and the year after will be worse.

The Hon. JOHN RUDDICK: Okay. On page 6—

IAN DUNLOP: This is not a question of doom, to come back to your issue.

The Hon. JOHN RUDDICK: Well, it is.

IAN DUNLOP: It's a question of properly assessing the risk and taking steps to ensure we avoid it to the best extent we can. It's proper risk management—nothing to do with doom.

The Hon. JOHN RUDDICK: Well, it is all about doom. On page 6 of your submission you state:

- Geoengineering may be essential to buy time, by cooling areas of the planet, before other initiatives take effect. This is a last resort, but now has to be seriously considered because of political inaction and the continued expansion of fossil fuels.

As I understand it—I'm hoping you can educate us—you're proposing to cool the planet. We've had life evolving here for four billion years. The human species, who is now the dominant species, is going to put planes up into the atmosphere and we're going to coat the atmosphere with some chemical compound to reduce temperature. Is what you're proposing?

IAN DUNLOP: No, it's not.

The Hon. JOHN RUDDICK: You're saying we should seriously consider it.

IAN DUNLOP: Parts of the planet.

The Hon. JOHN RUDDICK: How are we going to do it with parts of the planet?

IAN DUNLOP: If you go and listen—

The Hon. JOHN RUDDICK: It's a global atmosphere.

IAN DUNLOP: I can send you a podcast. You can listen to Sir David King, who was the chief scientist in the UK for many years and the special envoy on climate change. He is now head of the Centre for Climate Repair at Cambridge University. He and colleagues around the world are working on a range of areas to try and reduce the rate of temperature increase because we have run out of time to do it.

The Hon. JOHN RUDDICK: By spraying chemicals into the atmosphere. Is that what we're doing?

IAN DUNLOP: If I can finish, by using geoengineering measures but recognising that this is an extremely dangerous area because of the sort of things you said. If you put sulphates into the atmosphere, you don't know what the full effect is going to be.

The Hon. JOHN RUDDICK: That's right.

IAN DUNLOP: There are, however, measures that may be possible. For example, brightening clouds over the Arctic for periods of the summer in very a selective sense, where you can actually slow the rate of temperature increase over the key areas of the Arctic to stop it melting. We don't know whether you can or can't do it. But the problem, quite simply, is political inaction has brought us to the point where we now have no choice but to start thinking of those things. They may not work, in which case our problem is going to be—

The Hon. JOHN RUDDICK: We'd hate to give it a go and really stunt life in total. But my last question is—

IAN DUNLOP: We're not talking about stunting life. We're talking about trying to do things which we have some feel for whether we can understand the full effects—

The Hon. JOHN RUDDICK: I think the proposal—

IAN DUNLOP: —to offset a much bigger problem.

The Hon. JOHN RUDDICK: The proposal to pump chemicals up into the atmosphere to change the temperature—

IAN DUNLOP: I didn't say chemicals.

The CHAIR: That's not—yes.

IAN DUNLOP: I didn't say chemicals.

The Hon. JOHN RUDDICK: Well, whatever—compounds.

IAN DUNLOP: No, water.

The CHAIR: That wasn't the evidence, Mr Ruddick.

The Hon. JOHN RUDDICK: Meddling, playing God with this sacred planet is, I think, the most dangerous suggestion that has ever been made. But my final—

IAN DUNLOP: Yes, sir. Well what do you think we've been doing for the last 50 years by putting carbon emissions into the atmosphere?

The Hon. JOHN RUDDICK: I think that you've been misled. You think that there's one temperature control switch to this planet.

The CHAIR: I think Ms Munro has—

The Hon. JOHN RUDDICK: I think there's about 200 factors which influence the temperature. We don't understand half of them. You're saying there's one temperature control switch—carbon dioxide—and I think you're deeply misled. But I do have one more question, Chair. You had twice as long as I did. The group you're involved with has people with a military background et cetera. You're putting on the table and saying we should seriously consider the geoengineering. You said that carbon emissions are going up in New South Wales. They're going down. All across the western world, they've been going down for 20 years. That's not in dispute. What is also not in dispute is that today China releases 32 per cent of all of our carbon dioxide emissions, and it's going up 10 per cent a year. Why the fixation with Australia and the western world? Why don't your military planners—there is obviously one great threat here if you're right. If there is one temperature control switch and it's all about carbon dioxide, why care about what New South Wales does? Why don't you focus your efforts on trying to get the Chinese to reduce their carbon dioxide emissions? I feel like no-one cares about it because it's all about domestic politics.

IAN DUNLOP: We are involved in discussions which are trying to achieve precisely that and getting better initiatives between the US and China because, you're quite right, those are the two big emitters.

The Hon. JOHN RUDDICK: The US is going down.

IAN DUNLOP: If they can get together to take action, fine. China is actually doing far more than anyone else around the world. It has particular issues with its population growth and particular issues as to why it has been adding some coal-fired power stations. They have, by far, the biggest renewable industry in the world, and they are the ones who actually led in reducing the cost of those solar operations and so on. Coming back to your point about "why New South Wales", quite simply, everybody is faced with the same problem globally. If we are not prepared to take our fair share of action, how can we expect anybody else to do it, whatever size we are? The fact remains that we are amongst the highest carbon-per-capita emitters in the world. We are the fifth largest carbon polluter if you add our exports—which you should do, because it's a global problem—and the third largest fossil fuel exporter. You cannot say that what we do doesn't matter in the way that many politicians have done over the years. The fact is we're absolutely critical to what the world does. If Australia takes strong action, the rest of the world stands up and pays attention. We haven't been doing it.

The CHAIR: I note the evidence was that China has brought on 179 gigawatts of renewable energy compared to the 36 gigawatts it has made in coal. I know we're over time, but Ms Munro has one question and then I've got a final one.

The Hon. JACQUI MUNRO: Thank you so much for your generosity in being here and for your submission. I wanted to ask about your career and how you made the switch from working with fossil fuel companies to the work that you do today.

IAN DUNLOP: Very briefly, I was with an oil major after I left university in Britain. Early in my career, I got involved in long-term scenario planning work on the future of energy and so on. Climate change was on the agenda way back in the sixties, not in the sense of being an immediate issue but in the sense that, sooner or later, this was going to become a problem, if you believed the science which goes back to the 1800s. As time has gone by, the evidence has got clearer and clearer that things were happening. The science has got better and better. I have always had an interest in this stuff. I chaired the Australian Coal Association in the late eighties. We did a lot of work on the possibilities of changes to ensure the coal industry could continue—how do you reduce emissions from coal? I think it's fair to say that the industry was much more progressive in those days than it is

today, unfortunately. I decided in the early nineties that I would get out of fossil fuels and would refocus on going in the opposite direction and trying to address climate change.

The Hon. JACQUI MUNRO: Why was it that you decided to get out?

IAN DUNLOP: Because I believe personally that it is a very big issue and that it was going to become probably the greatest issue we've faced—which is, indeed, what has turned out to be the case. So I have been particularly focused on being involved in activities that endeavour to address it, ever since.

The CHAIR: When you talk about geoengineering, are you also looking at things like regenerating native forests in terms of bringing on carbon drawdown, sequestration and that kind of thing? Is that the full suite of options?

IAN DUNLOP: Yes, it's the full suite, but the issue you have is the timing. We have a very short time in which to get emissions down. It's not just getting emissions down, by the way; it's also withdrawing carbon down from the atmosphere from the current 420 parts per million or so back to around 350, which is not even on the agenda in this country. We don't talk about it. But those sorts of things—regenerative agriculture and so on—are all part of it. David King in Cambridge, for example, is working on a lot of very interesting stuff on whales and the sea, and their defecatory activities and what have you, about how you actually use that to generate fish stocks, which in turn absorb carbon and so on. There's a lot of very interesting work going on, but the challenge we have is the timing one of how fast can you actually make this happen, which is why the geoengineering question of slowing down the warming in the Arctic becomes absolutely critical. If it's of interest, there is a very interesting podcast I listened to yesterday, actually, which talks through some of this stuff.

The CHAIR: We're over time. Suffice to say, however, your evidence is very clear that you think ambition is very important for all participants, including government. Thank you very much, Mr Dunlop, for your evidence, and thank you to your organisation for your excellent, informative submission and your generosity of time in coming here today.

IAN DUNLOP: Thank you very much indeed. Thanks for the opportunity to talk to you.

The Hon. JOHN RUDDICK: The world will still be around in 200 years—you watch.

The CHAIR: I don't think that's contested.

(The witness withdrew.)

(Luncheon adjournment)

Mr TENNANT REED, Director Climate Change and Energy, Australian Industry Group, before the Committee via videoconference, affirmed and examined

Ms KYLIE MACFARLANE, Chief Operating Officer, Insurance Council of Australia, before the Committee via videoconference, sworn and examined

The CHAIR: Welcome back. Our next participants are joining us by videoconference. Would you like to start by making a short opening statement?

TENNANT REED: AI Group is a national employer association, representing thousands of businesses of all sizes in many sectors across Australia. Our members have a common interest in a successful, efficient and coherent policy response that helps hold temperature increases to the Paris goals and maximises opportunities for Australia and New South Wales. An effective framework for setting clear policy targets, reporting on progress and gathering expert advice and stakeholder feedback on further targets and actions is a very helpful element of that response. AI Group supported legislation in Victoria and at the national level that is broadly comparable to the Climate Change (Net Zero Future) Bill 2023. Overall, we consider the bill to be sensible and we think that it will be helpful. It provides a clear, enduring basis for broadly supported emissions reduction targets so far put forth, establishes appropriate principles to guide a response and provides for a Net Zero Commission with appropriate expertise and the capacity for independent advice informed by public consultation.

There are two respects in which we think the bill might be further refined. First, the bill provides less guidance than its counterparts on the tempo of advice and decision-making on future interim targets. Victoria adopted a 2035 target earlier this year and the Commonwealth is expected to do so some time in 2025. While there is certainly room for arrangements that are more fluid than the tightly specified advice cycle in Victoria, it would be helpful to reflect the expectation, rather than just the possibility, that the commission will provide input on interim targets and to assist industry and others in their planning—the intention to ensure that there is always at least five years' worth of clear forward guidance on interim targets. Secondly, the bill requires the commission to have regard to international climate action in framing its advice. It would be helpful to also specify that it must consider action in other Australian jurisdictions. Finally, in my personal capacity I served on the independent expert panel that advised the State of Victoria on its 2035 emissions targets and would be happy to offer perspectives on the workings of similar processes. Thank you.

KYLIE MACFARLANE: I'm here today representing the Insurance Council, which is the national body of the general insurance industry in Australia. We represent around 89 per cent of private sector general insurers. Australia's general insurance sector provides protection for 41 million homes, buildings and vehicles against the physical and financial impacts of extreme weather. I'm pleased to say at the outset that the Insurance Council supports this bill. We welcome the New South Wales Government's proposal to legislate emissions targets and the establishment of a Net Zero Commission, and we strongly support the objective to enhance New South Wales' resilience to climate change. Our support for this legislation reflects the insurance industry's strong commitment to creating a more resilient Australia.

As an industry we are focused on advocating for action to strengthen the resilience of homes, businesses and communities and shift our approach to what we build and where we build it. We know climate change is driving an increase in the frequency and intensity of extreme weather events around the world, and we're feeling these impacts here in New South Wales with lengthening bushfire seasons, worsening flooding and coastal erosion. If we don't act, we can expect to see growing challenges for home owners living in high-risk areas to obtain adequate insurance cover. These realities underpin the Insurance Council's support for these legislative measures. I would like to take a few moments to address each of these.

Firstly, we welcome the legislation of emissions reductions targets. Setting clear targets will give New South Wales businesses the confidence they need to make long-term investments. Secondly, the establishment of the Net Zero Commission will provide an important oversight mechanism and we look forward to the commission shining a strong light on what progress is being made to meet the State's emissions targets and where improvements are needed. And, thirdly, we support the inclusion of the adaptation objective in the bill to make New South Wales more resilient to climate change. On this last point, insurers are at the front line when it comes to climate change and extreme weather events, which is why we support this measure to improve community resilience.

As an example, since the 2019-2020 Black Summer bushfires, insurers have paid out an unprecedented $16.8 billion in extreme weather claims. In New South Wales there have been nine events declared by the Insurance Council since and including the Black Summer bushfires. The total value in New South Wales of these events is an estimated $7.1 billion. And the estimated value of just the one event last year—being what we call cat 221, but what many would think of as the south-east Queensland and northern New South Wales flooding—

accumulated $3 billion of insured losses. These losses will continue to climb if we don't immediately address what we build and where we build it. We simply cannot afford to keep building homes in high-risk areas, such as highly vulnerable portions of the flood plain.

We welcomed the announcement over the weekend from the Minns Government that they will not allow proposed residential developments to proceed in areas of Western Sydney where communities would have been in direct line of high flood risk due to the topography of the Hawkesbury-Nepean basin. Measures like this will improve the risk profile of Western Sydney. We also need to ensure our future housing stock is built to be more resilient and durable when disaster strikes, and we acknowledge the important measures in New South Wales, such as the Resilient Homes Program. The responsibility that undertake these actions falls to all levels of government but we welcome the New South Wales Government taking a leading role in these initiatives. There's now an opportunity to build on these initiatives and the bill we're discussing today will play a role in scaling up the State's responses to growing climate risk. Thank you. I look forward to your questions.

The CHAIR: Thank you both. The Committee will ask some questions now. I might just start with you, Mr Reed. The five-year accumulation of data from action that you referenced indicates that there should be a target earlier than 2030. Can you provide any insights as to why 2030 is this common 50 per cent reduction target, when a five-year review would actually see this bill aim for a 2028 or 2029 target?

TENNANT REED: Five years is frequently referenced for many reasons. One of them is the nature of the Paris Agreement, which establishes—well, there has actually been some continuing debate and refinement in the international arena about exactly how that tempo will work—an expectation of five-year windows, at least, where major updates to and extensions of nationally determined contributions will be made. Now, New South Wales is not directly a party to the Paris Agreement; it is doing its own thing, and it has got reasons for that, but there will be, nationally and internationally, a series of conversations that are very much about those five-year windows. That will have both some direct implications—because what New South Wales can achieve will be influenced by what is being pursued at the national level in relation to the next set of nationally determined contributions—and other States will be also going through a version of that tempo.

Now, should New South Wales adopt pre-2030 interim targets—if I'm not mistaken, the legislation is broad enough to allow for that, I think, although any interim targets beyond those specified, if they were to be anything other than a matter of policy, would, I think, need to be the subject of further legislation; the only targets to be firmly legislated here are 2030 and 2050. A further interim target between now and 2030 would have the challenge of the lead times involved in policies adopted or considered at this point making a difference. We are almost at the end of the period where variations to the 2030 ambition are likely to be able to be achieved by policy changes, and discussions about what we should be planning for for 2035 and beyond are becoming much more timely, particularly when we consider the lead times involved in transmission infrastructure planning and many other long-lived, often controversial, pieces of infrastructure that will be needed to make the industrial and energy system and agricultural transformations we hope for over the next few decades to be practically implemented.

The CHAIR: Where you started with the need to be implementing the Paris Agreement, do you consider this bill is consistent with the Paris Agreement if the bill maintains the power that the Minister is expressly forbidden from increasing targets through regulation?

TENNANT REED: In a very minimalist sense, it is not inconsistent with the Paris Agreement. Because New South Wales is not a party to the Paris Agreement, it's not directly bound by the Paris Agreement. In a larger sense, I think it is also consistent with the Paris Agreement—that is, if there is to be a decision either to raise the ambition of the 2030 target or to bring forward the proposed date of achieving net zero, that is a thing that can be done; it just has to be done through further legislation.

The Paris Agreement specifies that parties may not go backwards in their ambition and that their commitments should represent their highest possible ambition at every point in time and envisage regular cycles of coming back, re-upping their ledgers and striving to do more in light of both their own learning about what they could do and their trust in themselves and others from their track record. I don't think there's anything in this bill that prevents that process from operating, either in the narrow sense—because New South Wales is not part of it—but, in the broader sense, a legislative process rather than a regulatory process can pursue those increases in ambition as and when the government of the day wishes to.

The CHAIR: You served on the independent panel that advised Victoria. We heard evidence in our last hearing about a very substantial difference in the legislative framework between what has been proposed here and what's in Victoria, particularly the mechanism in the Victorian legislation, via the schedule to that, that impacts where the targets within the Victorian legislation are operationalised by—decisions being made under other legislation by decision-makers are actually bound by the Victorian climate targets. Is that a desirable scheme? Is our scheme being proposed lacking because it doesn't do that, do you think?

TENNANT REED: The New South Wales approach is more fluid than the Victorian one. As represented in this bill, at least, it is more fluid. The Victorian one has been seen by some stakeholders—externally and, my impression is, internally within the Victorian Government over the years—as at times a bit rigid. The specific time lines and tempo of decisions that it establishes have been, in practice, found to be a bit more awkward in implementation than they were at the time of initial consideration. The process of seeking commitments and buy-in and obligation from across the whole of government rather than just from within the portfolio of the climate Minister of the day is necessarily quite complex and fraught in any government, just for the reasons of Cabinet government and the distinctions between portfolios, and I think that is an area the State of Victoria is continuing to work on—how well internally coordinated it is on this.

The Federal Government's relevant bill was accompanied by consequential amendments that specified a number of other Acts that had to take the targets and principles in the Climate Change Act into account in executing their functions. And that's still to be tested, in many ways, but it was a useful change. Specifying that appropriate other decisions, for instance, about transport infrastructure or about the planning system, should take the climate goals into account makes a lot of sense on paper. It's just a tricky matter to actually achieve full coherence in any government.

The CHAIR: Ms Macfarlane, can you expand on the unprecedented rate and amount of declared events and insurance payout? How does the Insurance Council track the impact of climate change? Are we already at the point where some places are actually unable to be insured? I disclose, I am from Lismore, so I have some fairly direct experience from my community about the difficulties around insurance, but I am speaking more from a State-based perspective of New South Wales.

KYLIE MACFARLANE: As I mentioned previously, there have been nine events declared by the Insurance Council in New South Wales since the Black Summer bushfires. That includes six, what we would call, catastrophe events and three significant events. Effectively, they're events that by volume and intensity require a coordination of the insurance industry with government, regulators and other participants to ensure that those communities recover well. As I mentioned, in New South Wales, from those nine events, there's been an estimated $7.1 billion of claims paid out. Ultimately, what we're seeing and what we've seen over the last number of years is an increase in the frequency and intensity of the events. The year 2022 is a great example where, in New South Wales, there were $3.5 billion of insured losses in one single year. One of those events—what we called CAT 221—accounted for $3 billion of that $3.5 billion, and that, of course, is the event that affected Lismore so devastatingly.

From the Insurance Council's perspective, we see climate change as a driver of more frequent and intense weather, and we are calling on governments and businesses to be better prepared and more resilient into the future. From our perspective, climate change is a driver of insurance costs. Certainly, the frequency of extreme weather risk at the moment is a driver of insurance costs, along with inflation and the cost of reinsurance and the cost of taxes in the States. Those increasing premiums are making it difficult for people to make decisions around insurance. At the moment, it's an affordability issue more than an availability issue. At this point in time, we don't see that any part of Australia is uninsurable. But we certainly acknowledge that, with climate change and with the continued intensity and frequency of severe weather, it may become difficult in some areas of Australia to have insurance.

The CHAIR: On that point, we heard from some legal experts in the last hearing about needing to provide within the framework a principle of loss and damage. From what we could understand, it comes from the adaptation work of the IPCC around the hard edges of adaptation, so where it's actually not possible. I know that you are calling for and, as you said, are pleased that the Premier has declared no further development in some of these uninhabitable places. Has the Insurance Council of Australia looked at planned retreats?

KYLIE MACFARLANE: There are a number of things that we are calling on government to support and to enact going forward. The first of those is increasing investment in resilience and mitigation. One of the things you actually have to do proactively to pre-empt the widescale devastation that extreme weather can bring about—we know from current flood mapping or cyclonic mapping et cetera that there are areas of greater vulnerability that need to be addressed—are investments like levees and floodways et cetera. For new homes, we really see the need for changes to the planning laws to stop homes being built in high-risk locations and improving building codes to make future buildings more resilient. Again, that is looking at new homes.

To your point, what do we do about the existing building stock, there are a number of things here. Government needs to continue to support household-level resilience such as retrofitting programs, which could be retrofitting services into homes or it could be raising floor levels et cetera—a lot of what we saw through the package that was put out last year post-CAT 221. But we also see the need for home buybacks, and not just reactive home buybacks. We applaud the work being done at the moment to buy back properties in areas of high

risk. However, we would encourage government—not just in New South Wales but in other States as well—to be looking at pre-emptive buybacks and to be looking at what homes we actually need to take out of risk's way now to stop the impact when that event occurs.

The Hon. JOHN RUDDICK: I would like to ask a question of the lady from the Insurance Council, Ms Macfarlane. You have said that we are already experiencing rising sea levels. Other people who have been to the Committee have said that they have projected in the future that we might get rising sea levels but you are saying that we are actually already seeing it. I'm guessing there are a couple of million homes around Australia which are built directly on the coastline. Are you seeing any of your members withdrawing from insuring homes that are directly on the coastline because they are worried about rising sea levels?

KYLIE MACFARLANE: Firstly, I haven't said that we're seeing rising sea levels. We're certainly seeing—

The Hon. JOHN RUDDICK: Hang on, let me correct you. On the second or third page of your submission, you have written:

> Australia is on the frontline of climate change impacts, experiencing more severe bushfires, hotter and longer heatwaves, rising sea levels that are exacerbating hazards along our coastlines.

KYLIE MACFARLANE: My apologies—

The Hon. JOHN RUDDICK: So you are saying this is not something that is going to happen in the future; you are saying it's something that is happening now. You did mention that there are some areas around high flood plains where some of your insurers will not insure properties there, and I think that is their right to decide. But I'm very interested. Your members would be at the front line of these rising oceans and washing away homes, so are there any insurers which have withdrawn from the coastal market?

KYLIE MACFARLANE: Apologies; I didn't realise you were referring to our submission. But, yes, our submission does say that we have reached a mean temperature rise of 1.46 degrees Celsius, and that is seeing an impact on a range of different climatic conditions. Actions of the sea are rarely insured events. Most insurers would exclude actions of the sea from policies. This is quite standard and so, from an insurance perspective, actions of the sea are rarely covered in a home and contents policy, for example. What we are, however, looking at is what does government need to do to think about the pre-emptive buyback and retrieve of those communities that might be at risk of increasing rising sea levels. We would see that as we would with any other extreme weather event, whether it be flood, cyclone, bushfire or otherwise.

The CHAIR: Does that help?

The Hon. JOHN RUDDICK: I was interested to learn that a standard insurance policy doesn't cover actions of the sea. Okay. Well, that's interesting. If the sea level were to rise as we're told it's going to rise, by a foot or something, then those properties would not be insured. If it actually did happen that there was a rising sea, then those homes would not be protected.

KYLIE MACFARLANE: If their policies excluded actions of the sea, those homes would be not covered for that action. They would, of course, potentially be covered for the other—they would be covered for the other components that are in their policy.

The Hon. JOHN RUDDICK: Right.

The Hon. JACQUI MUNRO: I think Mr Reed had something to say. Is that right?

TENNANT REED: I beg your pardon, yes. Just to add that it is well understood and generally acknowledged that global sea levels are rising—

The Hon. JOHN RUDDICK: No, that's not true. I know everybody repeats it, but it's not true.

TENNANT REED: No. It is well measured and generally accepted. The rise to date has been quite modest and the future rise is subject to very wide uncertainty, particularly around the speed with which land-based ice in Greenland and Antarctica might melt, but there's a very high degree of certainty about thermal expansion of the oceans. This may be a more detailed discussion than the Committee wants.

The Hon. JOHN RUDDICK: No. I'm keen to hear it.

TENNANT REED: But I can certainly say that sea level rises are a very well established part of the climate impact that is going on and expected. There are other things that impact the sea level relative to different pieces of land at different regions of the world, but if the Committee seeks evidence from scientists rather than—I'm a policy person; I don't know about Ms Macfarlane—I'm sure that you can get some very good testimony on that score.

The Hon. JOHN RUDDICK: Thank you.

The CHAIR: Can I ask, just going back to Ms Macfarlane, about the uninsurable properties? If the New South Wales Government had to establish a reinsurance scheme for uninsurable properties, just on the South Coast for fires and on the North Coast for floods, for example, would the $7.1 billion cost be consistent? Is that what we would be looking at in terms of the cost of that?

KYLIE MACFARLANE: So $7.1 billion is just the insured losses of the last couple of years. That's a historic number based on the claims that our members have paid out over that period. What I would say about reinsurance pools is that reinsurance pools don't change the risk. They don't stop the flooding. They don't stop a cyclone. They don't stop a bushfire. What they do is provide a mechanism for providing capital to insurers. Reinsurance pools are simply insurance for insurers.

The CHAIR: And so, then, just on—sorry, go on. I cut you off there.

KYLIE MACFARLANE: That's okay. Any reinsurance pool, we would say, would need to be closely looked at to understand what it is that is trying to be effected through the development of that reinsurance pool, noting that that wouldn't diminish government's responsibility to invest more in resilience and mitigation investments through infrastructure and other programs.

The CHAIR: On that, I can see the sea level rise forecasts and understand those, the way they've been presented, but one thing we know is the increase in intense storm surge et cetera and, therefore, the exacerbation of coastal erosion. What's the value of property that is vulnerable to actions of the sea? Do you have that? Is that a figure that has been quantified?

KYLIE MACFARLANE: I don't have that figure at hand. What I can do is refer back to the piece of research that we commissioned in 2021-22 on actions of the sea and take that question on notice.

The Hon. JACQUI MUNRO: Thank you both for appearing today and for your submissions. Ms Macfarlane, I was curious about the calculation of the Sydney hailstorm—the $1.7 billion—in 1999. Your submission states that it "would have resulted in an estimated $8.85 billion in insured losses if it happened today". I want to understand how that was calculated.

KYLIE MACFARLANE: We normalise our data every few years so that we can do a direct comparison between an event that's happened today and events that happened historically. It takes into account things like inflation, changing property costs and changing building costs, and it normalises that data. It looks at the event—in this case, the hailstorm in Sydney—and says, "If it happened today, all things being equal, what would it cost, from all the insurance claims, to recover from the event?" So it's normalising it to 2023 numbers.

The Hon. JACQUI MUNRO: So they're external factors, essentially?

KYLIE MACFARLANE: Absolutely. Any event is impacted by the economic context of the moment in which it happens. At the moment, for example, we're in a period of high inflation, we have high building costs and low availability of labour, so we're seeing labour costs increase. These things drive the ability to recover and repair quickly, and they drive the cost of that recovery as well.

The Hon. JACQUI MUNRO: I'm curious about your thoughts on the membership of the commission. Is it something that you would be seeking to be a part of, with the Insurance Council of Australia represented on a body like that?

KYLIE MACFARLANE: For a commission to work effectively, it needs to be independent and it needs to have true oversight and the ability to report and advise government. From the Insurance Council's perspective, there are probably a number of ways that commission could be set up. It could be truly independent—with an independent commissioner and body that refers to industry groups like our own for submission and guidance—it could be set up as a commission that has representatives from business on it or a hybrid somewhere in between. I'll allow the Government to make the decision on how that is established. However, what we would say is we see the role of the commission and the commissioner being vital to the integrity of this bill and for the efficacy of the programs that get put in place in the future. We need to make sure that we are going to meet these net zero commitments, that New South Wales can adapt to extreme weather and be more resilient but also be able to call out what's working and what isn't working well and be able to adjust accordingly.

The Hon. JACQUI MUNRO: Mr Reed, I was curious about your involvement with the Victorian targets. Firstly, regarding the appointment to the independent panel that you were on, what was the process of determining the membership?

TENNANT REED: There is an appointment made by the Victorian climate change Minister on the basis of advice from her department. There are, I believe, capabilities, or areas of knowledge, that the independent

panel needs to have access to, whether that is from their own individual capabilities and experience or the expert assistance that they are able to draw on.

The Hon. JACQUI MUNRO: In the process of setting up those targets—it is an interesting comparison to the New South Wales bill in that, obviously, Victoria has those standard times set—what was the process that you were involved in to determine the timing and also to determine that that actually was critical to ensuring the bill's effectiveness?

TENNANT REED: There was an extensive review that led up to the formation of the Victorian Climate Change Act.

The Hon. JACQUI MUNRO: When you say extensive review, was it over a long period of time?

TENNANT REED: I wasn't directly involved in that review. That was conducted by, from memory, Martijn Wilder and Anna Skarbek. They were two of the key people who were on that review. From memory, they took a process of around a year to produce those recommendations and then there were some further legislative drafting times. It was an extensive process. I say that not in any way to criticise the New South Wales Government or the Federal Government, which had much shorter processes, but they were able to draw on what all of us had learned from Victoria and other jurisdictions, including the UK, which I think was the model for Victoria, in many ways.

The Hon. JACQUI MUNRO: Were you involved in that discussion of setting those time-based targets?

TENNANT REED: No, I was subsequently appointed in late—or was it early?—2022. It was early 2022. Time is a flat circle. I was appointed to participate in the review specifically on what the 2035 target should be under that framework that had already been established, and following the first review of what the 2030 target ought to be, which was chaired by Greg Combet.

The Hon. JACQUI MUNRO: In making the determination of that target—my understanding is that Victoria's doing quite well in actually achieving the targets and going further, which has allowed greater ambition further down the track. What were the considerations that you took in when you were looking at 2035?

TENNANT REED: It is a big exercise to think about 2035 because we really get to a point in terms of climate ambition where we need to think about numbers that are much more than what the electricity sector alone can deliver. A very large amount of change for climate policy to date has revolved around the area of energy efficiency and the substitution of high-emissions electricity with low-emissions electricity. That remains important and complex. The management of a highly renewable energy system is a new frontier in electricity systems around the world. But even as big a deal as that has been, when thinking about the next pit stop on the way to net zero, you need to start considering what is possible in stationary energy, what is possible in transport, what's possible in agriculture and many other areas. For all of these, there are opportunities—the panel found in the course of our work—that are not easy but easier, and there are opportunities that are significantly harder, or areas of emissions where we don't yet know how they will be reduced or fully avoided.

One of the things that became clear to the panel in the course of that work was the value of pushing as hard as you responsibly could on the easier opportunities, so as to leave more room in the carbon budget and in the time remaining to address those really hard-to-abate elements of each sector. I think those were some of the major considerations we faced in the course of that. New South Wales is obviously a different economy and has a different electricity mix to Victoria, but it has some common challenges as well. Should this bill pass and the process contemplated come about, as it goes through that consideration, I think similar issues will arise—including, of course, the fact that the further out we look now, the more likely it is that we will be talking about net negative emissions, at some point, to try to haul back out some of the carbon that, collectively, the world has not moved fast enough to avoid putting into the atmosphere in the first place. That is going to be an immense task, a very difficult task. The less of it we leave for ourselves, the better. But, with the best will in the world, there is going to be a certain amount of net negative emissions required, which is going to take some thinking about.

The Hon. JACQUI MUNRO: I have two quick final questions. First, just for the Committee's benefit, the target range that Victoria landed on for 2035, and also the easier ways to reduce emissions—could you perhaps list a top three, say?

TENNANT REED: Certainly. The panel recommended a target for 2035 of 80 per cent below 2005 levels. That is a very significant target. We were under no illusions that that target would be easy to achieve. The Government ultimately adopted a target of 75 per cent to 80 per cent below, in line with their previous practice of adopting target ranges. Among the opportunities, electrification of many things—not everything, but many things—will be very useful and relatively cost effective, provided the electricity sector continues to steeply lower

its emissions. That was going to be a significant part of the puzzle for transport. It also forced a lot of stationary energy use, including in light industry, in commercial uses and in homes.

The other thing I would highlight is the potential for some important reductions in agricultural emissions, through the adoption of some of the new technologies that are coming along around, particularly, livestock feed supplements based on asparagopsis seaweed and other strains of seaweed that show very encouraging early evidence of substantial emissions reduction from what's called enteric fermentation—or burps of methane—particularly from cattle. There are challenges around cost-effective distribution. The whole point of rangeland animals is that you don't need to chase around them and feed them. But, in dairy and in feedlots and, potentially, in other contexts, application of these supplements looks very promising for a substantial emissions reduction. We're some distance away from that being a really widespread commercial prospect at the moment. That's an important thing to move on, as well as the more familiar opportunities, around clean electricity and electrification.

The CHAIR: Ms Macfarlane, when we were talking about the question of reinsurance—I understand the complexity around that—we were saying the loss of $7.1 billion and the total risk exposure. Does your association have information about the losses beyond the insured assets? If that's something you do have, is it possible to take that on notice?

KYLIE MACFARLANE: Sadly, we don't. I think this is one of the important elements of actually measuring cost after an extreme weather event. The Insurance Council gathers the insured cost that's incurred, but we don't have the mechanism to actually measure the other economic and social losses that also incur. That would happen, I imagine, at a State and Federal government level. But I'm not sure.

The CHAIR: Do any of your member bodies insure fossil fuel projects?

KYLIE MACFARLANE: Insurer members have a variety of different policy positions on fossil fuels. There are members who are working with fossil fuel providers to transition. There are others who have stated categorically that they won't insure fossil fuels any longer. But it is on a spectrum. It's dependent on those organisations' risk profiles but also their approach to climate change as well.

The CHAIR: On that, finally, are emissions considered a risk factor for those insured organisations?

KYLIE MACFARLANE: As we know, we need to get to net zero emissions, and there are two factors at play here. Firstly, we need to get to net zero to actually make the investment in resilience and mitigation worthwhile, because if we don't get our emissions under control, no matter how much we spend on mitigating against extreme weather, it will actually have a point of declining return. So we need to get emissions under control. We need to balance that out with good infrastructure investments to mitigate against the impact of extreme weather—having a proactive response and spending government money prior to events occurring, as opposed to in recovery, so that we actually have a more stable outcome to extreme weather. Emissions are an important part of the equation, and in fact they become the most important part over the longer term to ensure that those investments in mitigation and resilience are fully realised.

The CHAIR: Are those costs of emissions considered in premiums paid? Are we at that point in the insurance industry?

KYLIE MACFARLANE: For clarity, are you asking if an insurer is pricing based on emissions outage?

The CHAIR: Yes.

KYLIE MACFARLANE: Certainly that's not my understanding, but I can take that question on notice.

The Hon. MARK BUTTIGIEG: Earlier in the evidence, you said that the Victorian system was a lot more prescriptive and rigid. Clearly, one of the intents of this particular bill is to use the commission to solicit quality advice and then have the flexibility in regulations to move with the times, so to speak—set the targets and take that advice on board from the commission. Do you have commentary around the advantages of that vis-a-vis the Victorian system?

TENNANT REED: There are many ways to skin a cat. Having a less prescriptive, more fluid approach is perfectly valid. Our suggestion around the timing of at least five years was about providing just a little more guidance within that broadly responsive framework so that there can be a higher level of confidence that will always have a minimum level of official insight into the interim targets of government. We suggested at least five years of future notice or clear road in front of us. That would be consistent with adopting, say, a 2035 interim goal some time in 2025, but as late as 2030—and ensuring, without having a continuous review process that everybody must be inputting to at all times, having enough room to enable regular reconsiderations and updates of advice and then decisions by government, and if it's to be legislated by the Parliament of the day as well. We have no

objection to the more fluid approach that New South Wales is taking. It's just helpful to combine that with some greater forewarning of what interim targets will be.

The Hon. MARK BUTTIGIEG: If I were to put it to you—as I would, as a Government member—that this Minister and this Government are fully committed to addressing climate change in this bill, and therefore we would have an expectation that the commission would come back to us and we would take those recommendations and prescriptions very seriously in a relatively short amount of time, that would be a fair enough position for a government to take, wouldn't it?

TENNANT REED: That would be a very useful position for the Government to take. It might be further enhanced by the text of the bill saying not just that the commission may make recommendations with respect to interim targets but that it is requested to make recommendations with a minimum frequency of—and you could specify what frequency you wished, but at least every five years, or words to that effect, might be useful and comparable to other jurisdictions without getting bogged down in a very intricate series of steps and critical dates.

The Hon. MARK BUTTIGIEG: To illustrate the point of the advantage of flexibility, I put to you that the commission could very well come back and say to us, "Well, five-year emissions target timings are actually not enough. We want it to be a shorter time frame." There's no reason why that couldn't be facilitated given the way this legislation has been written, where the regulations are subservient to what the commission recommends and then the Minister puts into place. That would be a fair enough position, wouldn't it?

TENNANT REED: It would indeed be wide open in that way. There is some value in having a balance between the short-term responsiveness not even just of legislation but of policy, and some longer term guidance. Of course, we are seeing important changes take place in the local and global economies, in technology, in international negotiations and in national and other jurisdictional targets. It's important to be able to adjust in the light of those things. But, for our members, who are businesses of all sizes—many of them making investments which will be affected one way or another by the success and the speed of Australia's journey on climate—it is helpful to have some forward-looking guidance. The bill contains the 2050 guidance and the 2030 guidance and that's very valuable in itself. An encouragement for the commission to provide to the Government advice on interim targets with a little bit more tempo to it would be helpful. But, as you say, the scope is there for the commission to do that even if they don't get further advice or requirement within the legislation.

The CHAIR: We're out of time. We are very grateful to both of you for your time and responsiveness to the shortness of time that you've had to respond to this inquiry. The secretariat will be in contact with you with any questions you've taken on notice. Once again, we have got quite a short turnaround for that too. Thank you so much for your participation and your evidence today.

(The witnesses withdrew.)

Mr ALLEN HICKS, NSW/ACT Divisional Branch Secretary, Electrical Trades Union NSW, before the Committee via videoconference, affirmed and examined

The CHAIR: Good afternoon. Have you got a short opening statement that you would like to present?

ALLEN HICKS: Yes, just a short opening statement that obviously we support the initiative put forward by the New South Wales Government. We think it's a positive step forward and I'm happy to speak to that.

The CHAIR: The position in current policy of the New South Wales Government is that we will reach a 50 per cent reduction by 2030, achieve net zero by 2050, but also that we will hit 70 per cent reduction on 2005 emissions levels by 2035. The current framework is not suggesting to legislate that 2035 target. Do you see any advantages or disadvantages of taking this new approach?

ALLEN HICKS: I think it's a disadvantage. The reason why I state that is simply that we have a target that has to be reached, obviously after the 2030 figure, and that will compel the government of the day to invest the necessary resources to make sure they make strategic decisions to get to net zero quicker. We all know that climate change is real and it's having a massive impact right across our communities throughout New South Wales. The faster we can get to net zero—provided it's done in a way that the society and the community can obviously deal with that approach—is much better. By not legislating it, I think that removes that compulsion for the government of the day, whoever that is, to get that necessary figure.

The CHAIR: Has the ETU had positive and productive interactions with the Federal energy transition authority?

ALLEN HICKS: We've certainly been consulted. We've had a number of meetings at a Federal level. To be honest, Michael Wright, the new national secretary, would be the best person to speak to about that. But certainly it's been a welcome decision.

The Hon. MARK BUTTIGIEG: Mr Hicks, the ETU's been probably one of the more progressive unions in the cause of taking up action on climate change given the perception that members in those industries, particularly the supply industry and other industries, could come off second best. I think your union's taken the view that there are massive opportunities as well, which we need to tap into and handle the transition properly. Do you just want to outline to the Committee the work that the union's done in that area and why you're looking at this as a positive? As opposed to some sectors who are looking at it as a job destroyer, I think the union's position is that it's actually a job creator. Is that right?

ALLEN HICKS: Correct. There's significant jobs to transition to renewable energy, apart from the jobs that are going to be created. Obviously what we've done is look at it from a truly [audio malfunction] perspective. We've looked at training [audio malfunction]. We've looked at upskilling our members that are working in those emission-intense industries to provide them the best possible opportunity to have the skills, experience and knowledge ready to go when the emerging technologies come through and it gets to a point where there is a requirement for that work to be done. There's a significant amount of investment right now, right around the country in the transmission networks that will allow the opening up of the transmission pathways to allow renewable energy projects to come on board and provide that much-needed electricity. Obviously we're big supporters of that because, again, not only is it fixing the issue around the emissions and the climate but it's also leading to pretty exciting opportunities for thousands of people to get into new and emerging industries.

As I said before, there are hundreds of thousands of jobs. The latest modelling from the Federal Government suggested that to get to their 2030 targets, we're going to have to have 32,000 more electrical workers in this country by 2030. It's something that has to be looked at very closely and has to be managed appropriately, otherwise we're just not going to get to those targets. We welcome the initiatives of the Government, but we also want to remind the Government of its need to consult with the workers and the workers' representatives to make sure that we have enough opportunities through TAFE, through private RTOs and the like to make sure we can actually upskill all of the people that need to be skilled up to get to this transition. There are massive opportunities for those people that work in emission-intensive industries right now. I think that's something all of those unions and the governments really need to be focused on in this transition.

The Hon. MARK BUTTIGIEG: This isn't something that's off into the never-never. This is happening pretty much right here, right now, isn't it, where the technology's sufficiently mature and the economy's sufficiently changing? This sort of transition into renewables on the ground—that is, real jobs—is happening as we speak, isn't it?

ALLEN HICKS: Yes, absolutely. There are projects that are currently on foot that we can't get enough labour to at the moment. Obviously, there is a desperate need for skilled tradespeople to do this work moving

forward. And that's going to get exacerbated with the uptake of batteries and the whole range of other measures that are being implemented into the system to create some stability on the network but also to be able to have that backup supply. So it's a problem, but it's an exciting opportunity for Australians and, obviously, for residents in New South Wales, because there is going to be a massive amount of work to be done. If we get those young people, or we can get existing workers that want to retrain or re-skill—existing tradespeople that want to look at different opportunities—there is a massive chance that they will get involved in this and they will have jobs for the next 20 or 30 years.

The Hon. MARK BUTTIGIEG: It was remiss of me and I should've declared this up-front—not that there's any conflict, perceived or otherwise, but I am a former official of the ETU, and I am a member of the ETU. I'll declare that in case anyone says, "Why didn't you declare it?"

The CHAIR: Thank you very much. That's very transparent of you.

The Hon. PETER PRIMROSE: I use electricity.

The CHAIR: And I'm somebody who wants to electrify everything. How about that?

The Hon. PETER PRIMROSE: We share that.

The CHAIR: Thank you, Mr Hicks. This is really helpful evidence. I think you were getting to this point now, or perhaps you did, but distributed power generation and storage will be a huge part of the transition. You're talking about 25,000 new electrical workers, but you're suggesting that will go further—that it will actually permeate further than the electrical workers.

ALLEN HICKS: Yes. I think the Federal Government's own evidence suggested that there was going to be 604,000 jobs created to get to net zero by 2050. That's indirect jobs. And then there was going to be something like 65,000 direct jobs that will be created out of this. It's not only about the stabilisation of the network and making sure we have a shift from emission-intensive industries to battery storage, solar and wind, but it's also the requirement—if we're going to get to net zero by 2050—to look at people's domestic residences where they've got inefficient cooktops and where they use older hot water systems and the like. We need to be retrofitting all of that as well. Obviously, there's some government money that's available for certain areas of the community where they're going to fund that, but there's a massive amount of work that needs to be done in that space if we're going to reach net zero. Right across the board, through domestic residential areas, commercial-type arrangements and industrial-type arrangements, it's going to be a continuation of this work that needs to be done to make sure that all of those areas are energy efficient and using the best possible technology to get to that net zero outcome.

The Hon. ANTHONY D'ADAM: I wanted to come back to the labour question. What specifically does government need to do to increase the number of apprentices to meet the labour shortage that you've identified? If you could recommend some specific actions that could be taken in the short term, what would they be?

ALLEN HICKS: One of the biggest employers of electrical work in the State of New South Wales is Essential Energy. The number of apprentices that they've got every year is pretty woeful, to be honest. If the Government wanted to look at making sure that they had an adequate supply of apprentices right throughout regional New South Wales, because the footprint of Essential Energy is quite extensive, they could have a look there. It's obviously a government-owned corporation. They should also work closely with the Federal Government to open up the opportunities for people to get into training. One of the biggest issues that we have at the moment is we've got thousands upon thousands of people that want to end up in the electrical industry, but the opportunities aren't there because TAFE can't train enough apprentices at this point in time. Some of the apprentices and group training organisations have told us they're waiting 12 to 14 months to get through TAFE. We've got all of these people that want to be trained, to continue to upskill their qualifications and the like to get through their apprenticeship program, but they aren't being afforded that opportunity.

The other thing is that if the Government needs to make sure that they are going to train people—again, that can be done in combination with TAFE—there should be opportunities for private training organisations to fill that gap as well, not to take over from TAFE but to complement what TAFE's doing. If we're focusing on the electrical industry and we're focusing on renewables, then perhaps some centres of excellence could be government-funded with industry bodies like unions and employers in a joint arrangement—making sure that it's a reputable organisation that'll train those people. To complement TAFE is good, but not to take away from what TAFE's doing.

The Hon. ANTHONY D'ADAM: What's causing the blockage in TAFE? Why can't TAFE meet the demand if there are so many people wanting to do apprenticeships?

ALLEN HICKS: A few things. One is obviously the shortage of resources that they currently have. They don't have enough TAFE teachers to perform this work. And then, obviously, because there's such a sheer

number of client to program and putting people through the TAFEs—most electrical apprentices do one day a week in TAFE rather than a block of weeks. They do once a week rather than turning up for three or four weeks at a time. Just to try to get the number of apprentices through that, that's why there's a backlog. So just a lack of resources, and there are a number of issues that the TAFEs [inaudible] need to fix up. But, again, I think if at a State and Federal level we can work towards doing that [inaudible] complement the work they do, they'd improve that situation.

The Hon. ANTHONY D'ADAM: Are there specific geographical blockages, like particular locations where this is more acute than in other places for TAFE?

ALLEN HICKS: No, it's unfortunately right across the State of New South Wales. In some of the regional areas, it's obviously more difficult because of travel, climates and the like. If the Government wanted to entertain and talk to the industry about centres-of-excellence-type ideas, then we would suggest that the areas they'd need to be located would be the Hunter, around Queanbeyan and then Western Sydney, to try to make sure that they could maximise participation rates in those areas.

The CHAIR: Has the ETU noticed a spike associated with household electrification where the State and Federal governments have offered subsidies?

ALLEN HICKS: We've certainly noticed a strong interest. A majority of our membership, to be fair, don't work in the residential space. We certainly have membership in that area, but the large majority of our membership work in commercial, industrial and then obviously in the transmission, distribution and generation of electricity. But in those areas that we have had discussion with members, there has been an uptake of people that are very interested in trying to retrofit. Even in conversations that I've had with people, just with members of the community, they're very keen to try to get battery storage or to try to get better hot water systems and the like to make their homes more energy-efficient. There's certainly strong interest, at least in the people that I've spoken to and obviously from our members that do work in that domestic space.

The CHAIR: In your opinion, is there a large unused capacity for solar on commercial rooftops?

ALLEN HICKS: Yes, absolutely. I think that as part of this process, if the bill becomes legislation, then the work of the commission is going to be pretty significant. There is a heap of ideas that could be implemented and the building code looked at insofar as that way, when they do build new premises buildings, there are minimum requirements that need to be met to ensure that there is that injection of solar. The difficulty then would be that if we don't have the skilled labour to do that work then it's going to make it impossible to try to facilitate that process. So it's a combination, and I think that's one of the things that if this bill does become legislation then the commission has a large amount of work to look at skills, training and how we're going to make sure that we have [inaudible] employment in this State.

The CHAIR: This morning somebody gave evidence about the provision within this bill for the commission to establish advisory committees. Do you see that your sector would be an appropriate and well-positioned advisory committee in terms of the goal of electrifying both commercial and residential?

ALLEN HICKS: Yes, obviously we would welcome an opportunity to be involved in an advisory committee to the commission because we think we can provide a lot of value. Obviously we're the largest representative of electrical workers in the State of New South Wales, and we [inaudible] strive to get apprenticeship programs, safety, industrial outcomes, legislative change. We're always there, we're always lobbying to make sure that those things can be improved. I think we've got a lot to add in that space, but it's not only just us. There's a number of other organisations that could value-add to advisory committees.

The only criticism I suppose I do have of the current bill is that the constitution of the commission, I don't think at this stage factors in someone—an organisation or representative—that is largely a representative of employees or workers. It doesn't factor in someone that's got expertise in the industry, job creation, local procurement and those sorts of things. It looks like it's very heavy from a science-based process, which is great. But the reality is that the commission has a large amount of work to do to give the Minister advice, and I just think where it lacks is that it doesn't have anyone on there that is largely a representative of the workers with industry experience to deal with those other things that will arise in the course of their work.

The CHAIR: I think that we've come to the conclusion of our time with you, Mr Hicks. Thank you very much for your evidence. Thank you for your time and, as I've been saying, thank you very much for responding in such a short time.

(The witness withdrew.)

(Short adjournment)

Professor KEN BALDWIN, Australian Academy of Technological Sciences and Engineering, affirmed and examined

Mr PETER DERBYSHIRE, Director, Policy and Government Relations, Australian Academy of Technological Sciences and Engineering, affirmed and examined

The CHAIR: Welcome back to the next part of this inquiry. We now welcome Mr Baldwin and Mr Derbyshire. Would you like to start by making an opening statement?

PETER DERBYSHIRE: Thank you for the opportunity to address you today. I'd first like to take a moment to acknowledge the traditional custodians of the land we are meeting on today, the Gadigal people, and reflect on their long history of achievement and innovation as Australia's first engineers. We pay respect to Elders, past and present. The science of climate change is unequivocal. The climate-induced catastrophes are irrefutable. Climate change is happening, including in New South Wales, and we need to act now. Our organisation, comprising of nearly 900 of Australia's leading engineers and technologists, has called for Australians to accelerate our ambition and aim to reach net zero greenhouse gas emissions by 2035. This is not a pipedream. Tasmania is already there with net zero emissions in six out of the last seven years, and 100 per cent of their energy is coming from renewables. New South Wales can get there too.

Meeting this target will be a challenge but with immediate and large-scale action to invest in skills and infrastructure, as well as political policy and regulatory support at all levels, it is achievable. Science, technology and engineering can help lead the way. ATSE fellows Professor Martin Green and Professor Andrew Blakers recently won the Queen Elizabeth Prize for Engineering for their invention, at UNSW, of the PERC solar cell, the dominant solar cell produced in the world today. ATSE fellow Professor Veena Sahajwalla, also at UNSW, is leading work on developing the next generation of green materials, reducing waste, cutting emissions and developing new industries.

The proposed bill is a step in the right direction. A new, independent Net Zero Commission will help drive change. The proposed targets of a 50 per cent reduction in carbon emissions by 2030 based on 2005 levels and net zero emissions by 2050 are insufficient to meet the urgency of the challenge facing us. We must act sooner and faster in order to keep global warming below 1.5 degrees. A more ambitious target, underpinned by science, will set a critical benchmark for action in New South Wales. It will incentivise investment to apply innovative solutions and give a clear signpost to industries to drive rapid deployment of existing and mature low-carbon technologies, as well as develop and roll out emerging technologies. The targets in this bill cannot be the peak of this State's ambition; they must be the floor, not a ceiling.

The Net Zero Commission should explicitly aim to keep warming below 1.5 degrees. It should have the freedom to advise and recommend more ambitious targets for the New South Wales Government to adopt. ATSE supports the intention of this bill to legislate a net zero target and establish a Net Zero Commission but ATSE urges the Committee to expand the remit of the Net Zero Commission to take existing climate change into consideration—1.1 degrees of global warming—and aim for a net zero target sooner, in line with limiting global warming to 1.5 degrees. This is necessary for the future of New South Wales people, cities and industry. Thank you.

The CHAIR: Thank you very much. Can I just start by putting to you that the current situation in New South Wales, as we all understand it, is there is government policy to achieve a reduction in emissions by 50 per cent by 2030 and net zero by 2050, but also in regulation that we meet a 70 per cent reduction by 2035. What would you say to this framework not having an interim target, either currently in regulation or in legislation from the outset?

KEN BALDWIN: I guess a target that is not in legislation is one that is perhaps not as firmly on the agenda as one that is legislated. So it makes a clear signal to business, to industry, to the wider community, of the trajectory and the plan and it is very important to have clear signalling, simply because the investment required at the scale needed to address climate change is so enormous that it creates an additional risk in the financial equation if there is no certainty, and this risk premium means higher cost in the transition. Having a very clear trajectory moving forward to net zero reduces the cost of this investment that is going to have to happen and this will be significant in terms of providing the correct signals for business and industry to make this challenge.

The CHAIR: If the Government is completely set on these two targets, which I hear clearly in your statement you are suggesting is not commensurate to the targets that we should have based on the science—so you're suggesting it needs to be an earlier target than net zero by 2050. At the moment the Government is suggesting that net zero by 2050 is their end target. But we have no understanding of what actually net zero means

at this point either. Do you have anything to say about net zero, regardless of when we meet it and in terms of what it means? I'm referring specifically to the use of offsets.

KEN BALDWIN: Yes. You can reach zero by having a positive amount of emissions offset by a negative amount of emissions. That is absolutely true. But the question is, first of all, whether the offsets are feasible in the time frame considered, and indeed whether the magnitude required is sufficient to offset the emissions in the trajectory going forward. So you have got to know the trajectory, you've got to understand where we go from now to zero in the future, because the area under that curve determines how much offset we need to invest in the intervening period. Understanding what that trajectory is will determine the amount of, let's say forests, that we grow or whatever the offset is, so that will tell us what the magnitude of the offset has to be. Not everyone can use offsets. If the whole world used offsets to get rid of business-as-usual emissions, we'd have to grow 10 Amazon rainforests in the intervening period. Clearly, not everyone can use offsets just to ameliorate their business-as-usual emissions.

There has to be reduction in emissions going forward—the trajectory that I talked about—and if that trajectory doesn't meet the target of overall CO2 emissions reduction, then offsets will be needed to take out the remaining CO2 from the atmosphere. We should also be thinking not just about natural offsets, such as growing trees; we should be thinking about indirect offsets as well—in other words, pulling CO2 out of the atmosphere and storing it in a way that indeed may be useful. Direct air capture, for example, is one of those technologies. It is at its very early stages now, it's not at commercial scale, it's very expensive. To rely on that at this point in time to ameliorate the emissions going forward would be a risky strategy, knowing what we do at the moment. And, indeed, the same is true with other offsets. We've got to know, for example, what the trajectory of other jurisdictions are in order to meet the ultimate goal of net zero, globally. If it turns out that we're all using the same offsets, then we'll never get to where we need to be.

The CHAIR: With your call for the net zero greenhouse gas emissions by 2035, for here in New South Wales—and in your opening statement I think you're suggesting that that would provide the necessary stimulation and signalling to actually reach that target—do you see anything so significant to stop us from achieving that that would suggest that we shouldn't have a target with that kind of ambition?

PETER DERBYSHIRE: I think if we were to look at the entire picture, technologically, the possibility of reaching that ambition is well within our grasp. We have the technologies for a low-emissions or zero-emission energy system. There are areas where we do not have the technologies yet developed, and that's just where, of course, offsets might come into place. I'm thinking, of course, of air travel, sea travel. These are areas where we still have to develop these technologies. But if we were to look at the big things that are stopping us from achieving this, it is a combination of the overall investment and political will, but it is also an issue of infrastructure and skills at the moment.

One of the challenges that we have been exploring is the challenges of having not enough electrical engineers or systems engineers in order to undertake this task. In the past, we have offset this sort of shortage in engineering by bringing in people from overseas in order to study engineering here in Australia and take up work here. Of course, we have an entire planet that is now looking at needing to fix these challenges and everyone is going to be looking for these engineers. So this is one area where we need to really start putting some effort into not just offsetting and creating new renewable energy sources but in also making sure that we have the skills in order to implement these technologies.

The CHAIR: What do you say to the fact that currently nothing in this bill relates, or correlates, or provides any relationship to the fact that we have new fossil fuel projects in the pipeline that could literally run in parallel for the next 10, 20 years and keep being approved and we expand the life of coal-fired power plants?

KEN BALDWIN: I guess what you've got to look at here is the amount of carbon that we have left in the budget before we reach net zero in order to keep below 1.5 degrees. As I said before, it's this trajectory that we need to understand to net zero, the area under the curve of that trajectory in terms of the amount of carbon that we emit up until 2050. What we have to do is to understand in detail the exact way in which we're going to meet that goal. I think that if we're looking at what is needed for a 1.5 degrees scenario, that has to be articulated quite clearly, and, indeed, we need to ensure that we have the trajectory and the pathway mapped out so that there is certainty over this going forward.

The CHAIR: We've heard some scientific evidence that, realistically, 1.5 is probably not really within our achievement scope—that, based on the current policy settings, we're probably going to bust 1.5 and that the fight or the challenge now is to remain below two degrees. We heard some evidence around and have been provided some very helpful material about the carbon budget. The evidence that we've received about the carbon budget is that there's actually no scope left for any new coal or gas or expansion projects. Is that something that you would, in principle, agree with--where we're currently at in New South Wales and our trajectory?

KEN BALDWIN: Again it comes back to how much carbon we can afford to release into the atmosphere to keep below 1.5 degrees. That is the crucial thing. Clearly, we're going to emit between now and 2050, so the real issue is reducing the use of fossil fuels rather than simply the amount of fossil fuel operations that are available. There are rigorous, published academic studies that show we've got to leave at least 90 per cent but more like 95 per cent of the world's coal and oil reserves in the ground in order to keep within this carbon budget that will allow us to stay within 1.5 degrees. That means that if a company wants to open up a new gas field or a new coal mine it will be competing with many other companies all over the world for that last couple of per cent of the supply of fossil fuels that we can afford to have to keep within 1.5 degrees.

So the answer to this is not so much strangling supply, because we know that 95 per cent of the supply has got to stay in the ground. It is about strangling demand—in other words, reducing the need for fossil fuels by switching from fossil fuel power stations to renewable power stations, electrifying all the other sectors of the economy and using renewable electricity to power that. So it is all about strangling the demand for fossil fuels much more than it is about strangling the supply, which is abundant and clearly available, given that 95 per cent of the reserves have to stay in the ground.

The CHAIR: I have images now of strangling people. Looking through a policy lens on this, if we are strangling demand over here, but we're not even remotely threatening supply, do you think that there is some balance to be found in that? Is it not necessarily one or the other, or are you suggesting that you can do it through strangling one only?

KEN BALDWIN: Well, it depends on what the intervention is. If there's a market, then having an abundant supply means that if you close one option because it happens to fall within your jurisdiction then another option is going to pop up to replace it, given that there is this absolute abundance of supply around the world. It is not clear that it is even possible to strangle the supply side of things, but it is much easier to strangle the demand.

The CHAIR: Just on that, what do you think about the idea that New South Wales does not at all account for the emissions of the coal or the fossil fuels that it exports? Do you think that there is any policy recklessness or irresponsibility about that?

KEN BALDWIN: Not in the sense that the world needs energy right now, and denying the energy to these people means, inevitably, that they will freeze and they will lose the ability to produce food and other products. So yes, we do have a responsibility to be a supplier of energy for other people. But in the interests of climate change, our best path forward is to persuade them to convert to non-fossil fuel forms of energy over the long run and to convert our export industries to renewable energy export industries so that we can still trade our way in a zero carbon world. I think that is an incredibly important part of this.

This doesn't have to be done by, as I said, strangling the supply of coal, gas or anything else. It can simply be laid over the top of that by growing an entirely new export industry, and our studies at ANU show that the prospects for that doing that are enormous. We could simply supply the same amount of energy to the world as we do now, in the form of renewable electricity or hydrogen, and we could still participate in the production of steel and aluminium not by shipping vast amounts of ore overseas but by refining that onshore using renewable electricity and exporting the green metal products. So there is enormous opportunity that can be laid right over the top of our existing export profile that would then give us the opportunity not only to make money into the future but also to decarbonise the rest of the world, given our central role in those areas.

The CHAIR: Absolutely, we'll continue to supply to assist other countries and hopefully transition that. But my point was more should we be accounting for that at this point in time? Should it play a role in our own budget here in New South Wales, even though we are exporting the emissions offshore?

KEN BALDWIN: There are all sorts of arguments about how you should account for scope 3 emissions and whether you should count them in your own emissions profile or allow it to be counted in the jurisdiction in which it is actually generated. This is just my view, but I think that the way forward is to try and convert the demand for these fuels into renewable energy demand rather than block supply to these countries that need our energy forms in one way or another.

The CHAIR: In that sense, are you saying that we rarely could be and should be, and the target of getting to net zero by 2035 would put us in the race and the forefront to be that supplier?

KEN BALDWIN: Indeed. That is where our future export opportunities lie.

The Hon. JOHN RUDDICK: Chair, I'm in need of a little bit of global warming in this room. It feels a little bit cold at the moment. Gentlemen, you both agree with the conventional signs that, on at least one occasion in the last four billion years, the polar ice caps have grown so large that they have met at the equator?

KEN BALDWIN: I think it's quite clear that the past history of climate change, while it helps us understand the way that the earth's atmosphere and biosphere interact, does not relate to what is happening at the current time, where human intervention is causing a faster rate of CO2 release and other greenhouse gases into the atmosphere than we've ever seen through history. It's not a geological time scale we're talking at the moment; it's over decades.

The Hon. JOHN RUDDICK: I think it's mainstream science that the polar ice caps do move around a lot and that there have been times when we have lived in what they call Snowball Earth. It wasn't that long ago—about 70 million years ago—that there were forests in Antarctica, when the world was a lot hotter than it is now. The temperature has obviously moved around a lot.

KEN BALDWIN: But so have the continents.

The Hon. JOHN RUDDICK: There is a whole ton of factors, isn't there? That's my view. I think our understanding of what causes the atmospheric temperature—I think in 200 to 300 years we'll know a lot more than what we know now. Anyway, it has moved around a lot. We have been a Snowball Earth and we have been a tropical forest everywhere. Therefore, there are natural forces at play. You would agree with that?

KEN BALDWIN: Yes.

The Hon. JOHN RUDDICK: Good. If we can do all the political prescriptions that you are wanting the Parliament to do—you did seem very adamant in your testimony that we will stop the temperature rising by more than 1.5 degrees above your baseline, if we do everything you want. I would put it to you that that seems terribly simplistic to think that a little molecule, which consists of 400 bits per million, is the temperature control switch.

KEN BALDWIN: The science says that it is.

The Hon. JOHN RUDDICK: I know the majority of scientists do, but there have been lots of scientific debates in the past where a minority has been proven right with time. So it is possible that is the case here as well, isn't it? Religious faith says that we are not allowed to doubt things, but you are men of science—

The Hon. PETER PRIMROSE: Point of order: I'm very interested and I don't want to interfere but, if you ask a question, you can't answer it at the same time. I wonder if we can hear from the witness.

The CHAIR: That's a good point.

KEN BALDWIN: What I would say is that science does not work the way that the law or indeed parliamentary debate works. It doesn't give equal weight to either side. It works by consensus. The vast majority of consensus—thousands and thousands of scientists all working in climate science—sits on one side, with maybe a few people who disagree on the other side. There is no doubt in the scientific community that climate change is real, that it's man made and it's causing the majority of the global warming we are seeing today. It is not a case of adversarial debate; it is a case of going with a consensus view.

The Hon. JOHN RUDDICK: Would you agree that the greatest scientists of history were the ones that did represent a minority view and were vindicated with time? Everyone who has come up with something new has been against the establishment of vested interests, so it's possible that is now the case.

KEN BALDWIN: Sure, that's right.

The Hon. JOHN RUDDICK: It's possible that it's now the case.

KEN BALDWIN: Science does work in a dynamic way so you might find that somebody finds something that goes against the current consensus and they find more evidence, and other people test that evidence, and that evidence might agree with what has been found by these few scientists, and then the consensus starts to shift. People move from one side of the perspective to the new side. As the evidence builds and it becomes more compelling, more and more people might shift to that view and that then becomes the new consensus. It's a dynamic process. But that's not the situation at the moment. The vast majority of scientists are now convinced with all the available evidence that climate change is real. It's caused by human beings and it's responsible for the majority of the warming that we see today.

The Hon. JACQUI MUNRO: Thank you so much for coming today. My question was around methane emissions. You spoke about some of the technologies that might be available to reduce carbon emissions in the atmosphere. I was wondering does that technology exist for methane, or is it more that to reduce methane in the atmosphere we just have to stop it at the time it's emitted or before it's emitted?

KEN BALDWIN: You're talking about the fugitive emissions that you might get from mining or gas and oil production, for example?

The Hon. JACQUI MUNRO: For example. I mean, it could be any emissions of methane—obviously, agriculture.

KEN BALDWIN: The best place to stop them, as you say, is its source, where the density of the methane is at its highest. It's much easier to prevent it at source. Once it's dispersed into the atmosphere, it's much, much harder to draw down. Indeed, a lot of the technology that is being looked at at the moment is to draw down on the CO2 emissions, which is a larger fraction of the atmosphere, and the technology that's being used there will require enormous amounts of energy. It'll be very expensive but it's something we should keep on the backburner because it might actually drive down the cost curve as so many things have, like solar panels, and get there in the future to the point where it is cost competitive. But to answer your question about fugitive emissions in particular, it's much more efficient to remove those at source before they become distributed throughout the atmosphere.

The Hon. JACQUI MUNRO: In terms of sequestration, is there a good proportion of methane emissions that could be reduced through that mechanism, or not really? Obviously, we're talking about carbon offsets. Is there an equivalent for methane?

KEN BALDWIN: There's no pilot plan developed at the moment in that regard, that's true. The ones that have been developed have been aimed purely at extracting CO2 and then storing the CO2.

The Hon. JACQUI MUNRO: Just on exports, which you mentioned earlier, I was just wondering if you could expand on some of the export opportunities that exist that we can make the most of, hopefully?

KEN BALDWIN: Indeed. It's important to think about our position in the world in terms of the energy that we provide to the rest of the international economy. This is not just in forms of direct energy, potentially, but it's in terms of embedded energy. There are enormous opportunities for us to create renewable electricity, particularly in the vastly under-populated areas in the centre and north-west of Australia where the solar resource, and indeed also the wind resource, are at their largest. With the renewable electricity, we could potentially export that directly as electricity using high-voltage direct current undersea cables—so this is millions of volts moving the electricity through the cables thousands of kilometres. This is, for example, the project SunCable that has been proposed.

The other opportunity is to use the renewable electricity to do what we've all done in high school, which is to put two electrodes into a glass of water and produce hydrogen at one and oxygen at the other, to capture the hydrogen and then to use that as a form of stored energy. You can then burn the hydrogen and this can release the energy as heat. This can then provide thermal energy as indeed you have in a normal thermal power station and generate electricity that way. Alternatively, it could be used to run a fuel cell, which is the reverse of the electrolysis process, and power a vehicle, for example. Hydrogen is an energy vector. It is a form of stored energy in the same way that batteries and off-river pumped hydro are a form of stored energy, but it's transportable. That creates an enormous opportunity because it allows us to export our renewable energy sources—solar and wind, which we have in abundance in Australia—to other countries in the form of hydrogen as stored renewable energy.

There is also another opportunity for us to export embedded renewable energy, and that is to do what we've rarely done in the past, which is to value-add to our mineral export products. You can take hydrogen, for example. When you convert iron ore, which is iron oxide—so iron plus oxygen—the hydrogen grabs the oxygen from the iron oxide, forms water, which is the by-product, and leaves the iron behind. Presently, we do this in a blast furnace, where we use coal and the carbon grabs the oxygen, leaves the iron behind and produces carbon dioxide. But in a new direct reduction iron process using hydrogen, as this is called, you can convert iron ore into green iron using hydrogen plus renewable electricity to heat the furnace. This is a sweet spot in the generation pipeline, the value chain, for creating green steel because that's the single entry point for converting the green iron into green steel.

At that stage in the steel production process, most of the energy requirements occur in the production of the green iron at the beginning. Australia has, as I said before, enormous reserves of solar and wind that it can use to provide the energy for that first step in the steel production process. We can then export what is called hot briquetted iron, HBI, which is much easier to export than shiploads of dirt—which is essentially what we're doing at the moment. This can then be the input to steel industries around the world, which then do the high value-add to specific types of steel, which are used, for example, in automotive industries or in other forms of manufacturing. That's one example. Perhaps another, easier example is aluminium, which, again, simply requires a source of electricity to create the heat. If we use renewable electricity for that process, you don't even need the hydrogen in that case. You could simply convert aluminium production to green aluminium by using renewable electricity. So there are enormous opportunities for those metals in particular, but others as well, to use renewable electricity, generated by solar and wind, to embed that renewable energy into new products and make that our way of trading with the world.

The Hon. JACQUI MUNRO: Back on hydrogen storage, is exporting that through pipelines or shipping containers?

KEN BALDWIN: In some countries that are adjacent to the markets, pipelines are a prospect. For example, that is being talked about in Europe. Europe has an energy deficit that they need to meet. They're thinking of using hydrogen to meet that energy deficit. Countries in North Africa or the Middle East could potentially supply hydrogen through pipelines to Europe. Australia doesn't have that prospect. One way we would export hydrogen as hydrogen is to either liquefy it, which means you have to go down to very cold temperatures—minus 250 degrees Celsius—which is very energy-intensive but it can be done. A ship has been built. It has sailed from Australia to Japan with liquid hydrogen on board as part of this new export industry. Another way is to store the hydrogen in various materials, particularly in what are called liquid organic hydrogen carriers, which are carbon chains, where the hydrogen can be attached. That can be shipped and at the other end it can be processed—heated up, effectively—to release the hydrogen and then the liquid organic hydrogen carrier is taken back to the original hydrogen source. That's another way.

Then there are a number of ways in which you can convert the hydrogen. You can convert it to ammonia, for example. Ammonia is traded all over the world in ships. It is a known product. It has known value chains. It would be an easy step to turn the hydrogen into ammonia and then ship the ammonia overseas and either use the ammonia directly—for example, in Japan they're already burning it in coal-fired power stations to replace 20 per cent of the coal and, therefore, reduce their emissions—or you could burn it directly or use it to power shipping. For example, they're looking at converting diesel-engine ships that burn heavy fuel oil at the moment to burning ammonia. Ammonia, as another energy vector, is another prospect for hydrogen generation. There are many different ways in which this could be done, and time will tell as to which is the most economic and competitive.

The Hon. JACQUI MUNRO: I think they're very interesting prospects because we have neighbours like Indonesia, which is obviously a very large emitter, and there are opportunities there for us to export but also help other countries to reduce their emissions.

KEN BALDWIN: Indeed.

The CHAIR: Earlier we received some evidence—it was a view from a climate risk expert—that net zero by 2050 is a goal of political convenience and is probably kicking the ambition down the road too far, and that actually went as far as saying that if that's what we do we are possibly institutionalising failure because it seems to be a target that has come from the past and is not necessarily one that's being modified. What would you say to that?

KEN BALDWIN: Again, it all comes down to the trajectory—how you get there. If what you do is business as usual and suddenly in 2049 you turn everything off, you won't reach below 1.5 degrees, you won't reach below two degrees and you probably won't even reach below three degrees. That's why we're saying that if you shift the net zero target forward, then you have a much stronger chance of getting to below 1.5 degrees, because if you simply draw a straight line from where we are now to zero in 2035 you should be able to keep within 1.5 degrees, even with just a straight, linear trajectory. That's why it's important to not only have the end-point date, but also to specify what the trajectory is along the way, because it's the area under that curve that determines how much CO2 you emit into the atmosphere, and that determines how much temperature rise you end up with.

The Hon. MARK BUTTIGIEG: I don't want to ask political, socio-economic questions of scientific people, but I think it's important for the record. What is the scientific community's view of the fact that when we first raised this as a climate emergency back in 2007 and we had a really good opportunity to bring in an ETS at the time, the imperfect became the enemy of the good—to use a very clichéd phrase—and now we find ourselves almost a generation later having to play massive catch-up and again we are arguing about the imperfections of a bill that will set down a clear direction, in the Government's view, to take this seriously? I just want to know what, generally, the scientific community thinks of that because this is a political navigation, isn't it? Mr Ruddick's questions show how fraught this is. There is a constituency out there, albeit a minority, which is not sold on this. I just want to get your view on that.

KEN BALDWIN: Certainly, you don't have to be a scientist to recognise that the climate wars of the last 15 years or more have not served this country well, and they've not served the planet well. It is, I think, therefore even more imperative that we have a clear plan going forward at this point in time—where we are already very late in the trajectory, and we are already staring down the barrel of more than 1.5 degrees unless we act right now—to ensure that we understand exactly what this path forward looks like. I would commend to the Parliament having not only a target but a trajectory to get to that target that is consistent with a 1.5-degree scenario because, as we know, we are already at 1.1 degrees and things are looking pretty bad. If we allow it to go over 1.5 degrees,

things could be much, much worse and we might not be able to recover back to where we are now afterwards—if we can do things like offsets and direct air capture and things like that down the track. It's incredibly important that we keep on a trajectory that is rigorous, consistent and deep in order to get to a 1.5-degree future.

The Hon. MARK BUTTIGIEG: Do you have a view about the bill's efficacy in being able to facilitate that by the commission recommending just those sorts of trajectories?

KEN BALDWIN: It's a good thing that there is a commission to advise the Parliament because this can update the Parliament with the latest understanding, the latest knowledge, in order to meet a 1.5-degree goal in the long run. One-point-five degrees isn't enshrined in the legislation, but the end point is. It is an opportunity, then, for the commission to continue to keep the Government to account on the pathway to meeting that 1.5-degree goal.

The Hon. MARK BUTTIGIEG: The evidence we've heard from similar witnesses to yourself, who are experts in the field, is that we do need a more prescriptive trajectory and interim targets. It would be really incongruous, wouldn't it, if the commission came back and wasn't prescriptive at some point about those trajectories?

KEN BALDWIN: Absolutely agree. Having at the moment the 50 per cent by 2030 goal is a good start. But the commission might say, in a few years' time, "Our emissions are tracking to the point where that actually has to be ramped up. Otherwise, we won't get there." Subsequently to the 2030 goal, you might need to ramp up the trajectory beyond that in order to ensure that the area under the curve, your carbon budget, isn't blown out by the time you get to 2050.

The Hon. JACQUI MUNRO: Were you aware of the 70 per cent target reduction by 2035?

KEN BALDWIN: Yes.

The Hon. JACQUI MUNRO: Would you say that it's important to enshrine that in a piece of legislation, in addition to the 2030 target?

KEN BALDWIN: I think that it's important to have clear signalling going forward. How much detail you want on the trajectory, whether you want every point every year on the trajectory through to your end point, is another question. I think that is a movable feast. It will change because we will learn exactly how much emissions we had last year. We will then be able to judge whether we need to ramp up our future trajectory in order to offset emissions that we had not intended or hadn't planned for. If there is another severe bushfire season, where we create enormous amounts of greenhouse gas emissions, then we could find ourselves in a trajectory that has to be accelerated very rapidly.

The Hon. JACQUI MUNRO: So then we're looking at changing the 2030 target as well.

KEN BALDWIN: We might have to. But that's why the commission's there, I presume, in order to be able to give that sort of advice and to say, "We've already had a 50 per cent target. We had a 70 per cent ambition in 2035. We might have to modify that because, otherwise, we won't reach our goal."

The Hon. PETER PRIMROSE: I note that, in clause 14 (2) (b), the commission's specifically given the role of giving advice and making recommendations to the Minister about "interim targets for the reduction in net greenhouse gas emissions in New South Wales before 2030 and 2050".

The Hon. JACQUI MUNRO: The problem is, though, that the bill also states that you can't have a target that reaches net zero before 2050. So that's where the—

The Hon. PETER PRIMROSE: Yes. I think there's a misunderstanding there. We've got the bureaucrats coming next.

The Hon. MARK BUTTIGIEG: It's a very important point, actually, that the honourable member makes. As my colleague's pointed out on the record, we understand that's a drafting error.

The Hon. JACQUI MUNRO: Very interesting. Just quickly, I want to understand how people have responded to that 70 per cent reduction by 2035 that's been in regulation. Has that given industry a signal that investment in renewables is desirable?

KEN BALDWIN: I think, compared to the climate wars that we've had previously, absolutely. It's very important to industry to understand that there is a series of benchmarks that have to be met, going forward. It not only informs what they do; it reduces their cost of finance. As I said before, the risk premium associated with not understanding what the climate trajectory is looking like, going forward, is enormous. This is a killer when it comes to investing in new plant, in new infrastructure, whether it's renewables, whether it's green steel industries, whether it's new forms of cement, whether it's new forms of carrying out agriculture. Having certainty over policy

going forward is absolutely essential. And so having touchpoints every now and then—I'm not saying you have them every year, but maybe every five years in your trajectory to net zero—gives companies and financial institutions certainty for that investment that is needed going forward.

The CHAIR: We heard some evidence—I don't want to paraphrase it incorrectly, but it was along the lines of the bill as it currently is could result in, effectively, in five years' time, everybody comes together and we actually haven't achieved any big emissions reduction, because at this point in time we are relying on the commission giving advice and Parliament responding. I don't think that is too uncontroversial. Do you think that is sound or do you think that is perhaps a product of the fact that we have been in climate wars and we're generally just very happy if we see something written down that looks like we're heading in the right direction?

KEN BALDWIN: Yes. I mean, there is no room for hubris or complacency here. We need to understand, at every time point going forward to net zero, where we are in the trajectory and whether we are meeting the emissions goals. If you wait five years to assess it and then come back and say, "Well, we've not got there," I don't think that's the sort of granularity in the time steps that we need. You need to have an annual assessment of the progress—and that is presumably what the commission will do—in order to inform Parliament, which every now and then will adjust the trajectory. But waiting five years would be too long.

The CHAIR: If that is the system we're relying on, do you think that there should be some kind of mechanism in the bill so that there is a duty on the Government, whether it is in the parent legislation or the regulation, to actually respond positively and implement the steps the commission recommends to achieve the targets?

KEN BALDWIN: I think if you set up a commission like this, with the elements of expertise and independence that are proposed, and you don't listen to them then you are neglecting your duty. Absolutely, there should be a response throughout the trajectory to net zero from the Parliament to recommendations by the commission.

The CHAIR: Just thinking of how the instruments of government work, where do you think that that is most reasonably placed: the obligation on the Ministers that actually make these decisions, or the Parliament itself? What do you think is a best-placed system for us to get this job done?

KEN BALDWIN: Certainly the Parliament is the place where things are debated and discussed. Having extra information before the Parliament is a good thing. It would appear to me, as a non human and social scientist, that the Parliament is the right place to debate and discuss the outcomes of the commission and what is needed going forward.

PETER DERBYSHIRE: I think it is also an important aspect of this bill that the advice being provided by the commission is done so in a timely fashion and in a public fashion, because that also gives the public an opportunity to basically hold Parliament to account on whether or not this advice is being listened to, taken on board and acted upon.

The Hon. MARK BUTTIGIEG: And I suppose, just to supplement that question, the perception created that there's an expert group of people feeding in recommendations to the Government on targets, trajectory and methodology gives it more social licence in the community, rather than a bunch of politicians making assertions about what they think should happen.

KEN BALDWIN: I think independence is important, absolutely.

The Hon. JACQUI MUNRO: Just on that, one of the criticisms or the recommendations around the reporting requirements of the commission is that at the moment there aren't regular reporting time frames, and that would actually reduce, possibly, the effectiveness and the credibility of the organisation. Would you say that having consistent reports—say, every five years, for example—on upcoming targets would be desirable?

KEN BALDWIN: If you had a rolling system of doing that with a five-year window, I think that could work, yes.

The Hon. MARK BUTTIGIEG: Having said that, there's nothing in this bill which would foreclose the commission, in fact, recommending shorter time frames than five years?

KEN BALDWIN: Sure. But having a rolling five-year period, if you get my drift, where it moves forward a year and advances, looking at that sort of time interval, allows you to adjust on the basis of new knowledge on a more regular basis with a time horizon that's five years out at every point.

The CHAIR: In achieving this, do you think that laws that are setting up emissions reduction goals should be setting that as a primary object? At the moment the bill has a purpose, but it also has guiding principles around the commission that are quite complex and they intersect with lots of things. As experts operating in this

field, do you think that it would perhaps be more efficient or effective to have a primary object, which is to reduce emissions in accordance with those goals consistent with Paris and keeping to 1.5 degrees Celsius—like a paramount duty goal and then everything else has to work to achieve that?

PETER DERBYSHIRE: I think that makes it a very difficult bill in and of itself. The challenges around climate change and the wicked problem that it is around energy generation, agriculture, heavy industry—I think having one bill to try to cover everything makes it a very giant beast. I think having this bill, which focuses on "This is the targeted emissions reduction that we are putting in place", and then having a commission that then drives forward the "How do we get there and how are we achieving it?" is probably a better approach. But my esteemed colleague might have a different—

KEN BALDWIN: I think this is true. If you look at what is driving this, it's not just the fact that we need to do our proportional part in the world to reducing emissions so that we don't all cook. It's also to ensure an economic future that exists in a world which is habitable. If the only driver is the climate driver, then we might miss the export opportunities that arise from investing early, fast and deep into renewable energy industries and renewable energy embedded products that would then set us ahead of the curve in terms of our international trade. So there are going to be lots of drivers, not just the driver of doing the right thing by the planet but also the driver of being there early in order to take advantage of these economic opportunities that are going to arise because everybody in the rest of the world is going to need the sorts of products that Australia can create with renewables.

The Hon. MARK BUTTIGIEG: This is interesting evidence which I don't think I've picked up in previous witnesses. It was something that was used back when the original debate started, that is, even if we weren't sure about the science, which your testimony as well as many others' is that we are, in and of itself in terms of the economic growth prospects of the country, you would do this anyway, based on what you're saying.

KEN BALDWIN: Indeed. Not only that, but if we look at what is happening, for example, in Europe, where just very recently they've introduced carbon border adjustment mechanisms whereby there is an assessment of the amount of embedded carbon in a given product and this carbon is taxed at a rate determined by the EU—if we do not adjust our export opportunities to take account of these adjustment mechanisms on entry into a given jurisdiction, we might find that our products don't have a market or the market is reduced simply because the price impost at the border on the product is prohibitive.

The CHAIR: There was quite strong and clear evidence from the Climate Energy Finance representative that if we don't get on with this we're really going to miss out, and that we should be as ambitious as we can be because it's there ready for the take and we'll be left behind big-time if we're not.

KEN BALDWIN: Indeed. We're heavily involved at my university in helping to develop the policy for certifying green hydrogen to ensure for the customer that the carbon content of the hydrogen they receive is not only rigorous but includes every part of the value chain, all the way from sourcing the water, from sourcing the electricity right the way through to the transport and storage processes. These types of regulations, we are developing right now, and they will be imposed on us unless we are participants very early on in the piece in designing those regulations. Fortunately, in the case of hydrogen, we are.

The CHAIR: You must be doing a good job, because I understand Andrew Forrest has divested all his coal and is completely focused on this particular sector. This has been incredibly helpful. We are very grateful for your time and your presence here. We are extra grateful because we know how short the period of time has been to participate and respond, so thank you. I don't think you took any questions on notice, which means you don't get any homework from us. Thank you very much for being here today.

KEN BALDWIN: Thank you. Best wishes with your endeavours.

The CHAIR: Before you go, are there any final comments that you wanted to make? Sorry, I didn't afford that opportunity.

KEN BALDWIN: I think we've covered pretty much everything we wanted to pass on. Thank you very much.

The CHAIR: Thank you for your time and evidence.

(The witnesses withdrew.)

Ms DANIJELA KARAC, Executive Director Strategic Services, Department of Planning and Environment, affirmed and examined

Mr STEPHEN HARTLEY, Executive Director Resilience and Urban Sustainability, Department of Planning and Environment, affirmed and examined

Mr TONY CHAPPEL, Chief Executive Officer, Environment Protection Authority, Department of Planning and Environment, sworn and examined

Mr MATTHEW RILEY, Director Climate and Atmospheric, Science Economics and Insights, Department of Planning and Environment, affirmed and examined

The CHAIR: Welcome back. Mr Chappel, would you like to make an opening statement?

TONY CHAPPEL: Chair, thank you for the invitation to appear before the Committee to represent the NSW Environment Protection Authority, which I will refer to as the EPA. We're pleased to be able to assist the Committee with its inquiry. I would like to acknowledge the traditional owners of the land on which we meet today, the Gadigal people of the Eora nation, and thank them for their custodianship of country since deep time that has continued through to today and is ongoing. I acknowledge their enduring connection to the land, sky and waters of this place. I extend my respect to Elders past, present and emerging, and extend that respect to any Aboriginal or Torres Strait Islander people here today or watching the broadcast. As the primary environmental regulator for New South Wales, the EPA plays a critical role in protecting the environment and the community from the threat of climate change, and we have a statutory duty to do so. We take this duty seriously and are actively strengthening our regulatory approaches to ensure that we're supporting industries, businesses and the community to decarbonise and deal with current climate change challenges, as well as those we'll face in the future.

The EPA released its first climate change policy and action plan in January this year, setting out an approach about how the EPA will regulate the causes and consequences of climate change in New South Wales, and support decarbonisation and the transformation and growth of a low-carbon economy here in New South Wales. We're the first State in Australia to have such a robust regulatory framework for climate change. It has been the culmination of a great deal of work and extensive consultation that will build on and complement the delivery of the plethora of climate change policies, programs and initiatives being delivered across the New South Wales and Australian governments. While only 10 months into implementation, we are well progressed in the actions we've committed to, building foundations to ensure that we're regulating greenhouse gases like any other pollutant.

Some of the priority actions we're taking include developing a clear framework for how climate change is considered and addressed in the planning system, including assessment requirements and guidelines to inform decision-making and consent requirements; developing a protection-of-the-environment policy to reduce embodied emissions and increase the use of recycled materials in infrastructure projects; establishing Aboriginal, youth and industry advisory groups to guide the EPA's regulatory response to climate change; partnering with organisations, councils, businesses and civil society on initiatives to reduce greenhouse gas emissions, including specific programs to enable a circular economy and drive net zero emissions from organic waste; and collaborating with universities and researchers to test and trial innovations in the measurement and management of greenhouse gases, including fugitive methane emissions.

The EPA strongly supports the Climate Change (Net Zero Future) Bill 2023. It will greatly assist us by enshrining emissions reduction targets for New South Wales and establishing an independent Net Zero Commission. Having legislated targets is a clear and critical signal to industry and to the community that the Government is serious about achieving its emission reduction targets, consistent with the Paris Agreement. Enshrining these targets in legislation will give greater weight to the EPA's regulatory efforts, especially as we develop emission reduction targets and enforceable emission limits for the key industry sectors we regulate. We value the role that the net zero commission will play, and we intend to partner extensively with them. We anticipate they'll bring transparent scientific rigour, evidence-based perspectives and innovative ideas that can provide pragmatic and evidence-based advice to guide New South Wales to decarbonise in line with our targets and support our transition to a low-carbon and climate-resilient economy.

Importantly, we hope their independence will help us to ensure that we're not thinking too narrowly and that we are on track, aware and awake to all opportunities. Perhaps most importantly, the commission can highlight issues which can't be addressed by a single government agency, like the EPA, or a single Minister's portfolio. That's where we expect an independent commission will be well placed to recommend areas for whole-of-government approaches that may be needed to address some of these matters most efficiently and

effectively. We welcome the establishment of the commission and look forward to partnering with them. We look forward to the targets being enshrined in legislation to provide greater certainty to the New South Wales community and give greater weight to our work.

The CHAIR: If it was an unintended consequence of the passing of this bill that your 2035 current target of 70 per cent reduction in emissions on 2005 levels was no longer a policy or an imperative of the State, would you see that as a problem?

TONY CHAPPEL: From the EPA specifically?

The CHAIR: Yes.

TONY CHAPPEL: Well, the courts have made it clear that the EPA has obligations to develop evidence-based targets for the sectors we regulate based on the science, and we can't delegate that to another part of government. If you look at our documents, they currently reflect the targets that I think you're referencing. Those targets may adjust as we get better evidence, and I'm sure the commission will be a useful source of that.

The CHAIR: If conflicting evidence arose between the commission and the EPA's current policy, how do you see you would resolve that?

TONY CHAPPEL: I don't really envisage a case of conflicting evidence.

The CHAIR: Or conflicting ambition, then?

TONY CHAPPEL: When you think about the targets in the bill, I think the global scientific community has been very clear that, globally, we need to reduce emissions by at least half by 2030, and as quickly as possible to zero. The steps between here and there need to weigh multiple factors, and I actually think the commission will be very valuable in helping unpack opportunities to potentially go further and faster or other opportunities that may become evident through time and with that multidisciplinary approach that they'll take. I think that it will only help inform the EPA's approach.

The CHAIR: So you're saying EPA will maintain its 2035 target regardless of what happens with this bill?

TONY CHAPPEL: I'm not quite saying that, Chair. What I'm saying is the current targets the EPA is working to, which are Government targets as well, are enshrined in our action plan. We've said that we will set out the initial actions we'll take over the three years; the first year is nearly up. What we're also intending to do once the bill is passed, in whatever form that is, is review those actions and that action plan.

The CHAIR: If this bill passed in three weeks, will you likely revise your materials and exclude that 2035 target?

TONY CHAPPEL: We'd have to consider the basis for any change, and I think the commission would be a critical source of advice in that regard. Whether 70 per cent, 75 per cent or 80 per cent, and whether it's 35 or 40, there are multiple factors to be weighed there, including justice considerations, obviously. The objective for the EPA, consistent with our Act and consistent with the objectives in this bill, is to ensure the sustainable development of the State, which means we're trying to decarbonise. We are not interested in deindustrialising, so we need to weigh all of those factors and the best advice available at the time. Most importantly, I think our analysis would be informed by the work we're doing with our 3,000 or so largest current emitters. We've surveyed them to get a sense of their own plans to reduce emissions down to zero over time and how they're expanding their own resilience and so on. Other developments, as well, need to be considered.

The CHAIR: Has the existing Net Zero Emissions and Clean Economy Board been useful? Has that informed your agency?

TONY CHAPPEL: Yes, absolutely, and I think what's different here and more valuable is the very public signals of enshrining targets in legislation and also the very public approach of reporting to the Parliament the rigour and efficacy of efforts to achieve relevant targets.

The Hon. MARK BUTTIGIEG: Just as a follow-up, what's the impression you're getting back from the survey that you've done of the major emitters? Is the level of seriousness where it needs to be yet, or is there still some encouragement to happen for industry to move to where we need it to be, given the markers we're laying down?

TONY CHAPPEL: It's definitely the latter. I would say there's a wide diversity of level of engagement across industry in New South Wales in different sectors, both on mitigation and their own resilience and adaptation. There's a lot of work to do there—connecting them with best practice, making sure learnings are shared

and opportunities are harnessed. I think the very public enshrining of these targets will be of itself a very useful step in helping industry understand the necessary priority here.

The CHAIR: Do you think that that factor overrides, or is greater than, what's existing at the moment? I suppose what I'm referring to really is that according to the New South Wales Government's Net Zero Emissions Dashboard, things are looking quite promising. Particularly in relation to reaching the 70 per cent by 2035 target, there's a report—on that dashboard, there's some visibility. Do you think that it's more important to have a legislatively enshrined target than it is to carry on with the current plan and the trajectory of getting to 70 per cent by 2035?

TONY CHAPPEL: I don't see them as inconsistent. In terms of the data and what it shows, I might invite my colleague Mr Riley to touch on it.

MATTHEW RILEY: You're right, Chair, the dashboard does show that we're on track to achieve a reduction of 70 per cent by 2035. It's important to note that we update those projections annually and many things can change year to year and sector to sector. Having said that, we do think that we are on track to achieve that. We are on track also to achieve our 2030 target quite well. Just relating to points that Mr Chappel made, there are multiple epochs or times that you could choose to set targets for—2035 or 2040. I think it's important to ensure that all of the modelling and all of the projections are publicly available and that all of the experts are able to have their input, and the public have their input, into what we believe is achievable—technologically achievable and also achievable through policy and program. That's one thing we're looking forward to from the Net Zero Commission—that vehicle to be able to have that open conversation about what the targets are and what they could be.

The CHAIR: There's just a couple of things on that. We heard some evidence just earlier from a climate risk expert who stated that if we were to legislate a net zero by 2050 we would be institutionalising failure, and that we've come up with that target through political inaction in the past or whatever, and that's a target we've adapted for all sorts of convenience. I'm just concerned at this point that what this bill potentially presents is actually not something as good as what we've already got. Perhaps the enshrining of a public process of a commission that's going to help us is good, but do we honestly, and in earnest, need legislation to do that? We could just have a body that does it.

The EPA is very public in its processes and has public consultation processes. Whilst I suspect the commission will be an improvement on the current system, the concern is are we getting the balance right in terms of losing that midterm interim target legislated, having 2050 enshrined in law—given the evidence we've got—and given the so-called benefit, is this something we could do without legislation? I suppose we're looking for some kind of confidence, in this Committee, that this is a no-regrets piece of legislation for the State of New South Wales, with all of our ambition, to do the very thing that we need to do, which is to maintain the habitability of the environment for all of us.

MATTHEW RILEY: I don't believe the intent of the legislation is to ensure that our targets of net zero are achieved on 30 June 2050. It's to ensure that we are on track to achieve net zero by that date at the latest. I think the value of the Net Zero Commission is that it can provide advice on the trajectory and can provide further advice on the targets and interim targets and it provides a mechanism to be very open and transparent about that.

The CHAIR: Sorry to interrupt. I accept that. Except for some drafting errors that we've been advised about potentially looking like a bit of a ceiling as opposed to a floor, but it is more the notion that we can do all of those things now. What does this do that actually does genuinely provide the State with a better climate plan than what we currently have right now and what we're currently progressing apparently on? For example, there is actually nothing in the bill that says if the Net Zero Commission is incredibly public and it's good, and it's very ambitious, and it's expert, and it does the things it does—there's nothing in there to say, and the Minister must implement the findings, for example. Would it be better if we had a duty, or something that assists all of you doing your work listening to the commission to make this happen?

MATTHEW RILEY: Perhaps that's best for my colleagues who operate under their regulatory environments to comment.

TONY CHAPPEL: The bill as it stands is a product of a whole-of-government Cabinet process. So I don't think we can really speak to that. But when the EPA board discussed some of these issues, Chris Turney, who is vice-chancellor at UTS and a climate scientist, was very emphatic that having public enshrined targets in legislation when he's looked around the world is one of the key enablers for much deeper collaboration and the necessary sense of urgency for business to take it particularly seriously.

The CHAIR: Just on that, Mr Chappel, I don't think anybody is disputing that. I think we think so, but the concern is if we don't legislate a regretful target, or not the best target. More to the point, the target that apparently we have got now and that we are working towards—is there something inconsistent with that?

The Hon. MARK BUTTIGIEG: Can I just on that follow up, Chair, because there seems to be a bit of creational ambiguity here, if I could put it that way. The current regulatory target which is in place is not going to be overwritten by this legislation, is it? The two are not mutually inconsistent? You have got the commission then potentially recommending better targets on a quicker trajectory. That's the whole point, isn't it? That's my understanding of the bill.

TONY CHAPPEL: That's certainly my understanding and that then I think the Government would return to Parliament with any further targets, and those would be matters for Parliament.

The Hon. PETER PRIMROSE: But how does that work? The first thing is to confirm—it's been raised many times—the existing regulation is not going to be wiped out if this bill passed. That could be a decision by the government at some point to seek to wipe it out, but it is not automatically wiped out if this becomes an Act. That is correct?

TONY CHAPPEL: I think we'd probably need to take it on notice.

The CHAIR: I think the issue is—and we will investigate this perhaps with some legal advice. But the argument put to us is that even though the regulation would continue—the Energy and Utilities Administration Regulation would continue—the effect of that 2035 target would mean nothing, because the board that ensures that target is reported and it is only through the board that will no longer exist. I think that's the—

The Hon. PETER PRIMROSE: Well, can I just persist? We've got witnesses here from the department, presumably I don't want to talk about the ephemera; I would like to talk about the bill that is before us, just for a couple of minutes, then we can go back to talking about other things. If I can just talk about the bill as it is presented to us, can you tell me—because it's been raised many times—does the existing regulation and the target that is contained in there, continue to exist if this is passed? Can anyone answer that?

STEPHEN HARTLEY: I would like to be able to. I haven't been involved in the drafting of the bill. I've read the bill.

The Hon. JACQUI MUNRO: Just quickly, has anyone on this panel been involved in the drafting of the bill?

DANIJELA KARAC: No.

STEPHEN HARTLEY: No.

TONY CHAPPEL: Not directly. We give advice into the process, and then the Cabinet makes a decision. So these are really matters for Cabinet.

The CHAIR: For sure, and we will. We will follow up and get the advice. My understanding is that—

The Hon. PETER PRIMROSE: Who do we have to call to find out so we can discuss the bill? I'm happy to talk about climate change and targets and that till the cows come home. The truth is that we keep going around in circles because we—particularly in clause 9 (3). We've got:

> Despite subsection (2), the regulations must not set a specific interim target to reduce net greenhouse gas emissions in New South Wales by a particular date occurring before 30 June 2050.

That doesn't seem particularly flexible to me.

TONY CHAPPEL: No. Certainly, my understanding is that the Government's intention is that any additional targets would come back to Parliament for Parliament to ultimately agree. That's how I've understood that provision.

The Hon. PETER PRIMROSE: So that's perfectly in accord, then—

The Hon. JACQUI MUNRO: You should speak to your colleagues, Peter.

The Hon. PETER PRIMROSE: I'm very happy to, but I also recognise the importance of this. This has been referred to us, and I would just like to get some answers before I then go back and have chats to anyone.

The CHAIR: I think the biggest issue is what's your understanding of what will happen to the current net zero emissions board when this legislation is enacted?

TONY CHAPPEL: I think they'll be replaced by the commission.

The CHAIR: Right now the 70 per cent reduction of 2005 emissions levels by 2035 is contingent on that board exercising its functions, because it must consider that emissions reduction target. In effect, that target would cease to exist when that board does, and there's nothing in the current system that would carry that regulation to the new commission. I think that's the issue that we—

The Hon. MARK BUTTIGIEG: Can I ask a question related to that, Chair?

The CHAIR: We can get advice from your colleagues.

The Hon. JACQUI MUNRO: I actually think there are two issues.

The CHAIR: Yes.

The Hon. JACQUI MUNRO: I think that is one issue. Then there is also the direct issue.

The Hon. PETER PRIMROSE: Then there's clause 14 (2) (b) about the ability of the commission to recommend interim targets.

The Hon. JACQUI MUNRO: Yes.

The CHAIR: Yes, that's right.

The Hon. MARK BUTTIGIEG: But can I ask a question related to that, Chair? Does the EPA have confidence that the commission would judge whether or not that was a credible target? Presumably, if it was, the recommendation would be that that target gets stuck to.

TONY CHAPPEL: I think that's right. From the point of view of effective regulation and independent evidence-based regulation, having an independent evidence-based commission providing advice of that kind would be very helpful.

The Hon. JACQUI MUNRO: Could I just go on from that with the commission? Do any of you have an idea of how the commissioners would be appointed, what the intention is for the membership to be? We heard earlier today that it may be a fully independent panel, essentially, of commissioners who don't have any particular ties to industry, for example, or it could be a commission that is actually made up of people who do have specific ties to, for example, industry or interested parties and they're kind of representative bodies. Was there an understanding of the composition of the commission from this panel?

TONY CHAPPEL: The skills base, I think, is pretty clearly set out there in subsection (3). Obviously, the chief scientist is also an ex officio member, according to subsection (1), but the specific individuals to be appointed would be a matter for Cabinet.

The Hon. JACQUI MUNRO: Just on that, is there an understanding about the process by way of a time line—when this commission would be set up, when it would be required to report for the first time?

DANIJELA KARAC: I think our colleagues indicated that we weren't involved in the drafting of the bill, so we're not—

The Hon. JACQUI MUNRO: There's no understanding of that?

DANIJELA KARAC: No understanding of the time line.

TONY CHAPPEL: I'm sure we can take that one on notice.

STEPHEN HARTLEY: Yes.

DANIJELA KARAC: Yes.

The Hon. JACQUI MUNRO: That would be helpful. Thank you.

The CHAIR: Mr Riley, perhaps this is one for you. Does the fossil fuel sector pose a problem, based on what's currently happening and what's in the pipeline to happen, in terms of our 50 per cent reduction goal in 2030? I know with the climate action plan—and we're looking at those sectorial pathways, but is it posing any problem at the moment?

MATTHEW RILEY: No, I don't believe so. Because they cover the whole economy and all of the sectors and they are very detailed, our projections indicate that we're actually on track for a 56 per cent reduction in emissions by 2030. That is the latest projections. Of course, we update them annually, and, over the course of a year, many things can change. We need to consider what will happen with, perhaps, Eraring and the impact of any decisions regarding Eraring on our projections. Also, I will note, currently, in our projections, we are projecting that Vales Point Power Station will cease operations by 2029. That was the information available to

the market when we did our projections last year. For the next update to projections, due at the end of this year, we will include Vales Point operating through to 2033, which is the announced closure date of Vales Point.

I use that just to illustrate the point that, because we're looking at the entire economy, things can change within individual sectors over the course of a year. We try and take a very measured approach. We look at getting as much information as we can from individual participants within New South Wales, whether they are coal mines, whether they are gas fields or whether they are power generators, and we try to get as much intelligence on what their actual operating environments are like and are likely to be over time. We rely heavily on the National Greenhouse and Energy Reporting Scheme to get individual emissions intensities from each mine and from each power station.

What we also rely on is, in sectors where we don't have as sophisticated or detailed levels of information, we do tend to take a little bit more of a measured approach, and I will use the example of electric vehicles. Our projections for electrical vehicle uptake are lower than what we're seeing in the market right now, in this year. Original projections for the penetration of electric vehicles are running behind in a number of sectors quite significantly compared to actual sales. So, each year, we might see some increases in our projected emissions from a particular sector, often offset by decreases in other sectors. That is the value of having the modelling occur over the entire State and over every sector of the State. But, in answer to the question, we do not believe that there's a significant risk to the 50 per cent target in 2030. We think we're actually on track to achieve that.

The CHAIR: Is that not a case to be more ambitious? I think John's purchase of his electric vehicle last week has contributed. Sorry, it was the moment. It's 5:00 p.m.

The Hon. MARK BUTTIGIEG: John, what are you doing, mate? What's gotten into you?

The CHAIR: Surely, if our ambition and our mandate is to reduce emissions as fast and responsibly as we can, if we are looking at achieving a 50 per cent reduction and we could, in fact, get to a 56 per cent reduction by 2030, is that where you pivot to? Or—and I think this highlights the point of net zero by 2050—if we are cruising along going, "That's okay. They are our climate targets. We don't have to put any more downward pressure on certain industries. We can keep approving new coal and new gas through our new assessment requirements by just letting them look at them and report on them rather than actually doing what the young people's climate strikes are suggesting we should be doing, which is to reach zero emissions by 2030"—that's the young people telling us that—how do we factor the 2030 goal of 50 per cent if we're okay to just keep cruising?

MATTHEW RILEY: I think that what is in front of us in the bill here is a good start. It includes the legislation of the target, which hasn't occurred in New South Wales before, but it also includes mechanisms to change that. And I might refer back—there has been some discussion about clause 9 (3). My understanding of the intent of clause 9 (3) is it's so that targets would not be set in regulation; they would actually be set in the Act. They would come to Parliament for Parliament to set. Using your words, Chair, if we are cruising, then we now have a mechanism—

The CHAIR: Electric vehicle cruising, of course.

MATTHEW RILEY: If we are in a position where we do find ourselves cruising, we now have a clear mechanism to be able to provide advice from the public sector to the Net Zero Commission, who will also seek their own independent advice. And then they would be able to inform and advise Parliament on whether there needed to be changes to the legislation.

The Hon. MARK BUTTIGIEG: Can I ask a related question? It is pertinent. In seven years' time we are on track to reduce to 56 per cent. Presumably, what this bill does with the commission keeping a track of that is to say, "Well, we need to lean in heavier if we are going to get to net zero in the 20 years after that," or "We are on track if we do X, Y, Z," or "We are not on track. We have a problem here." That's the whole point, isn't it?

MATTHEW RILEY: That is correct.

The CHAIR: I just want to take you up on that, though. I am still at the first base here. How does this improve things? For example, the State-set policy goal objectives that we would get to net zero by 2050 and we would get to 50 per cent by 2030—it appeared from independent advice from within the Government that somehow the former Government was advised that we are on track to meet 70 per cent reduction by 2035 and we announced that and we report on that and that is what I am reading in the dashboard and that is what we've got. How does this bill, genuinely, on the ground, change and improve things and does not set us back because it does not have that 2035 target in it at this point, just a very basic premise?

MATTHEW RILEY: It legislates the targets and it provides mechanisms to clearly adjust those targets when and where required based on the best scientific advice coming from multiple sources and reviewed by the commission.

The Hon. JACQUI MUNRO: But why wouldn't the recommendation be to legislate the 70 per cent target by 2035?

MATTHEW RILEY: That's a matter for Cabinet.

The Hon. MARK BUTTIGIEG: In essence, the answer to that question from the Chair is that it's actually illegal for us not to reach net zero by 2050 and, therefore, that will enforce the discipline. That's the answer, isn't it? This is a legal instrument mandating that the Government must enforce a target by 2050. That is the efficacy of having a target.

The CHAIR: On that question, I don't see any mechanism in there that actually does that. I see that there is a goal, but I don't see any requirement, any consequence or any duty. The Minister will not be going to jail, for example.

The Hon. MARK BUTTIGIEG: Chair, you will crucify us politically if we don't reach that target, I would suggest.

The CHAIR: We probably will. I won't be around, but someone will. Do you see anything in this bill that has a consequence of not achieving the targets at this point? Anyone? No. Can I ask then—

The Hon. MARK BUTTIGIEG: Chair, on that question, does it not then give the Government some legal purchase over noncompliance of actors in the renewable space—in other words, in the emitting space? If the targets are not on track to be met, then the Government would have the legal authority to make sure that they are.

TONY CHAPPEL: It certainly helps, in that regard. The mere fact of legislating targets is a very strong signal and it certainly provides additional legitimacy and efficacy out there and social licence, if you will, to the EPA's requirements to regulate sectors to abate their emissions.

The Hon. MARK BUTTIGIEG: The evidence is that this bill matters and it's a significant fillip to getting us to those targets. I just want to make that clear. That is the evidence we are hearing.

The Hon. JACQUI MUNRO: But we make the targets.

The CHAIR: Mr Chappel, on that, if I am one of those hard-to-abate sectors and I, after this bill passes unamended, literally look to you and say, "Hey, I am in the net zero by 2050 group. I just don't have the incentive that I currently do because I am in that hard category already. You don't have a 2035 obligation. It's not written in the law. Even in the policy, it's going to evaporate a bit because we have a 2050." I would suggest to you that that is unhelpful. Would you agree?

TONY CHAPPEL: Framed that particular way, Chair, I can see how that could be unhelpful. I think that the important thing to recognise, though, is that this bill is not the only architecture to support the transformation of the economy here to a thriving low-carbon State. The hard-to-abate sectors are the subject of much engagement already and will be ongoingly. Ultimately, every sector needs to reduce their emissions and there are lots of incentives to do that. There are also going to be requirements to do that.

The CHAIR: Can I just take you to the resilient New South Wales adaptation principle? It was put to us by some legal experts that this is the time and the place to actually enshrine a loss and damage principle. From what I could understand, that was pointing to the IPCC's adaptation work and looking at hard edges and hard boundaries and adaptation, kind of, impossibility. Do you think we should be looking at enshrining loss and damage, in that it provides us the leverage to be doing more around planned retreats and so on?

TONY CHAPPEL: Certainly, giving as many signals as possible to decision-makers, who have to ultimately make merits-based decisions under the planning legislation, is helpful.

STEPHEN HARTLEY: I was going to add to that. The NSW Reconstruction Authority has now been established and that reconstruction authority, as part of its remit, is required to prepare a State Disaster Mitigation Plan and regional disaster adaptation plans, which include a number of considerations but resilience is one of the things that, whilst I'm not with the Reconstruction Authority, we have been discussing at length with the NSW Reconstruction Authority. I would imagine that the legislation and the functions of the commission, from what I've seen of the Reconstruction Authority's work, work together in a very complementary way. I can't comment whether it's better to duplicate or not functions across legislation, but I know that the State Disaster Mitigation Plan, which is due by 14 December this year, will, one year within the first year of operation of the RA, go and provide a framework that we haven't had before in terms of resilience, planned retreat, buybacks—those types of mechanisms within the planning system.

The CHAIR: Just to finish on that, I suppose what I'm getting at is at the moment the way the adaptation objective is defined in this proposed law is to make a more resilient New South Wales. I think what the legal

premise being presented to us is that that's a great ambition, that's very important, but without recognising loss and damage because it's actually a completely different thing to resilience alone. Would that be potentially something helpful? It was put to us that we should be looking at that.

STEPHEN HARTLEY: Again, I suppose from not being within the Reconstruction Authority but I know that they do take advantage of existing policy frameworks. NSW Treasury, I believe, has a requirement to effectively value the risks of climate change. Infrastructure NSW also in their State Infrastructure Strategy recognise and call out the risk of climate change but accounting for the cost of climate change, and I am aware and have seen some of that information. I know it is very useful from at least a land use planning sense in terms of considering the future cost or risk posed by climate change in land use planning decisions. Again, I can't comment on the specifics of what's in the bill, but I know that information and those policy frameworks exist and are utilised in other decision-making frameworks.

The Hon. JACQUI MUNRO: Mr Riley, I want to ask about the calculation of our emissions and where we're looking at achieving our targets. You mentioned that you hadn't yet included Vales Point in your calculations. Have you included Eraring and the extension of Eraring in your calculations?

MATTHEW RILEY: For the current projections, no. We will update the projections for Vales Point when they're released later this year. Once there is a firm decision and a firm direction on what may happen with Eraring, then we will adopt that into the protections. But, currently, within the protections that are available, Eraring is still scheduled to cease in 2025.

The Hon. JACQUI MUNRO: What kind of signal are you looking for to include Eraring?

MATTHEW RILEY: Firm plans for ongoing operations of Eraring with announcements to the network operator, to AEMO.

The Hon. JACQUI MUNRO: How long does it take you to recalculate after you get new information like this?

MATTHEW RILEY: We've committed to updating annually. It's too large a task to update across all of the sectors in a much more rapid tempo than that. So that's what we'll continue to do—we'll update annually and we'll provide that information to the commission to assist them. Generally, for the electricity sector, because it can be quite a dynamic sector, we seek several streams of modelling to inform us on what we believe the future state of the market will look like. We rely heavily on AEMO's modelling but also internal modelling for the Government.

The Hon. JACQUI MUNRO: What's your annual timetable at the moment? When is your next report coming out?

MATTHEW RILEY: December this year, we're aiming for.

The Hon. JACQUI MUNRO: Mr Chappel, I want to ask about whether methane emissions were included in any of the strategies that you're employing at the moment?

TONY CHAPPEL: Very much so. They are something we're paying a lot of attention to. We've spent the past six months commissioning various experts to provide trials of different monitoring technologies. We've done airborne monitoring and ground-based monitoring and so on through the CSIRO and a number of universities. We're looking to develop a more comprehensive real-time monitoring network of major installations and major precincts, such as the coalfields but also parts of Sydney, where emissions are already significant in the way they impact people. It was surprising for me to learn from the CSIRO that in the evening in Western Sydney in winter, the atmospheric CO2 equivalent goes from about 400 parts per million to over 800 parts per million when there's an inversion. That's potentially a serious health impact that needs to be considered, because once atmospheric greenhouse gas concentrations reach about 1,000 parts per million your cognitive function reduces by half.

The Hon. JACQUI MUNRO: Very serious. I'm sorry, Ms Karac. Forgive my ignorance about your role, but I was hoping to understand what you do.

DANIJELA KARAC: I'm in the planning part of the Department of Planning and Environment—State planning policies—so the Sustainable Buildings SEPP, which was recently released and commenced on 1 October, and residential and non-residential sustainability standards. We also set renewable energy policy.

The Hon. JACQUI MUNRO: When you say you set renewable energy policy—

DANIJELA KARAC: We have a State environmental planning policy, which outlines various matters that need to be considered for a development application for resource and mining projects, and also guidance.

The CHAIR: Ms Karac, I understand the EPA works in assisting with assessment guidelines. How is that work happening? We heard evidence last week about—I think a mining proponent had "draft" written in response to submissions and the IPC was saying, "We don't really know what we're meant to be doing when we're considering new coal projects." I think it was the Glencore project that we were getting advice about. If you look at the strategic statement on coal right now, all government settings are to facilitate new coal development. I'm wondering how that sits with the assessment guidelines that you've been provided and how that's working?

DANIJELA KARAC: My understanding is that the EPA is leading the preparation of those guidelines, with our input, and I know that the team is working really closely with the EPA in their development. In terms of coal projects coming before the department for assessment, we would assess them in line with the State environmental planning policy. There are checks and balances in there—we can impose conditions, for instance—to make sure that they don't exceed certain levels of emissions and that, if they do, they would have to offset them. We're going as far now as imposing conditions of that nature, where we're more closely measuring and setting standards for greenhouse gas emissions.

The CHAIR: I remember the Land and Environment Court trying to do that before we got a carbon tax, and then we got a carbon tax and the Land and Environment Court said, "We won't need that anymore", and then we got rid of the carbon tax. So we are still ready to go, are we, to actually impost offset requirements for coal companies? It seems like it has been a long, long time—sorry, that was a narrative. On that, it's still about not actually having a framework that suggests that not going ahead with these new projects is the better outcome for emissions reduction. Is that correct?

DANIJELA KARAC: It's a Government decision in terms of whether it would facilitate new projects coming on board. The role of the planning system is to make sure that we put in place appropriate checks and balances during the assessment process so that we're considering projects on their merit and looking at the social, environmental and economic impacts, and weighing those up to make a decision on the projects.

The CHAIR: Mr Chappel, if you had a new Climate Change (Net Zero Future) Bill—a future Act—in place, would your guidelines that you're leading on make strong suggestions that we have an emissions net zero goal by 2050 and therefore it's okay to just carry on emitting? Like, how is this going to work in real terms?

TONY CHAPPEL: The bill obviously sets a 2030 target, which I think is the more pertinent one in the near term for planning or assessment of potential projects in the planning system. The work we are doing currently with the planning department and other colleagues in government is to produce a very clear, transparent and rigorous guideline that the community and industry can see sets out how the full emissions profile of any potential activity in any sector needs to be considered and needs to demonstrate that it contributes to the objectives of the 2030 and 2050 targets. I think the other relevance of a bill like this one, though, Chair, is that the policy tools that you alluded to, such as the *Strategic statement on coal, exploration and mining* and others—it would be timely to update those given the number of developments that have occurred in this space, including the bill, the role of the EPA being codified by the court and some of the other developments.

The CHAIR: Do you think that, actually, a better policy and law-making pathway might have been for the Government to actually do that work first, and then look at how all of the settings feed into realistic climate targets that are commensurate with the goal of keeping the climate to 1.5 degrees—although some science has told us that that's not possible? I am just concerned about that. If we are suggesting that the strategic statement on coal right now is the thing that's driving up new coal approvals, which we know results in massive scope 1 and scope 2 emissions—let alone the scope 3 emissions that we don't count—then we are going to set a target that would accommodate that and then perhaps redress those, rather than the other way around.

TONY CHAPPEL: We are not necessarily setting targets that accommodate those. Certainly our understanding is, at the time—

The CHAIR: According to Mr Riley we possibly are.

TONY CHAPPEL: I think it depends on the particular project. We need to monitor and verify those emissions and ensure that mitigation measures are being taken, not just for new projects, but over time the sector will need to play its part. I think, in terms of the order of doing things, those are probably best—

The CHAIR: Just on that, how do you address the sector pathway inequities? We've got coal operators right now in New South Wales that have approvals to carry on like there is no tomorrow until 2045. Obviously we are looking at hard-to-abate sectors or whatever, but how are we going to find the equity here in terms of who is doing the heaviest lifting? How do we navigate that?

TONY CHAPPEL: In the absence of economy-wide signals in the pricing sense that you alluded to earlier, we need to work in a very granular level with each sector to identify the most cost-effective opportunities for abatement and ensure those are being captured. That includes the mining sector.

MATTHEW RILEY: Chair, it is also important to note that this bill won't operate in isolation. There is the Commonwealth Safeguard Mechanism. So those mines that are currently operating—the vast majority of them are captured under the thresholds of the Safeguard Mechanism and do have obligations to reduce their emissions with their declining baselines, as set by the Commonwealth. So it's not as if these miners will not be asked to reduce their emissions through other mechanisms as well.

The CHAIR: Thinking about the Commonwealth system and the kind of ratchet mechanism that's in there, do you think that leaving it all just to the commission's advice—would it be better if this framework actually, in the law, provided for that ratchet mechanism, in a more mechanical sense, rather than just the advice of the commission and at this point in time no obligation to implement that? I accept that it would be unwise, perhaps, maybe, but there is no actual reciprocal obligation to take that advice.

MATTHEW RILEY: I'd suggest, Chair, it's very hard for us to make legislation in the Commonwealth Parliament. It's very challenging to work in this space. What I think we have here is an opportunity to provide advice that's open and transparent and a mechanism to be able to share that advice with the Commonwealth and also, hopefully, influence the Commonwealth's target setting.

The CHAIR: I meant more in this legislation for our own targets. But I hear what you're saying.

MATTHEW RILEY: I think I was just trying to make the point that the Commonwealth will do what the Commonwealth does. They've set their 43 per cent target and their safeguard mechanism. Our target is stronger than that. We have mechanisms that will be set through regulations, subsequent to this bill, that will help us to achieve those results.

TONY CHAPPEL: I was just going to add, Chair, that I think the intent of the bill, as we read it, is to enable that sort of ratchet of ambition as these opportunities become available. I think the key point is whether it should be Parliament making those new determinations of targets or some other method, some other mechanism.

The CHAIR: I feel like we're reading a lot into something. It's a bit frustrating when you're charged with the responsibility of having a law and then we're told that we're just meant to—something like the Constitution. The best parts are the part not in it, the implied freedoms.

The Hon. JACQUI MUNRO: I was just wanting to make sure I understood. Mr Riley, are you in the environment part of the department?

MATTHEW RILEY: Yes.

The Hon. JACQUI MUNRO: Thank you. I think I've probably asked all the questions that I was interested in.

The CHAIR: Ms Karac, if this bill passes, do you see that we would be prudent to then be looking at a State environmental planning policy that affects across the whole of the planning decisions that are made in terms of strategic plans, in terms of local planning instruments? We don't have regional ones anymore, do we?

DANIJELA KARAC: We do. Not the—

The CHAIR: We have strategies, yes. Do you think that that would be a policy framework to translate what's in here into your massive sector?

DANIJELA KARAC: It certainly would, Chair, even now with the establishment of the Reconstruction Authority. Their preparation of the State disaster mitigation plan will go some way in helping the planning part of the department prepare strategic plans, which will then filter through into State environmental planning policies and then local plans as well. We look to the Net Zero Plan quite a lot when we prepare policies—in particular, the Sustainable Buildings SEPP. I think it's been already mentioned by my colleagues here. It is really useful to have it enshrined in legislation because, when we go out and talk to industry and our stakeholders, having something to point to, that's enshrined in legislation, is really helpful.

We often get a lot of pushback on the basis of additional costs to meet those additional standards. I think the legislation would go someway in helping us going forward in setting higher standards, for instance in the sustainable buildings sector, which we are required to review in three years' time. We would also look to expand the scope of the standards we currently have in place, and I think that the bill would go some way in helping us on that front as well.

In terms of our other State plans, we work closely with the EPA already in terms of the mining and resourcing sector, and we would look to other types of development to see whether there are any gaps that we would need to fill on the basis of the commission's advice. I think it would be really beneficial. With the strategic plan—the regional and district plans—I think the commission's advice on that would be useful also, because it is very beneficial to look at places at different scales. There are different actions that can be done and implemented at different scales from regional district to local to then site-specific measures.

The CHAIR: It is a bit uncanny that we need law, and targets enshrined in law, to get some influence and impact, yet we can just have a strategic statement on something and we are rolling through and there is so much buy-in from particular sectors. Anyway, I understand the pain and pressure of trying to achieve things. I am about to do a Mr Primrose here, which is a very good thing. Is there anything in the guiding principles that you think could be enhanced or that hasn't been thought about or that we may have missed in there? From your day-to-day work across the many sectors, is there anything that you think we could do to improve those?

TONY CHAPPEL: I think, Chair, we have all fed into these, and I think we'd all be fairly comfortable with their level of comprehensiveness.

The CHAIR: What about one thing that was put to me about the members of the commission—sorry, two things. There was one thing that was put around actual ecological expertise, just because one of the major impacts of climate will be ecosystem trouble and breakdown, and actually there is nothing in there at the moment that provides for the commission members to have particular skills or qualifications in relation to ecosystems and ecosystem services.

TONY CHAPPEL: It is certainly a relevant factor. I know that Taronga Zoo is doing a project now with Microsoft, for example, to map parts of the Hawkesbury catchment looking ahead as the climate changes to where the breeding grounds of turtles and other things will move to. It may be that, for example, an area suitable today for a boat ramp doesn't impact anything, but it's the most suitable habitat when you look out ahead to likely changes. I think that is a useful set of skills.

The CHAIR: The other one was about the level and degree of First Nations input and engagement, and whether there was some suggestion that a member of the commission should be an identified Aboriginal person with that skill and expertise. Do you have any view on that? I know the EPA is going really heavy on this sector, which I am sure is proving to be very beneficial.

TONY CHAPPEL: I just would say there is a lot of wisdom from deep time—culture that went through multiple ice ages over tens of thousands of years and managed to live sustainably. I think there is a lot of knowledge there about water systems and ecosystems and the fire cycle and other elements that are very useful. That is what is informing the EPA's approach. We are trying to integrate as much traditional ecological knowledge and partnership as we can.

The CHAIR: I thank you very much for your time and your participation here. Thank you for being available and giving what you have.

(The witnesses withdrew.)

The Committee adjourned at 17:30.