REPORT ON PROCEEDINGS BEFORE

PUBLIC WORKS COMMITTEE

INQUIRY INTO THE COSTS FOR REMEDIATION OF SITES CONTAINING COAL ASH REPOSITORIES

CORRECTED

At Macquarie Room, Parliament House, Sydney on Tuesday 1 September 2020

The Committee met at 9:30.

PRESENT

The Hon. Daniel Mookhey (Chair)

The Hon. Mark Banasiak (Deputy Chair)
Ms Abigail Boyd
The Hon. Wes Fang
The Hon. Trevor Khan
The Hon. Shayne Mallard
The Hon. Tara Moriarty

The CHAIR: Welcome to the first public hearing of the Public Works Committee inquiry into the costs for remediation of sites containing coal ash repositories. The inquiry is examining a number of aspects relating to the remediation of contaminated sites at various power stations across New South Wales. Before I commence, I would like to acknowledge the Gadigal people, who are the traditional custodians of this land. I would also like to pay respect to the Elders past, present and emerging of the Eora nation, and extend that respect to other Aboriginals present. Today is the first of three hearings we plan to hold for this inquiry. We will hear from industry representatives, environmental organisations and community groups.

Before we commence I would like to make some brief comments about the procedures for today's hearing. While Parliament House is closed to the public at this stage, today's hearing is a public hearing and is being broadcast live via the Parliament's website. A transcript of today's evidence will be placed on the Committee's website when it becomes available. I would also like to remind media representatives that you take responsibility for what you publish about the Committee's proceedings. The guidelines for the broadcast of proceedings are available from the secretariat. Today we will have some participants attending this hearing via videoconference. While technology has facilitated much of the Committee's work over this pandemic period, this is still new territory for upper House inquiries. I would like to ask and thank everybody for their patience and forbearance through any technical difficulties we may encounter today.

All witnesses have a right to procedural fairness according to the procedural fairness resolution adopted by the House in 2018. There may be some questions that a witness could only answer if they had more time or with certain documents to hand. In these circumstances, witnesses are advised that they can take a question on notice and provide an answer within 21 days. I remind everyone here today that Committee hearings are not intended to provide a forum for people to make adverse reflections about others under the protection of parliamentary privilege. I therefore request that witnesses focus on the issues raised by the inquiry terms of reference and avoid naming individuals unnecessarily. Witnesses are advised that any messages should be delivered to the Committee members through the Committee staff. To aid the audibility of the hearing, may I remind both Committee members and witnesses to speak into the microphones. Finally, could everyone please turn their mobile phones to silent for the duration of the hearing.

JUSTIN FLOOD, Executive Manager Sustainability, Delta Electricity, affirmed and examined

GREG EVERETT, Managing Director, Delta Electricity, affirmed and examined

GREG JARVIS, Executive General Manager, Energy Supply and Operations, Origin Energy Limited, affirmed and examined

GLENN ORGIAS, General Manager Commercial Transactions, Origin Energy Limited, affirmed and examined

STEVE RIENIETS, Group General Manager Operations, Integrated Energy, AGL Macquarie Pty Limited, before the Committee via videoconference, sworn and examined

SUSAN ROSE, Group Counsel, Environment, Safety and Approvals, AGL Macquarie Pty Limited, sworn and examined

The CHAIR: I now welcome our first witnesses. Before I go on, may I remind you that if you lose your internet connection and are disconnected from the hearing, please rejoin the hearing by using the same link as provided by the Committee secretariat. I would now like to invite representatives to make a short opening statement if they so wish. Mr Jarvis, would you like to start?

Mr JARVIS: Yes, thank you. Thank you for the opportunity to appear at this hearing. About Origin—Origin is the largest energy retailer and one of Australia's largest generators, gas suppliers and renewable energy companies. In New South Wales we have a generation portfolio comprising coal, gas, hydro and solar. About Eraring—Eraring is Australia's largest coal-fired power station with a lower emissions intensity than brown coal-fired plants. It is one of the most flexible coal-fired generators in the National Energy Market [NEM]. As the NEM transitions to more intermittent renewable generation, Eraring will play a very important role in providing stability and reliability to New South Wales and the NEM. To reduce greenhouse gas emissions and transition to a decarbonised future, Origin has committed to reducing emissions from Eraring and to exit coal-fired power stations by 2032.

About fly-ash at Eraring—Eraring's fly-ash is either sold to customers in the industrial and construction sectors or is deposited in the Eraring ash dam. In the financial year 2020 Origin implemented new arrangements to increase Eraring's ash re-use rate to 40 per cent from 35 per cent. Our aim this year is to increase that to over 50 per cent. Origin has a mandated 80 per cent ash recycling target. To achieve this goal Origin is seeking improvements in the regulatory regimes that apply to fly-ash re-use. About recycling—Origin is working with its partners to develop new products and markets for fly-ash. An example is a recent arrangement we entered into with BFG Daracon to build a new $6 million classifier at Eraring, which will provide processed fly-ash for concrete and ground remediation.

Changes we would like to see—changes to the regulatory regime will help us maximise the re-use of ash. Origin advocates for several key changes. Transport for NSW require a higher quality of fly-ash for use in roads and construction than the national standards. This limits the re-use of ash in New South Wales. Origin advocates for a performance-based standard rather than a criteria-based standard. Origin also advocates for greater transparency and surety around regulatory approval for time frames for the re-use of ash in the market. That is all I have got to say. Thank you.

The CHAIR: Thank you, Mr Jarvis. Do you mind—either yourself or a person who might be in a position to assist you—emailing your opening statement through to the secretariat, just to make Hansard's job a little bit easier?

Mr JARVIS: No problem at all.

The Hon. TREVOR KHAN: But if there is a copy here—

The CHAIR: Yes. Also, would you mind tabling it so we can get it copied and have it with Committee members?

Mr JARVIS: Not a problem at all.

The CHAIR: Thank you so much. Mr Flood?

Mr FLOOD: Thank you for the invitation to appear before the Committee. Delta Electricity is the owner and operator of Vales Point Power Station. Delta's detailed submission addresses some of the Committee's questions regarding ash dam regulations, dam safety, environmental risks and the potential liability to Delta and the State, assuming current policy and regulatory settings. The Committee may have noted that the Tallawarra ash

dam adjacent to Lake Illawarra was decommissioned in the 1990s and whilst still the subject of ongoing monitoring, no environmental issues of note have arisen since that time. The Tallawarra setting is not dissimilar to Vales Point, being located on the shores of a significant coastal lake. Delta has reviewed various submissions to the inquiry. There are calls for the application of an ash dam levy, lining of existing ash dams, and the application of limits on discharges for ash dams in line with the Australian and New Zealand Environment and Conservation Council [ANZECC] & Agriculture and Resource Management Council of Australia and New Zealand [ARMCANZ] (2000) water quality guidelines. In quickly addressing some of these calls, the creation of an additional tax has the effect of increasing cost for electricity consumers. A more effective solution would be to remove obstacles to the re-use of ash in road and civil construction applications.

Developing an incentive for the industry re-use of ash would be a better economic tool to increase the beneficial re-use of ash. The lining of ash dams is impractical as it would be impossible to remove the ash from existing placement dams without causing significant environmental and economic harm in the process. The ANZECC guidelines have not been designed for direct application in activities such as discharge consents. They are intended to be applied to the receiving waters as a whole, such as Lake Macquarie, and not the discharges into them. Delta's submission, which includes the rigorous regime of ash dam structural inspection and maintenance, should assure the Committee that the ash dam operation is safe and meets regulatory standards.

The CHAIR: Would you also mind tabling your statement and, if possible, emailing it to the secretariat?

Mr FLOOD: Sure.

Mr RIENIETS: Thank you for the invitation to appear before this inquiry. My name is Steve Rieniets. I am the AGL group operations manager for operations. Unfortunately, I am stuck in Victoria for the time being but am pleased that my colleague Susan Rose, AGL's Group Counsel for Environment, Safety & Approvals, can join the Committee in person. I will make a brief opening statement before we do our best to answer your questions. Following our submission, I will spare members a lengthy introduction to AGL except to say that AGL was established in the decade following the inaugural New South Wales Parliament and was founded in 1837. Our history is as Australia's oldest operating energy company. We currently supply gas, electricity and telecommunications to almost four million customers' accounts across Australia.

As the Group General Manager of Operations I can assure you that the safety of our people, the safety of the communities in which we operate, and the safety of the environment are our number one priority. We are very proud of the contribution we make to New South Wales. We have coal, gas, wind and solar generation scattered as far west as Broken Hill and Silverton to the south-west of Sydney and north-west in the Hunter Valley. We are the largest generator in New South Wales. We are also Australia's largest carbon emitter whilst also being the largest private investor in renewable energy. Since 2014 we have owned and operated the Bayswater Power Station and the Liddell Power Station. These operations include a complex water, coal, rail and ash infrastructure system that operate to produce around 23,000 gigawatt hours annually, or approximately 35 per cent of New South Wales' electricity supply.

Prior to 2014 Bayswater and Liddell stations were owned and operated by Macquarie Generation, a statutory corporation owned by the New South Wales Government. The combined operations of the Bayswater and Liddell power stations known today as AGL Macquarie is located between Singleton and Muswellbrook in the Upper Hunter Valley, New South Wales, and employs approximately 600 people directly. Both Bayswater and Liddell have been a major source of direct and indirect employment to the region over the past 40 years and currently contributes more than $1.35 billion annually to the regional economy. As I am sure the honourable Committee members are aware, we have announced the closure of the Liddell Power Station in 2023, giving seven years notice of this decision. We have also announced that Bayswater will close at the end of its life in 2035.

We are constantly investing in our environmental performance and have committed approximately $40 million in expenditure over the next five years to further environmental improvement programs and projects. We are committed to closing and rehabilitating the Liddell and Bayswater in accordance with all regulatory requirements. We also want to be a trusted partner for our communities to meet and exceed their rising expectations and to be making decisions that are informed by that understanding. Our publicly available 2017 Rehabilitation Report summarises our understanding of the challenges associated with closing, repurposing and rehabilitating large power generation sites. This report outlines how AGL is approaching the challenges associated with rehabilitating large long-life assets and infrastructure. The report is designed to provide an overview of the processes, strategies and time lines that are considered in the development and rehabilitation plans, including the need for periodic review, stakeholder consultation and the consideration of community impact.

This work has already commenced and the New South Wales Department of Planning, Industry and Environment is currently reviewing an application supporting enabling works to decouple shared infrastructure between Liddell and Bayswater, ensuring that Bayswater's has continued operation following Liddell's retirement. A further application is currently under assessment to deliver a project that will deliver a range of important water and coal ash related improvements at Bayswater. It includes augmentation of the Bayswater ash dam to provide additional ash storage capacity to ensure Bayswater can continue to operate until its planned end of life and deliver further water management improvements within the Bayswater ash dam. And secondly, increasing coal ash harvesting up to 1 million tonnes per annum during periods of peak demand to enable increased beneficial use of coal ash by third parties. We hope that this will enable more coal ash to be available to third-party operators for beneficial re-use in a range of applications including as a component for the manufacture of cement.

Finally, while the terms of the Macquarie Generation 2014 sale and purchase agreement remain confidential, we are pleased to inform the Committee that any potential contamination impacts associated with the Ravensworth void, Bayswater ash dam and Liddell ash dam are well understood. AGL Macquarie does not currently expect the New South Wales Government to incur any material expenditure as a result of the rehabilitation by AGL Macquarie of the Ravensworth void, Bayswater ash dam and Liddell ash dam once they reach the end of their operational lives. Thank you again for the opportunity to address the Committee today. We look forward to answering your questions.

The CHAIR: Thank you, Mr Rieniets. Do you mind also emailing your statement through? If there is a representative in the room with a copy of it, tabling it for committee members' use would be most helpful. Thank you all for your opening statements. The Committee has resolved not to formally allocate time to Committee members for questioning.

Ms ABIGAIL BOYD: Thank you very much for coming today. We really appreciate the chance to talk to you about your submissions. If I could start with AGL, because that final statement was very interesting in relation to there being no perceived liability for the State in relation to the ash dams, what about the rest of the power station site?

Ms ROSE: I will refer that question to Mr Rieniets.

Mr RIENIETS: So the purchase and sales agreement is confidential in nature. There is a pre-existing contamination clause in that agreement, and we are happy to share that outside the meeting. But, in general, AGL is responsible for remediation and rehabilitation of the site following purchase, save for that clause in the sales and purchase agreement.

Ms ABIGAIL BOYD: Have you made attempts to quantify the contamination on the rest of the power station sites at Liddell and Bayswater in order to understand the State's liability for cleaning up that contamination?

Mr RIENIETS: We are working through those studies of what our rehabilitation plans look like. That, obviously, needs to ensure what the current condition is. Progressively, we are working through those and they will be shared once we have further consultation of what those plans look like.

The Hon. SHAYNE MALLARD: Are you referring to coal ash contamination?

Ms ABIGAIL BOYD: I am referring to the entire power site.

The Hon. SHAYNE MALLARD: Is that coal ash?

Ms ABIGAIL BOYD: The coal ash sits on the entire site that was sold as part of the privatisation. In terms of the site as a whole, what contamination issues have you identified already?

Mr RIENIETS: That will be covered in the rehabilitation report we have provided.

Ms ABIGAIL BOYD: Have you located PFAS contamination at either of those power station sites?

Mr RIENIETS: That will be covered in our reports we have submitted.

Ms ABIGAIL BOYD: What is the extent of asbestos contamination at your power station sites?

Mr RIENIETS: Once again, the controlled asbestos dumps on the sites—that is also covered as part of our rehabilitation report.

Ms ABIGAIL BOYD: Is that rehabilitation report publicly available?

Ms ROSE: Yes, it is.

Mr RIENIETS: Yes.

Ms ABIGAIL BOYD: Just to clarify, there is then reference to contamination in that report in relation to PFAS and asbestos?

Mr RIENIETS: That is my understanding, yes.

Ms ABIGAIL BOYD: Are you able to confirm, Ms Rose?

Ms ROSE: What I would also say is, as part of the sales and purchase agreement, baseline studies were produced. I understand those documents have previously been provided. That is my understanding.

Ms ABIGAIL BOYD: To clarify for the Committee's benefit, we have an agreement between AGL and the State at the time that these power stations were sold where the State would be liable for a certain level of pre-existing contamination. You are saying that there is contamination on the site outside of the ash dam. So when you make the statement in your submission that you do not believe the State to have any significant liabilities in relation to the ash dam contamination, you are not, then, talking about the State's liabilities in relation to the broader site contamination?

Mr RIENIETS: Sorry, was that directed to myself?

The Hon. TREVOR KHAN: Point of order: The terms of references state:

> 1. That the Public Works Committee inquire into and report on the costs for remediation of coal ash repositories in New South Wales, and in particular …

Then points (a), (b), (c), (d), (e) and (f) repeatedly refer to coal ash. I suppose we can go into everything under the sun, but the terms of reference are created for a purpose. The witnesses plainly have come here, on the basis of their submissions, to talk about coal ash. So far we seem to be skirting the subject of the inquiry. Chair, I invite you to bring the member back to the purpose of the hearing.

Ms ABIGAIL BOYD: To the point of order: The reason that this inquiry came to the Public Works Committee is that it involves significant liability for the State of over $10 million. We are investigating how much of the liability the State will be responsible for, and we are trying to quantify those currently unquantified contingent liabilities in the budget. This is very much relevant to the terms of reference and to the "any other related matters".

The Hon. TREVOR KHAN: Further to the point of order: Whatever this member's view is of why the Committee was established is irrelevant. The Committee is bound by the terms of reference. The witnesses are entitled, under the procedural fairness resolution, to have this Committee deal with the matter in the terms of reference, not what is in the mind of this witness as to the purpose that the member asserts is behind the establishment of the inquiry.

Ms ABIGAIL BOYD: Further to the point of order: Of course it is relevant; otherwise we would not be allowed to have this as part of the Public Works Committee. The Public Works Committee terms of reference are limited to things that cost a certain amount of money.

The Hon. WES FANG: I have heard enough on the point of order. I understood Ms Abigail Boyd was simply clarifying the witness's statement as to whether there are contingent liabilities and pressing the witness specifically on what they were talking about. If it stays within that bound, it is fine. As is always the case, so long as there is some reasonable connection to the terms of reference, broadly speaking, it is fine. I take the Hon. Trevor Khan's point and I understand his desire to make this point early in questioning. We will proceed on that basis.

Ms ABIGAIL BOYD: To clarify the statement in your submission that you do not envisage significant liability for the State in relation to the ash dams, can we take from that statement that you have not excluded that the State will be liable under the privatisation documents in relation to other types of contamination on the power sites?

Mr RIENIETS: The rehabilitation report is publicly available but does not quantify the contamination. We are still working through that.

Ms ABIGAIL BOYD: So that statement really does not help us in working out whether the State will be liable under the privatisation contracts in relation to presale contamination at Liddell and Bayswater.

Mr RIENIETS: All I can say is there is a clause in that contract which quite clearly says the State has obligations for pre-contamination at that site.

Ms ABIGAIL BOYD: Thank you. I think we can move on for now.

The CHAIR: Are you going to ask the other witnesses the same questions?

Ms ABIGAIL BOYD: No, go ahead.

The CHAIR: I was going to ask the other companies represented here a similar question to that which Ms Abigail Boyd asked of AGL: Have you quantified the coal ash liability that the State might have in respect to your sites—equally as to whether that qualification that the liability is only for coal ash and not the other forms of contamination as well. If you have any comment on that, it would be useful.

Mr FLOOD: We have put in our submission that we do not believe that there will be a liability for the State in terms of the Vales Point ash dam. The capping requirements should be largely done by the end of Vales Point's life. The cost of capping—there is a fee charged for people to deposit excavated natural material onto the site for the capping purpose, so we expect that to be cost neutral. There is the ongoing environmental monitoring costs for the ash dam, with the groundwater. We have a proposal for a solar farm on the already rehabilitated ponds 1 to 3 at Vales Point and we believe the lease fees will cover that more than adequately.

The CHAIR: So your point is that there is contamination, but it is capped or effectively contained?

Mr FLOOD: I was looking at the liability. The liability involves capping to stop the dust.

The CHAIR: Yes, and you have undertaken that capping?

Mr FLOOD: We have started it. We are doing progressive capping of the ash dam.

The CHAIR: That is at your cost, not at the State's?

Mr FLOOD: Currently, yes.

The CHAIR: And the sales agreement for Vales Point does not create any residual or otherwise ability for you to claim that from the State?

Mr FLOOD: There is a hand-back deed so that—

The CHAIR: At the end?

Mr FLOOD: —when Vales Point shuts there is an option either for Delta to put it back to the State or the State to call it back from Delta.

The CHAIR: So the site—the entire station, not just that site per se—is the hand-back deed.

Mr FLOOD: Yes, the entire site.

Ms ABIGAIL BOYD: Could I just clarify on that point, in your submission you talk about the cap and covering of the ash instead of actually recycling it into lined dams. I understand that you view that as being all that is required for rehabilitation. If the regulations were to change to reflect recent scientific understanding and research in other countries to require a more robust rehabilitation and remediation of the site, would you then be faced with significant liabilities that you would be putting some part of that onto the State?

Mr FLOOD: I think that would put significant costs on the business and we would have to assess it if they came forward.

Ms ABIGAIL BOYD: Would some of that be claimable against the New South Wales Government under the sales contracts?

Mr EVERETT: Look, I do not think we should be speculating about what future regulation may or may not be. I also am not sure about what you are saying is the recent scientific evidence. The evidence that we can see is that the existing practice is far more widespread than in a few instances where there have been particular geotechnical or other slime-based problems.

Mr FLOOD: There is one instance in the United States where one state has required its ash dams to be removed and lined because of significant failures but that was partly from regulatory failures as well as operator failures. That is very specific.

Ms ABIGAIL BOYD: Do you believe Australia then has international best practice guidelines for ash dams?

Mr FLOOD: Yes, because we have built our ash dams properly and they are regulated under the Dams Safety Act—forgive me if I have the old Act name—as well as the NSW Environment Protection Authority [EPA] under the Environment Protection Licences [EPL]—

Ms ABIGAIL BOYD: Will we be hearing from—

The Hon. TREVOR KHAN: Sorry, can I just ask that when the witness is answering the question that they be allowed to finish before the next question is asked? I am sure the chairman has some sympathy with this proposition.

The CHAIR: I see it from both sides. Yes, I think in the general practice and in this particular matter it is fine to provide the witness with—

Ms ABIGAIL BOYD: Apologies, in my excitement I did not realise I was doing that.

The CHAIR: Mr Flood, I think you were concluding your answer.

Mr FLOOD: I think I am done.

The CHAIR: Can I follow up on that, though? Was it your choice to cap—as in, Delta's choice—or is that what you were told to do?

Mr FLOOD: That is what we have been doing since Vales Point was commissioned and we have adopted that. Part of the requirement of the hand-back deed was to maintain the existing commercial ash dam management.

The CHAIR: To be clear, it was not upon the point of you acquiring the asset that you chose this policy; it was a continuation of the policy that was being embarked upon?

Mr FLOOD: That is right.

The CHAIR: And to the same standard?

Mr FLOOD: Yes.

The CHAIR: And at this point there are no plans for you to change that approach?

Mr FLOOD: No.

Ms ABIGAIL BOYD: And is the capping layer the same depth across all of the ponds?

Mr FLOOD: Half a meter is the current standard but I believe the old the older ponds might have had a slightly lower capping depth. The additional baseline study identified that. I think it was on average around 400 millimetres.

The CHAIR: I invite the other representatives to comment on the same question, which was basically whether or not you have quantified any liability on the State for coal ash and whether or not there are any other liabilities that you have identified for the State that are not coal ash.

Mr JARVIS: Look, we have put money aside in our accounts for rehabilitation of the dam. We are still working through exactly what that means and we are hopeful we can still recycle a lot of this ash in the dam, but there is a lot more study to go. We are still capping but you have to be careful about how much you cap because then it stops you recycling that ash later if it becomes economic.

The CHAIR: Just to unpack that, Mr Jarvis, when you said you are "working through", when did that work start and when do you anticipate it will finish?

Mr JARVIS: That work has been going on for a number of years. Again, if circumstances change where we can recycle this ash then we need to change our plans. But we are working through that.

The CHAIR: When you say you have put money aside in your accounts, when did you do that?

Mr JARVIS: We increased the provision this year again and that is in our accounts.

The CHAIR: Is that recoverable against the State?

Mr JARVIS: No.

The CHAIR: Is it intended, therefore, that in your pricing filings that you would be making to the energy operators—which, to be fair, is very complicated itself—is the intention that that is recoverable through that mechanism? Or do you not know yet?

Mr JARVIS: I do not think so. I will take that on notice.

The CHAIR: Sure. Basically, is the cost of this going to be passed on to consumers of electricity?

Mr JARVIS: No.

The CHAIR: Why not?

Mr JARVIS: I would love to but it comes at a cost. We have to get an economic return for that power station but we will manage that through the overall costs.

The CHAIR: Your view is that it would not be in your commercial interest to try to recover it or that you have no legal power to recover it?

Mr JARVIS: We have to recover it from the market and the market will provide that that is a competitive market so we will do our best.

The Hon. SHAYNE MALLARD: Excuse my ignorance, but 101 of this area, talking about dams, I read about slurry. Can you go through what is going on in terms of the coal ash? Is it slurry going into a designated dam site that is dried out and then capped, is that what we are talking about? You just have to assume that we do not know what you are talking about.

Mr FLOOD: Each operation is different. At Vales Point it is a lean phase slurry, where the ash is mixed with water that is then transported up to the ash dam from the power station. The ash beaches out—settles out—and then the water is returned, picks some more ash and it is a closed loop.

The Hon. SHAYNE MALLARD: So the dam as such is dried out material when it is finished?

Mr FLOOD: So half the dam is ash, which then dries out and is capped, and the end of the dam is water.

The Hon. SHAYNE MALLARD: Is that the same method that all the firms use?

Mr JARVIS: Yes, it is the same Eraring, which is a dry slurry.

The Hon. SHAYNE MALLARD: My second question is: Mr Flood, in your opening statement you talked about the regulatory problems that you would like to see reformed to create a stronger market for coal ash. Did you want to expand upon what the regulatory hurdles are in New South Wales?

Mr FLOOD: It is more creating a demand and incentive for the re-use of ash, rather than regulatory hurdles as such. At the moment we are the producer of ash and we cannot force the market take it. We have identified potential uses as an aggregate, as a bound application in concrete cement. It is well established and so that market is fairly saturated so we have tried to expand it in road and civil applications. Having an incentive, I suppose, for the road and civil markets to take ash in preference to quarried material would be of benefit.

The Hon. SHAYNE MALLARD: Mr Jarvis, you referred to in your submission to misalignment of road standards between Australian standards and New South Wales and Roads and Maritime Services [RMS], and the regulations governing the maximum amount of coal ash used in roads. Do you want to expand upon those points?

Mr JARVIS: Yes. The New South Wales standard is different from the national standard. If we could go to the national standard that would potentially increase the usage for roads in New South Wales, which is, again, creating demand for ash.

The Hon. SHAYNE MALLARD: What is the difference between the two standards?

Mr ORGIAS: Specifically it is around some of the specific components of ash that are allowed in the national standard, whereas they are not in the Transport for NSW standards. We are advocating more of a performance standard. So what you would do is lay a road—in fact, we have done this at a Eraring previously, which is 90 per cent ash—and you would test the performance of the road as a single product rather than testing individual components of the ash.

The Hon. SHAYNE MALLARD: I will finish up with this question exploring this market issue: Are the national standards used by other States or do they have their own standards as well?

Mr ORGIAS: The national standard is sometimes used by other States and they also have their own standard.

The Hon. SHAYNE MALLARD: Are you seeing more demand for coal ash material in road construction in other States?

Mr ORGIAS: In Victoria, for example, they use more ash in roads than we do in New South Wales, yes.

The CHAIR: But is that pursuant to the Victorian standard or the national standard?

Mr ORGIAS: It depends. For different products they will use different standards—so for some types of roads they will use the national standard and for other types of roads they will use the Victorian standard, depending on how much traffic goes on the road and the type of road it is.

The CHAIR: Does the Federal Government in federal road construction use the national standard?

Mr ORGIAS: Yes.

The CHAIR: They do?

Mr ORGIAS: Well, sometimes they do not if it is going through—if the State and the RMS agree to use different standard they will use a different standard. So it is depends.

The CHAIR: In your view, on a major road project—say, the Pacific Highway—who is the decision-maker? Which government is the decision-maker in that context, or is not clear to you?

Mr ORGIAS: State.

The CHAIR: Given that most road construction in the country is happening in Victoria and in New South Wales, on matters like the WestConnex and those types of massive projects, is coal ash an appropriate product and is it being made by the State that makes the decision, in your view? Can it be used in tunnels?

Mr ORGIAS: We believe that it can be used more often than it is. On some high traffic, you know, very important roads you would take a careful look at how much ash is suitable in that road. And there probably are different levels depending on how trafficked that road is.

The CHAIR: But of all the alternative uses that have been identified by the energy companies, is road construction the most likely and the one that should be pursued the most?

Mr JARVIS: There are a number of applications. Roads are one but certainly building products as well, building applications, there is potential there too.

The CHAIR: Which is most likely to be the most economical in the short- to medium-term?

Mr JARVIS: Certainly roads.

The CHAIR: Is that a consensus view?

Mr FLOOD: The economics generally are that when building a road they look for material as close as possible to the construction site. So the transport limits the cost.

The CHAIR: So that is a variable factor?

Mr FLOOD: That is another factor.

Ms ABIGAIL BOYD: In terms of providing an incentive for greater re-use of the ash would a levy on the amount of coal ash put into the dams—you know, a $20 per tonne type of levy—also help to push the economics towards reusing more of it?

Mr FLOOD: That would be difficult for us to push onto the market because we are not an end user. We cannot dictate that they must take ash and say, taking a $20 per tonne levy and giving that to someone else to take the ash, I do not think would result in—

Ms ABIGAIL BOYD: I am sorry, $20 if you do not sell it off, so $20 to put into the actual—

Mr FLOOD: That is an incentive for us to spend $20 to put it elsewhere. That would not result in higher re-use because the end user may not see a cost benefit out of that.

Ms ABIGAIL BOYD: When you are looking at what you can re-use, obviously there is the stuff that is being produced every year, but in terms of what sits in the ash dams have you identified certain parts of those ash dams where there would coal ash generally that you could use for re-use? Are there parts that are identified to have asbestos and other things in them that you just cannot touch?

Mr FLOOD: For Vales Point there are six legacy asbestos dumps identified and signposted where we could not disturb that material. Once capped and covered it is difficult to go in a re-use. The best time to re-use is actually when it is produced.

The Hon. TREVOR KHAN: Will you explain why it is difficult to re-use?

Mr FLOOD: When it is dry it can go into those concrete tankers and it is easy to transport and to re-use immediately. We mix it with saltwater, so straight away you are adding salt and water to the mix and it makes it less usable. So, it is better to use as it is produced rather than store it in the ash dam and dig it up later, although we are investigating ways to re-use it later and mine an ash dam.

The Hon. TREVOR KHAN: So you add saltwater to the material in the dam before you cap it, do you?

Mr FLOOD: The water we add and having our closed-loop cycle resourced from Lake Macquarie, so it is saltwater.

Ms ABIGAIL BOYD: It is the use of the water in those ash dams that creates leeching risk, is that right?

Mr FLOOD: In terms of the leaching risk, most of the trace metals are bound in the glass matrix of the ash and because it is alkaline the metals do not tend to leach: they are not soluble in water. There is one notable except for Vales Point but otherwise—

Ms ABIGAIL BOYD: What is that?

Mr FLOOD: Selenium.

Ms ABIGAIL BOYD: Yes. Would that be solved with a lined receptacle? I know that the ones you have at the moment at Vales Point are not lined.

Mr FLOOD: So because we have closed-loop cycle now—so up until the late 1990s there was a once- through system. So we drew lake water, put it up to the ash dam and then discharged water back into the lake. So the selenium issue in Wyee Bay was created because of that once-through system. So once we put in the re-circulating system that has limited the amount of selenium in the environment such that the selenium levels have stablished since the late 1990s.

Ms ABIGAIL BOYD: Is there still leaching into Wyee?

Mr FLOOD: No, it is already there.

Ms ABIGAIL BOYD: So there is no additional?

Mr FLOOD: No, we do not discharge into Wyee Creek or Mannering Bay any more.

Ms ABIGAIL BOYD: Hypothetically, if you were to build a brand-new ash dam would you be asking for that to be a lined ash dam to reduce some of those risks?

Mr FLOOD: I think today's standards are different to when Vales Point was built so I have not contemplated building a new ash dam. I think we would do it differently for a new power station.

Ms ABIGAIL BOYD: Do you think it is reasonable for a regulation to require future ash dams to be lined?

Mr EVERETT: That is a matter for those who are looking at regulation of new power stations. It would go through an EIS process, et cetera.

The CHAIR: Mr Flood, you just said you would do things differently into the future if you were given the opportunity. What would you do differently?

Mr FLOOD: Sorry, I was thinking like if you look at how New South Wales power stations were developed by the electricity commission over the years. Mount Piper was the last power station built and it had a dry ash repository but it was not lined. They used an old mine void.

The Hon. TREVOR KHAN: There is no contemplation at any of your sites of the requirement to consider the hypothetical put forward by Ms Abigail Boyd?

Mr EVERETT: No.

The Hon. TREVOR KHAN: There will be no new ash dams?

Mr EVERETT: No.

The Hon. TREVOR KHAN: Is that right from all three of you?

Mr EVERETT: That is correct, no new.

Ms ABIGAIL BOYD: Looking at Eraring and the recent extension application for the ash dam, there was no suggestion that that would be a lined repository. Why was that?

Mr JARVIS: Well, there was not a requirement. It was within the existing footprint as well.

Ms ABIGAIL BOYD: Okay, because it was not required, not because it is not necessarily less risky?

Mr JARVIS: It is within the existing footprint of the dam or the ash dam today.

Ms ABIGAIL BOYD: Can we talk a little bit about the Eraring ash dam?

Mr JARVIS: Yes.

Ms ABIGAIL BOYD: And the instability of the dam walls. Will you talk to us about what was happening there? What was causing that instability?

Mr JARVIS: It is a very good dam. We are required to do an independent study so we had the engineers come in to do a check. After that engineering study we decided to raise the category standard of that ash dam, which required us to do some civil works on that ash dam which were are undertaking now.

Ms ABIGAIL BOYD: Was that ash dam built prior to Origin taking ownership?

Mr JARVIS: Yes, that ash dam goes back to Wangi Wangi, which is a very old power station back in the 1950s and then extended and expanded for Eraring.

Ms ABIGAIL BOYD: Was the State then liable for some part of those structural inadequacies or was it because it was unrelated to contamination event, it was something that Origin was wholly liable for?

Mr ORGIAS: Origin is liable for the current structural integrity of the dam and we will do this to increase the structural integrity. So there is no liability to the State for the improvements to the dam wall.

Ms ABIGAIL BOYD: Going forward, if there were a breach of that dam and there was spill, are you saying that Origin would be wholly responsible for the contamination from that?

Mr JARVIS: Yes, absolutely.

Ms ABIGAIL BOYD: Finally on the ash dam expansion, I understand that under the sales contract that there was an agreement with the State that if a backfill proposal was not approved that this alternative expansion would be part paid for by the State. Are you able to quantify how much the State is liable for?

Mr JARVIS: The first comment is, if we did raise the dam wall there is an agreement with the State to meet that share. Now it is Origin's intention to completely avoid increasing that dam wall size. We really do want to do recycling in the first instance.

Ms ABIGAIL BOYD: Is the State liable for some of the expansion?

Mr JARVIS: Yes, it is.

Ms ABIGAIL BOYD: Can you quantify what that will be?

Mr JARVIS: No. We have done no assessment of the cost of raising that dam wall, if we had to.

Ms ABIGAIL BOYD: Have you got a ball park figure?

Mr JARVIS: I really do not. Quite frankly, I really want to look at many other options before we do raise the dam wall.

The CHAIR: What is the status of the Eraring application? That has been approved by the Independent Planning Commission?

Mr JARVIS: Yes, it has.

The CHAIR: So you have planning approval but you are saying that you are yet to make a decision as to whether you are going to proceed?

Mr JARVIS: Yes, that is right. It takes significant cost to do that development and we would like to look at all our other options before we proceed.

The CHAIR: Of course. And one of the options that you are contemplating is whether it is possible to expand recycling to, therefore, limit the amount of ash that needs to go into the dam. Is that right?

Mr JARVIS: There are a couple of ideas. One, we produce less ash by running less. Two, we are definitely increasing our ash recycling. They are probably the two biggest, but there are other options as well.

The CHAIR: What is the time frame that you are making the decisions in? At what point do you have to decide that the other options are not viable?

Mr JARVIS: That is a really good question. I have a full-on team looking at this every day. We are running until 2032. We started when the shutdown arrived. Just where the market is going with renewables and what have you—we are running that power station a lot less so we have a lot more space. That is the first thing. Again, if we are successful with some of our recycling options, we can go all the way until 2032 without any real expansion of that ash dam.

The CHAIR: Presumably when you have to make your investment decision on the expansion, has it been prepared with the base comparative being a recycling option?

Mr JARVIS: Yes.

The CHAIR: In terms of your ability to choose the recycling option, what sort of commercial return do you need on that?

Mr JARVIS: The economics would be the capital costs of an expansion versus recycling. There are absolutely economics here to drive for more recycling.

The CHAIR: But overwhelmingly the view is that, in the absence of additional demand for coal ash, you are not really in the position to make that commercial decision?

Mr JARVIS: We are assessing it all the time. Again, as the market changes, and it is changing considerably because of the renewables coming into the system, we have a lot more choice about the trade-offs that we can do around the ash dam.

The CHAIR: I was going to ask the other two companies here—do you also recognise that there is an economic opportunity in recycling? If so, how big is it?

Mr FLOOD: For Vales Point it is a little limited. Our boilers and mills are older and they put a little bit more carbon into the ash. Users of ash prefer the Eraring ash to ours. We have difficulty.

Mr JARVIS: That is good.

The CHAIR: That is an important distinction.

The Hon. SHAYNE MALLARD: That is why we sat you together.

Mr FLOOD: We sell 20 to 25 per cent to one producer in the market.

The CHAIR: AGL, have you reached a similar assessment as to how lucrative it would be to recycle?

Mr RIENIETS: As mentioned in our submission, we are looking at expanding our recycling capability from 170 kilotons per year up to a million kilotons per year. That would be a significant increase in recycling.

The CHAIR: Do you have a time frame in which you need to make that commercial decision?

Mr RIENIETS: Part of our raw plan for the next five years includes ash removal. There is the recycling augmentation of the Bayswater ash dam and also a pipeline reconstruction to the Ravensworth mine, which is about 10 kilometres away and where we transport ash into an old mine void.

The CHAIR: How many jobs would be created if each of you were to make a decision to pursue your recycling option to the maximum ability?

Mr JARVIS: That is really hard to say. We have not made that assessment. I have looked at going into the concrete business, so there is the opportunity to increase employment.

The CHAIR: I am going to press for an answer. We are politicians and we are after jobs in the current climate. Do you have a view on the jobs growth that could come from this part of the business?

Mr JARVIS: We have not made that assessment. I would not be giving you the full facts without making a better assessment. I could possibly take that on notice and come back to you with a more informed view.

The CHAIR: Could you?

Mr JARVIS: Yes, absolutely.

The CHAIR: The same goes to the other two companies. Do you have any assessments as to the amount of jobs that could be created by pursuing a more recycling-based approach?

Mr EVERETT: We would probably make the comment that it is a highly automated process. The recovery of the ash would be automated rather than manual. So the benefits that you would get are environmental rather than job creation.

The Hon. TREVOR KHAN: We have talked about the economics of this. This is not a matter of making money for your companies but a question of what cost you are going to bear on the various alternatives that you have got. Am I right in that regard? Do I build a new dam, for instance, or increase the height of an existing dam? Do I bear some other burden? Do we look at some other alternative in terms of recycling? It is weighing up cost alternatives as opposed to—

Mr EVERETT: Exactly. Ash disposal is a cost element for these businesses.

The Hon. TREVOR KHAN: Are we all in agreement in that regard? Mr Jarvis?

Mr JARVIS: Absolutely.

The Hon. TREVOR KHAN: When the Chair talks in terms of jobs creation, what we are talking about is essentially a cost being borne that may create jobs but it may in fact be a balance of creating jobs here or creating jobs over there. It is not a free outcome.

Mr EVERETT: We are talking about seeing fewer than 10 people involved in ash management at a power station, at least for us. The jobs that you might create would be a similar sort of number. We are not talking large numbers here at all. You are moving large volumes, so wherever you can you automate.

The Hon. TREVOR KHAN: Mr Flood, you seemed to nod approvingly?

Mr FLOOD: I was thinking—apart from Mr Everett being my boss—more that if you shift the ash into a market you are pushing something else out, like quarried aggregate. So it is going to be like for like.

The CHAIR: Assuming the market is not growing in general.

The Hon. TREVOR KHAN: It seems to me that there is a concern being expressed with regard to this being, in a sense, sealed eventually in what was a dam. If we are distributing this stuff as road base, what is the environmental impact? We are being told that sealing it in a dam, or a former dam, is a bad idea so what is the issue with putting it as a road base and spreading it all over New South Wales?

Mr FLOOD: It is considered a bound application.

Ms ABIGAIL BOYD: It is very different. You will have to ask the scientists later on.

The CHAIR: We are asking here. You are entitled to answer the question.

Ms ABIGAIL BOYD: Sorry.

Mr FLOOD: There is a coal ash order that the EPA has issued that allows the use of ash in certain road and civil applications. It is largely because it is bound and it is not submersed in water. If you are a road builder, you do not build road through water because that would destroy the road. The ash is generally used in bound applications.

The Hon. SHAYNE MALLARD: Is the coal ash a toxic material or is it inert?

Mr FLOOD: It is inert. It has got some trace metals in it which, as I touched on before, are bound in the glass matrix. In the example of Vales Point, selenium will leach into an alkaline environment.

The Hon. SHAYNE MALLARD: You said that you cap the old dams by half a metre. In some of the older ones it might be less. Do you vegetate the cap?

Mr FLOOD: Yes.

The Hon. SHAYNE MALLARD: Are there trees there?

Mr FLOOD: No, only shallow roots. There is usually grasses, small trees and shrubbery.

The Hon. SHAYNE MALLARD: Do you have vents and monitoring capability?

Mr FLOOD: Yes.

The Hon. SHAYNE MALLARD: So it is like a landfill?

Mr EVERETT: Yes. We have a system of boreholes around the dam that monitor the water quality. On the topic of regrowth, nature just reasserts itself. We have a photo in our submission. With ponds one to three, which have been capped, nature just reasserted itself and they became salt marshes again.

Ms ABIGAIL BOYD: There is capping at the top which stops the ash from flying off and creating air pollution.

The Hon. TREVOR KHAN: And water penetrating.

Ms ABIGAIL BOYD: But the worry is with the bottom part—I notice that in the Delta submission there was a reference to the Tallawarra ash ponds. I don't know if you are aware of the Wollongong City Council submission to this inquiry, but it talks about the groundwater concerns that they now have from leaching even though it has been there for decades. Are you personally convinced that there will be no further leaching of those toxic metals?

Mr FLOOD: For Vales Point, which I know about, we have groundwater monitoring. We submitted a report to the EPA in 2015 about our study. It showed that there was no notable impact on the groundwater environment compared to background bores that were not influenced by the ash dam.

Ms ABIGAIL BOYD: When we talked about coal ash being inert, how does the coal ash in Australia's or New South Wales's ash dams differ from the ash that was in the Kingston disaster, which created so many health problems?

Mr FLOOD: That caused a lot of issues because the ash dam itself failed and they then sent 200 workers to work unprotected in a dusty environment. A lot of the health implications from that disaster were about the working conditions.

Ms ABIGAIL BOYD: So it was air pollution rather than the actual chemicals contained in the coal ash?

Mr FLOOD: I believe so, from what I have read. I am not an expert on that one but I did read up on it.

Ms ABIGAIL BOYD: That is not my understanding. In any event, what protections are there for workers dealing with coal ash on your sites?

Mr FLOOD: In the power station we have P2 dust masks to minimise the respirable dust when working in a dusty environment.

Ms ABIGAIL BOYD: Is the regulation comparable with what you would see in a coalmine?

Mr EVERETT: For a dust environment, yes it is comparable, but where Mr Flood is talking about P2 masks, on the ash dam the management practice is that we keep the dust areas wet, so there is not dust that comes off of that, or the areas are capped.

Mr FLOOD: We do not wear masks around the ash dam because it is maintained. It is just in a specific dust environment.

Mr EVERETT: Very limited areas.

Ms ABIGAIL BOYD: Is there health monitoring for those workers in the same way there are for coalmine workers?

Mr EVERETT: Absolutely. On a regular basis, both static and personal monitors.

Ms ABIGAIL BOYD: Is that the same for you, Mr Jarvis?

Mr JARVIS: Yes, most definitely. Safety is our first priority so we make sure we go out of our way to protect our people.

Ms ABIGAIL BOYD: Are there regular health checks and monitoring done?

Mr JARVIS: For our people? Absolutely.

Ms ABIGAIL BOYD: Is that the same for AGL?

Mr RIENIETS: Yes.

The CHAIR: Have you identified any workers who have inhaled this dust and, as a result, made a workers compensation claim or a dust diseases claim?

Mr FLOOD: I am not aware of any, but I do not work in that area.

Mr EVERETT: Any claims that we have usually go back to asbestos claims from the construction of the power stations. Most of the firms that were involved in construction do not exist anymore, and so those claims find their way back through to the original companies. The State has obviously taken on a lot of that liability.

The CHAIR: Basically, it is historic claims in nature.

Mr EVERETT: Yes, that is right, mostly from asbestos cladding et cetera in construction.

The CHAIR: Regarding the submissions to this inquiry and the calls being advanced by a variety of environmental groups for specific, and presumably new, regulation to manage coal ash dams, do you have a view that the current regulation is fit for purpose?

Mr FLOOD: Yes. It is the dam safety regulations.

The CHAIR: Can you identify any deficiencies in them?

Mr FLOOD: No. We conduct weekly inspections. We have a quarterly independent dam safety engineer come out and look at the instrumentation around the dam embankments. Then there are the annual reports that are also done and submitted to the regulators, and five yearly comprehensive inspection reports.

The CHAIR: Are you submitting that to the EPA?

Mr FLOOD: No, Dam Safety.

The CHAIR: Is that the only regulator you are dealing with on this matter?

Mr FLOOD: Specifically for the dam?

The CHAIR: Yes.

Mr FLOOD: Yes. For the management of the ash, there are conditions in the EPL that are managed by the EPA.

The CHAIR: Is the view that the current regulation is sufficient and fit for purpose shared by the other two companies here?

Mr JARVIS: Yes. We have no issues. Having gone through quite substantial changes with our ash dam we understand the dam Act very well.

The CHAIR: Is your view that it is fit for purpose?

Mr JARVIS: Yes. We do regular testing and we have made substantial changes accordingly.

The CHAIR: Are there any changes to that particular legislation or regulatory framework that could assist you?

Mr JARVIS: No. I do not think so.

The CHAIR: Any comment from AGL?

Mr RIENIETS: Similar to the other generators, we are okay with the current regulation and we have regular dam inspections across all of our portfolios where there are dams.

Ms ABIGAIL BOYD: My colleague asked earlier if the chemicals contained in coal ash are toxic and the response was that it is inert. Obviously there are a lot of toxic chemicals that are inert. Can you clarify what you mean?

Mr FLOOD: It is in our submission on page 4. The main components of fly-ash are aluminosilicate, which are sand-like materials, silica, and calcium oxide.

Ms ABIGAIL BOYD: It is that last part of that chart in your submission that has all of the nasty chemicals.

Mr FLOOD: The small amounts, yes. What I referred to before is that most of the metals are bound within the glass matrix and do not readily leach. They are not soluble in water.

Ms ABIGAIL BOYD: There is a beautiful set of pictures of an ash pond in Russia, where people were having their wedding photos taken next to it because it looked so beautiful—it was like an azure blue. Did you see those photos?

Mr FLOOD: I am not familiar with that.

Ms ABIGAIL BOYD: The Russian coal operators had to come out and say that the ash dams are toxic, hazardous dumps and you cannot come near here and take your photos—it is actually quite dangerous. That seems to be quite opposed to what you are putting forward as the image of these coal ash dams.

Mr EVERETT: They are not toxic hazardous dumps.

The CHAIR: Presumably, you are not contemplating wedding photos at your ash dams anytime soon?

Mr FLOOD: No, but what we do have is a lot of wildlife in the area. We have a lot of bird life that use it as a stopping point as they migrate, as well as all of the resident wildlife there.

The Hon. SHAYNE MALLARD: Environmental standards between Russia and Australia are very different.

Mr FLOOD: I think so.

Ms ABIGAIL BOYD: The point is that in the rest of the world—

The Hon. SHAYNE MALLARD: Your mates in Russia.

Ms ABIGAIL BOYD: And America, and a bunch of other people have an acknowledgement that this stuff is toxic.

The CHAIR: Please direct your questions to the witnesses, and if you are going to make an adverse mention of other countries at least qualify it to their government and not their people.

Ms ABIGAIL BOYD: Good point.

The Hon. TREVOR KHAN: A comment was just made, and it was sort of made earlier in regard to other countries. What are the standards for the operation of ash dams in Australia compared to the United States, Britain, Germany or other European countries? Are our standards different, and, if so, how?

Mr FLOOD: The coals around the world are different.

The Hon. TREVOR KHAN: Of course. We can go to Victoria and find that as well.

Mr FLOOD: They are all different circumstances. I am not an expert on those to be able to comment.

The CHAIR: Don't you operate ash dams between State jurisdictions?

Mr FLOOD: For Delta, no, just New South Wales.

The CHAIR: Does Origin or AGL?

Mr JARVIS: We only have one coal-fired power station in New South Wales.

The CHAIR: Do you have any in other States?

Mr JARVIS: No.

The CHAIR: AGL?

Mr RIENIETS: We operate brown coal station ash dams in Victoria and black coal station ash dams in New South Wales. The constituents between brown and black coal are very different and the quantity of ash varies significantly.

The Hon. TREVOR KHAN: Is more ash generated from Victorian brown coal?

Mr RIENIETS: A lot less.

The Hon. TREVOR KHAN: Is there any difference in what is left in the ash in Victoria compared to New South Wales?

Mr RIENIETS: Different properties but the principles of disposing it are very similar.

The CHAIR: Are there any meaningful differences between the regulatory regimes of Victoria and New South Wales that you think would be advantageous for New South Wales to adopt?

Mr RIENIETS: They are very similar, except the brown coal ash in Victoria is not suitable for re-use.

The CHAIR: Some of the submissions identify that you were recently given an enforceable undertaking around breaches of the coal ash order in 2014. There is an EPA press release from earlier this year with the title

"AGL Macquarie ordered to give $100,000 to community projects after breach". Can you explain to us what that is about?

Mr RIENIETS: I will refer that to Ms Rose.

Ms ROSE: Thank you, Mr Rieniets. Throw me the hard ones. Earlier last year we did suspend our sales of coal ash sampling as a precautionary measure. We obviously take our environmental compliance obligations very seriously, and the health and safety of our people and the communities are very serious to us. We did that after identifying that the sampling itself was not fully compliant with the requirements of the coal ash order, and we reported that to the EPA immediately, in accordance with our legal requirements to do so. There is a series of public information available on this, so I do not propose to go into the details particularly. I can say that we did engage an external expert to carry out a comprehensive human health risk assessment, because, like I said, we take these obligations very seriously. They were able to confirm that, based on the sampling results and the known uses, the beneficial use of the coal ash did not pose any risk to human health or the environment in that circumstance.

Ms ABIGAIL BOYD: The $15,000 fine for that incident—do you think that was a sufficient disincentive? Did that make any difference at all to a company like AGL?

Ms ROSE: I think we might be talking about two different things. The incident I was referring to—we entered into an enforceable undertaking and there were quite significant undertakings that were made as a result of that incident.

Ms ABIGAIL BOYD: You are right. That was 2014, whereas I was talking about the 2018 one.

The Hon. SHAYNE MALLARD: The point is that you self-reported. You self-reported it.

The CHAIR: In accordance with your legal obligations to report.

Ms ROSE: Yes. I can say we reported both in accordance with our legal requirements.

The CHAIR: That enforceable undertaking presumably is public because it is enforceable.

Ms ROSE: Correct.

The CHAIR: Do you mind providing us with a copy of it on notice? Off the top of your head, does it cover any other matters other than the order to pay $100,000 to the community? Do you have to change your sampling methods or take corrective action?

Ms ROSE: I will have to take that on notice. I am just not entirely across those details and I prefer not to have a stab.

The CHAIR: In the last two years, is that the only regulatory order that has been made on AGL or the only fine that has been imposed? What are we talking about in terms of the regulatory record here?

Ms ROSE: Steve, did you want to answer that question?

The CHAIR: Limited only to coal ash.

Mr RIENIETS: The coal ash sampling issue—there have been several pipeline issues with our transporting coal to the Ravensworth line, which we once again self-reported to the authorities when we have had a leak in that pipeline.

The CHAIR: There have been leakages from the line that transports the ash to the mine.

Mr RIENIETS: That is correct.

Ms ROSE: Yes. I should say again we obviously take our regulatory obligations quite seriously. We do report as we are required to do so. That information is fully disclosed in our EPL annual returns. In terms of the specifics of those incidents and numbers, I am just not across that detail, but we can provide that publicly available information if that would assist.

The CHAIR: It would. To be clear, I am presuming the regulator who is taking this action is the dams regulator.

The Hon. TREVOR KHAN: Not in this case I would have thought.

Ms ROSE: No.

The CHAIR: Or the EPA. It is both the dams regulator and the EPA presumably.

Ms ROSE: In terms of the dam safety legislation, that is primarily around the safety and the ongoing management from a structural integrity perspective, whereas the EPA has obligations in relation to protection of the environment and people. That is regulated in accordance with environmental protection licences.

The CHAIR: I understand.

The Hon. TREVOR KHAN: So a pipeline breach, for instance, is an EPA matter. The report goes to EPA and is dealt with by EPA.

Ms ROSE: Correct.

Mr RIENIETS: That is correct.

The CHAIR: I am certainly trying to adduce this evidence less to draw attention to your record—although that is relevant—but more because we will be testing the regulator on this later in Committee proceedings. A lot of the feedback we are getting is about the quality and enforcement of regulation as well. Can I just ask the other two companies to also tell us their regulatory record, at least when it comes to the EPA for the last five years.

The Hon. TREVOR KHAN: Can I just ask—

The CHAIR: Coal ash. Just limited coal ash.

The Hon. TREVOR KHAN: Coal ash, yes.

Mr FLOOD: Our regulatory record on coal ash.

The CHAIR: Yes. Have you been subjected to any fines, any enforcement action, any prosecutions by the EPA or other regulators in respect to coal ash in the last five years?

Mr FLOOD: There is a current clean-up order for Vales Point ash dam.[1]

The CHAIR: When was that put into effect?

Mr FLOOD: In 2018. The incident happened in late 2018 and we reported that to the EPA.

Ms ABIGAIL BOYD: Is this the asbestos in the capping?

Mr FLOOD: That is right.

The CHAIR: Is that the only one?

Mr FLOOD: That is the only one.

The CHAIR: In terms of the regulator matter clean-up order to you, is that public?

Mr FLOOD: We have not finalised the clean-up of it yet with the EPA. It is almost done.

The CHAIR: When you say you have not finalised a clean-up, does that mean you have not finalised the order or the actual activities required by the order?

Mr FLOOD: The actual activities. Straightaway the EPA got us to quarantine the area and it is capped and vegetated at the moment, so it does not present a risk. We are working out the appropriate methodology to contain that.

The CHAIR: Are you still in dialogue with the EPA on that?

Mr FLOOD: Yes.

The CHAIR: Is the order public? Not necessarily the—

Mr FLOOD: Each clean-up order is public.

The CHAIR: Do you mind providing that on notice?

Mr FLOOD: Sure.

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[1] In correspondence to the committee received 19 February 2021, Hunt & Hunt Lawyers on behalf of Howard Recycling Services Pty Ltd provided clarification to the evidence provided by Delta Electricity.

The Hon. TREVOR KHAN: When you say each clean-up order is public, where is it public?

Mr FLOOD: On the EPA website. Under each license it will have a list of notices issued.

Ms ABIGAIL BOYD: Is the community informed when those things happen?

Mr FLOOD: We inform our community each quarter on the progress of what is going on. We have what we call a "care forum" where community representatives come in. We update them on these matters.

The CHAIR: Is that a discretionary choice by your company or are you required to do that?

Mr FLOOD: It is our choice.

Ms ABIGAIL BOYD: With Origin, is there a similar direct community consultation?

Mr JARVIS: Yes, there is.

Ms ABIGAIL BOYD: Is that quarterly as well?

Mr JARVIS: I am not too sure if it is quarterly. It could be even more regular than that, but I will need to confirm. Does Mr Orgias know?

Mr ORGIAS: I don't. It is not less than quarterly. It is definitely very regular but we can get back to you with the exact details on those.

The CHAIR: Could Origin also detail its record with the EPA in the last five years?

Mr JARVIS: Yes. We had two dusting events over the last few years where we received fines for that.

The CHAIR: When was that?

Mr ORGIAS: We will have to take that on notice.

The CHAIR: That was the regulatory action imposed. It was fines?

Mr JARVIS: Yes.

The Hon. TREVOR KHAN: Was that as a result of disclosures that you had made?

Mr JARVIS: Yes. We self-reported.

The CHAIR: In accordance with your legal obligation.

Mr JARVIS: Yes.

The CHAIR: Again, are you in a position to provide the actual—if there is an order or fine or an infringement notice that is public, can you put that on—

Mr JARVIS: It is all on the EPA website.

The CHAIR: Do you mind providing that to us on notice?

Mr JARVIS: We can provide that.

Ms ABIGAIL BOYD: In relation to the issue with the ash dam at Eraring and the sudden closure of Myuna Bay Sport and Recreation Centre, when was that notified to the community?

Mr JARVIS: As soon as we did the engineering studies and worked out the risk assessment of the dam, we notified the Government and the sports and recreation centre straightaway about our desire to have that closed. It was as soon as we had new information.

Ms ABIGAIL BOYD: I think people were a bit perplexed because you have got Myuna Bay there. Sorry, for Hansard that is very unhelpful; I will not use my hands to describe things. You have got Myuna Bay sitting south of the power station or of the ash dam.

The Hon. TREVOR KHAN: But you are using your hands.

Ms ABIGAIL BOYD: There are areas in between. People were a bit perplexed as to why there was no risk from the breach of ash dam to the road and the areas between. Can you explain that?

Mr JARVIS: Yes. It is difficult because it is a risk assessment. It was deemed that Myuna Bay centre was a higher risk and so that is the—there are a lot of tests which go into this because it has got to come under

earthquake conditions and what have you, but we deemed because people stay overnight that the Myuna Bay centre was the highest risk and that is why we advised the Government.

Ms ABIGAIL BOYD: Were people with nearby properties that might have some risk informed of that risk?

Mr JARVIS: We have informed the community extensively on this issue.

Ms ABIGAIL BOYD: Have they seen the flow—I don't know what it that is called but basically the—

Mr ORGIAS: The inundation map.

Ms ABIGAIL BOYD: Have they seen that flow map?

Mr ORGIAS: I am not sure who individually—

Ms ABIGAIL BOYD: Has that been publicly released or has it just been released to the Government?

Mr ORGIAS: It has just been released the Government.

Ms ABIGAIL BOYD: So it is for the Government to release that to people. Is there any unilateral possibility of you releasing the information to the public? Are you restricted in some way from doing that?

Mr ORGIAS: At this stage we have just released it to the Government. I do not believe there is a restriction in releasing it publicly.

Ms ABIGAIL BOYD: Will you release that information? Could you at least table it for this Committee?

Mr JARVIS: I will take that on notice.

Ms ABIGAIL BOYD: Understood.

The CHAIR: We have got 10 minutes left. A line of questioning that I would like to return to is the alternative use proposition that has been advanced. Your view about road and civil construction—have you had dialogue with Transport for NSW or RMS about this?

Mr JARVIS: Yes.

Mr ORGIAS: We have had some substantial discussions with Transport for NSW and they have been open to these discussions that we have had, so they have been good. We actually have a trial that we are proceeding with them on a road. We have actually previously trialled a 92 per cent ash product in our own private haul road, which has been there for 25 years and has been a very successful product. It has had a lot of coal trucks go along it and it is a fantastic road. We are doing another one with them and the Lake Macquarie City Council to test using a high proportion of ash in roads. We are hopeful to convince Transport for NSW that it is a useful product. We are talking to them in detail.

The CHAIR: When did you start talking to them?

Mr ORGIAS: We started talking to them several years ago.

The CHAIR: When did they start or, in your view, at least progressed to the point where a trial was contemplated?

Mr ORGIAS: They have committed to witness the trial but they have not committed to being a part of it as such. But they have always been reasonably interested in it and responsive, although we have not managed to move them yet on their standards.

The CHAIR: Who precisely within RMS—not by name but by title—or Transport for NSW? But I imagine this probably started with RMS.

The Hon. SHAYNE MALLARD: You voted to abolish them.

The CHAIR: I did.

The Hon. SHAYNE MALLARD: Eventually.

The CHAIR: Eventually. What type of level are we talking about here in terms of who you are engaging with at Transport for NSW?

Mr ORGIAS: We are talking to the Newcastle regional roads manager—so someone who is in control of the regional roads outside of metropolitan Sydney, all of those roads, so reasonably high up in the organisation in terms of regional roads.

The CHAIR: Have you had dialogue with any—I do not know what you call them now in the agencies—the deputy secretaries or at that level?

Mr ORGIAS: We have not, no, although we have spoken to the roads Ministry and have had a discussion with them on this subject, but we have not spoken to anyone higher up in Transport for NSW.

The CHAIR: That trial you are referring to, when is that beginning?

Mr ORGIAS: We would like to start that as soon as possible. We are just finalising agreements with the university who is helping us and the Lake Macquarie City Council.

The CHAIR: Who is the university that is helping you?

Mr ORGIAS: It is the University of Newcastle.

The CHAIR: You made mention that you have got the support of Lake Macquarie council for this trial.

Mr ORGIAS: Yes, they are going to be involved both in terms of being a witness and also in helping us to scope out the specification that we are using and to define how the trial will work.

The CHAIR: And Lake Macquarie council has an economic development company as well whose name escapes me. Are you engaging with them?

Mr JARVIS: Yes.

Mr ORGIAS: Yes, they are involved.

The CHAIR: And you have the support of them as well, I presume.

Mr ORGIAS: Yes, we do.

The CHAIR: And are similar levels of conversation being had by other companies or is this more a—

Mr FLOOD: We are a member of the Ash Development Association of Australia and that association has, on behalf of the industry, engaged with RMS, Transport for NSW, for well over 10 years, trying to get more ash into road products. I think the department now sits on the technical committee, the Ash Development Association.

The CHAIR: Has RMS, or Transport for NSW in its current form, identified a specific barrier or specific reason for why they do not wish to progress, or at least why they are supporting a criteria-based standard as opposed to a performance-based standard? Do we know what their objection is?

Mr ORGIAS: Their objection is just that the engineering around the use of a significant quantity of ash in major arterial roads is not proven. So it is something that is new and it requires testing and experimentation to get it correct. I do not think they are saying that it is not possible; they are just saying that it is unproven.

The CHAIR: Is there any other jurisdiction in the world that undertakes road construction with the ash like you would like New South Wales to do?

Mr ORGIAS: I would have to take that question on notice.

Ms ABIGAIL BOYD: Is there an intermediate process where you can improve the quality of the ash before it gets used in roads?

Mr JARVIS: Yes, as Mr Flood said before, you can make better quality ash by your boiler effectively. So if you burn it well you get higher-quality ash.

Mr ORGIAS: As Mr Jarvis mentioned in his initial comments, we have recently built a very large classifier at Eraring—we spent $6 million on that—which is effectively processing ash for one of our partners to then use it in quarrying materials for ground remediation and possibly for roads.

The Hon. SHAYNE MALLARD: Is there a cost advantage, a pricing advantage for the road construction companies to be looking at coal ash? Is it cheaper than crushed blue granite?

Mr FLOOD: I think one of the issues there is size. Because we pulverise coal to combust it, the ash comes out very fine like talcum powder, so there is only so much you can use in an application. So the idea is to build a road base that has got, say, blue metal and some ash and mix it together.

The Hon. SHAYNE MALLARD: So it supplements that material.

Mr FLOOD: As an aggregate, that is right.

The Hon. SHAYNE MALLARD: Is that material being supplied by Boral or someone now to road construction?

Mr ORGIAS: Sometimes, yes.

The Hon. SHAYNE MALLARD: That fine material.

Mr ORGIAS: The quarrying material and then we add to that and that creates an aggregate. Transportation is a key—Mr Flood mentioned that previously—one of the fundamental—

The Hon. SHAYNE MALLARD: Coming out from Goulburn or somewhere.

Mr ORGIAS: It is a local road. We are going to be well priced.

Mr JARVIS: Both of those companies are on our site taking action.

The CHAIR: That kind of gets to the core of what I think you were talking about earlier. You are the producers of the ash, but who are the buyers of it? It would be, under current market conditions , predominantly Boral, cement companies? What are we talking about?

Mr JARVIS: Predominantly the building companies, yes.

The CHAIR: What about mines, for mine rehabilitation?

Mr JARVIS: We are talking to one mine at the moment for rehabilitation.

The CHAIR: In your view does the use of coal ash for mine rehabilitation provide any environmental risk?

Mr JARVIS: No. We have got approval recently just from the Environment Protection Authority [EPA] to look at doing something.

Mr ORGIAS: Yes, it would be to grout one of the local mines. Fly-ash needs some processing to create it to be bound and into an aggregate so that it does not create any environmental problems. But it could be used successfully for mine void grouting.

The CHAIR: I can only presume that there is not much of an export market for coal ash.

Mr FLOOD: It is imported.

Mr JARVIS: We actually import some of that into, I think, South Australia. When they closed down the coal-fired power station in South Australia they actually import fly-ash for cement production.

The CHAIR: From where?

Mr FLOOD: India, China.

Mr JARVIS: I thought it was India, but, again, we would need to confirm that.

Ms ABIGAIL BOYD: I have got two questions left that I would love to ask. The first one is just following on from that point. Are there any restrictions on who you can enter into agreements with in relation to the fly-ash by virtue of the sales documents for the sales of the power stations? I know that it was public, the Vales Point reference to an ash dam management plan and a requirement to continue that ongoing. Does that involve particular commercial arrangements needing to be honoured?

Mr EVERETT: We are not restricted in who we can deal with by that document.

Mr JARVIS: No, we are not restricted. We will be delighted to talk to them all.

Ms ABIGAIL BOYD: Good. My final question is in relation to point (e) of our terms of reference, trying to understand the connection between the State being liable in some ways for parts of the contamination and also being the one responsible for deciding on how strict the regulations should be in relation to rehabilitation. Could I ask each of you a simple question: If the rehabilitation standards were increased by regulation under this

Government, would you be seeking greater amounts of indemnity from the Government for that pre-existing contamination?

Mr EVERETT: In our case that would directly affect the Government because we hand back the sites. Our obligation is to de-energise and decommission the site and then they take responsibility and all value and benefit as well from the site.

Ms ABIGAIL BOYD: Thank you. Origin?

Mr JARVIS: We still have to make that assessment. We just do not know enough about any legislation you are proposing.

Ms ABIGAIL BOYD: For example, if there was a requirement that everything be moved to a lined repository, would that increase the State's liability under those documents?

Mr JARVIS: It may, but I would have to make more assessment before I can give you a good answer.

Ms ABIGAIL BOYD: Ms Rose?

Ms ROSE: I will direct that to Mr Rieniets.

Mr RIENIETS: I think in AGL's case it is limited to the pre-existing contamination. So to the extent it applied to that, it would, and if it did not apply to that it would be AGL's responsibility.

The CHAIR: Is there anything in the sale deeds that would restrict the ability of the State to make regulations?

Mr FLOOD: No.

Mr JARVIS: I do not think so.

The CHAIR: Do the contract deeds provide any specific method of consultation between the State and the energy companies that is separate from public or other consultation requirements that would be required under law?

Mr EVERETT: We have an obligation to provide regular reports on activities at the ash dam and what we are doing by way of monitoring reports and we provide those.

The CHAIR: But there is no additional, for want of a better term, privilege that you have in the contract deeds to be consulted by the Government that the public does not have. Is that fair?

Mr EVERETT: That is fair.

Mr JARVIS: That is fair, yes.

The CHAIR: Thank you so much for your time. I note that you have taken some questions on notice and that you have 21 days to answer them. The secretariat will be in touch. We appreciate your time and your energy.

(The witnesses withdrew.)

(Short adjournment)

CHRIS GAMBIAN, Chief Executive, Nature Conservation Council of NSW, sworn and examined

LIZ HADJIA, Climate and Energy Campaigner, Nature Conservation Council of NSW, affirmed and examined

BRONYA LIPSKI, Lawyer, Environmental Justice Australia, affirmed and examined, before the Committee via videoconference, affirmed and examined

KATHLEEN WILD, Member, Doctors for the Environment, before the Committee via videoconference, affirmed and examined

The CHAIR: We will wait a short time to see if it is possible to contact Dr Wild. Otherwise, I will pause proceedings to welcome Dr Wild when the technical issue is resolved. We thank and appreciate everyone for their patience as we deal with any technical delays that may arise during the hearing. I invite the witnesses at the table to make an opening statement.

Ms HADJIA: Thank you for the opportunity to speak at this important inquiry. As the peak body for nature in New South Wales, the Nature Conservation Council and the member groups we represent have a strong interest in the management and rehabilitation of coal ash dams. There are five operational coal ash repositories in New South Wales that reside near the five power stations. There is also the nearby Wallerawang Power Station that closed six years ago and the coal ash repository to this date remains un-rehabilitated.

All of these repositories, operational or not, are impacting on nature and communities by contaminating air, soil and water. The standard treatment of this toxic waste is to mix it with water and then pipe it into nearby dams that have not been built to protect groundwater and surface water. Many coal-fired power stations sit near recreational lakes and reservoirs. The Eraring and Vales Point power stations reside by Lake Macquarie, neither of which are lined to protect groundwater. Water samples taken by Hunter Community Environment Centre [HCEC], who will be appearing later today, from Lake Macquarie taken near the Vales Point Power Station were found to be contaminated with copper, nickel and zinc at concentrations that exceeded ANZECC & ARMCANZ (2000) water quality guidelines trigger values for marine waters. Power stations must be held accountable for this pollution, and this pollution could be a lot worse.

The Eraring coal ash dam wall holds about 35 megatons of coal ash, a truly frightening fact when considering the risk of coal ash dump containment failures. In 2008 the Kingston Tennessee catastrophic coal ash dam collapse saw 5.4 million tonnes of coal ash sludge flood an area of 300 acres. The toxic sludge swept away multiple houses, filled two rivers and destroyed a whole residential community. The clean-up cost over US $1 billion and more than 30 workers died of illness from toxic ash exposure. More than 200 workers remain ill 10 years after the disaster. For both the Eraring and Vales Point power stations, the Government is liable for presale contamination of their coal ash dams. The Government should reflect on international coal ash disasters and ensure it takes every possible measure to mitigate this risk. The Wallerawang Power Station was permanently retired in 2014 but the ash dam has never been decommissioned.

An Environment Protection Authority [EPA] audit report in 2016 found they were discharging too much acid and sulphur into the Coxs River, which flows into Sydney's drinking water. It has been six years now and get there is still no plan and no requirement for remediation of this toxic site by the owners. Cleaning up existing contamination and preventing future disasters is critical to protecting water sources, air pollution and human health. We strongly encourage the Committee to recommend the following: Firstly, develop coal ash dam regulations consistent with international best practice ash repository management and remediation and apply these regulations to both active and inactive, open and closed ash dams. Secondly, require all ash dams to be lined and leach proof. Thirdly, resite, reconstruct and decontaminate the poorly constructed ash dams of Vales Point and Eraring power stations. And lastly, rehabilitate the Wallerawang ash dam in a timely manner. Thank you. I will now hand over to Mr Gambian to make his statement.

Mr GAMBIAN: Thank you to the committee for this opportunity this morning. Coal ash creates an enormous amount of waste for New South Wales and the statistics are incredibly shocking, as I am sure you have already heard. Coal ash accounts for nearly one-fifth of the entire nation's waste. Australian power stations produce an estimated 10 to 12 million tonnes of coal ash annually. Australia has as a consequence well over 400 million tonnes of ash currently stored in dams. Here in New South Wales, only 25 per cent of the ash generated each year by Vales point and Eraring power stations are re-used; by contrast, Germany re-uses 96 per cent of its coal ash. Australia has very low rates of coal ash re-use compared to other countries. Rather than leaving large volumes of coal ash in unregulated landfill to indefinitely pollute, there is a significant opportunity to generate economic activity and jobs in coal ash re-use.

This is particularly important when we consider the imminent need to transition coal power workers into new industries. Coal ash re-use could provide workers with a tangible alternative for employment as the region moves away from fossil fuels. I am told there are emerging technologies that transform coal ash into lightweight aggregate for the building industry, where coal ash is incorporated into a solid substrate such as concrete, bricks and tiles. Understanding and harnessing these opportunities should be an urgent priority. In Australia, production of Portland cement, the most basic and most commonly used cement, is responsible for 7.4 million tonnes of emissions, or about 1.3 per cent of national emissions.

Nature Conservation Council [NCC] welcomes coal ash re-use as it reduces the risk of long-term toxic legacy developing at the site. The biggest barrier to coal ash re-use is that there is little market demand. Establishing a market at sufficient scale requires significant government intervention. Reducing these barriers is critical and the Government should invest in researching methods to incentivise coal ash re-use. At the same time, power station operators must be incentivised to re-use coal ash. We support the solution put forward by HCEC to charge power station operators a levy per tonne of coal ash waste. This could be imposed by an EPA regulated load-based licence levy. This will provide a powerful motivation for coal stations to increase coal ash re-use. We believe the Committee should recommend: imposing a $20 a tonne minimum load-based licence fee on all coal ash disposed of in repositories, funding research into coal ash re-use in collaboration with industry, and providing incentives based on this research for environmentally safe coal ash applications resulting in large volumes of ash being removed from ash dams.

The CHAIR: I firstly invite the witnesses to table their opening statements if they have copies. Equally, if it is possible to email it through to the secretariat, that would be useful. For the purposes of Hansard, when you say HCEC you mean the Hunter Community Environment Centre, do you not?

Mr GAMBIAN: I do, yes.

The CHAIR: We are now going to invite Ms Lipski at Environmental Justice Australia to make an opening statement, if she so wishes.

Ms LIPSKI: Environmental Justice Australia is a public interest legal practice specialising in environmental law. We welcome the opportunity to appear before the Committee this morning. Between 2010 and 2020 there have been 76 coal ash dam accidents reported across India. Hundreds of people have died, homes destroyed and livelihoods lost when agriculture was irreparably contaminated by tsunamis of toxic sludge. The most recent coal ash spill in India was in April 2020. In the United States 91 per cent of coal-fired power station ash dams are contaminating surrounding waterways with often hundreds of times higher than safe drinking levels of one or more coal ash related toxins, including lead, arsenic, cadmium and selenium. These toxins can cause cancers, neurological damage, neurotoxicity, can cause adverse health impacts at low levels for humans and are lethal in small amounts for aquatic ecosystems.

Coal ash repository failure has devastated communities such as Kingston, Tennessee, where the health impacts of the 2008 Tennessee Valley Authority coal ash repository failure is ongoing. At least 50 people have died since and more than 400 are sick. In New South Wales unsafe levels of selenium and cadmium are found in Lake Macquarie, not far from the Eraring and Vales Point power stations. Independent expert analysis shows that assessments of risk of harm from coal ash repositories are underplayed by operators and their consultants. Independent research has shown that contamination of waterways near coal-fired power station ash dams is rife and far more serious than the public is aware of. This is one of the legacies of burning coal; huge tracts of land containing millions of cubic metres of toxic material leaching into waterways, poisoning ecosystems and threatening public health.

The management of coal ash repositories in New South Wales are not preventing contamination. From what is known about the rehabilitation obligations imposed on operators, the community has little confidence that these sites have been comprehensively remediated to reduce the risk of contamination into the future. Coal ash is one of the largest waste streams in New South Wales. The risks and liabilities associated with adequate management and remediation of coal ash repositories are enormous. Without appropriate regulatory intervention now the New South Wales Government and community will be dealing with this legacy for decades, if not much longer. However, the costs associated with mitigating the amount of coal ash in repositories could provide a profitable market that has a threefold effect; it removes coal ash from poorly constructed and leaching repositories, contributes to a just transition for communities living near these sites and paves the way for comprehensive environmental remediation.

This process requires regulatory oversight that is far more effective than what is now in place. Without clear, enforceable obligations imposed on operators of coal ash repositories, only half the job is done. New South

Wales requires specific coal ash regulations to mitigate the harms already occurring, ensure sites are comprehensively remediated, outline clear pathways to re-use and contribute to the circular economy. The solutions are already embedded in the law to avoid the types of disasters that have occurred in places like India and the United States. This Committee has an opportunity to help New South Wales lead Australia in developing robust solutions to a toxic problem. Thank you.

The CHAIR: Ms Lipski, is it possible that you could email through your opening statement to the secretariat as well?

Ms LIPSKI: I certainly can.

The CHAIR: Thank you very much. We are now joined by Dr Wild. Welcome, Dr Wild. Would you like to make an opening statement?

Dr WILD: Yes, I would. I am representing Doctors for the Environment Australia, which is a national non-profit organisation representing Australian doctors and medical students with an interest in protecting human health in relation to the environment and the environment in relation to human health. It is our hope that this Committee emerges from this inquiry with recommendations that can give communities and workers in this industry faith that their health and wellbeing is valued by the Government. Coal ash is a highly toxic substance and there are multiple potential negative health effects. Despite this, it is unclear to what extent the communities have been surveyed in terms of what the health consequences of these installations have been.

Without knowing the epidemiological effects of living by these communities it is impossible to actually estimate what the costs of remediating these sites are. Workers and health services have for a long time been subsidising the impact of coal-fired power because of the negative health impacts on communities. It is really important, as we have recommended, that we undertake to really appreciate what has been happening and what is the actual facts on the ground of the health impacts before we can assess the cost of remediating it. That is all I have to say.

The CHAIR: Thank you, doctor. Are you in a position to email through your statement to the secretariat?

Dr WILD: It looks like this but I will try my best.

The CHAIR: We have seen worse. Thank you all. We will now open to questioning. The Committee has resolved to allow the questioning to be free-flowing from different members, so expect action from all quarters.

Ms ABIGAIL BOYD: Thank you all for making yourselves available to talk to us today. I do not know if you were listening in to the last session but there was quite a lot of talk about what is international best practice and how Australian regulations shape up. We also heard reference to the Kingston disaster as being just one example and causing one set of regulations in response. I was hoping that you could elaborate for us on what the rest of the world is doing and how things may have changed in the last 20 years.

The Hon. TREVOR KHAN: Well, you cannot ask what the rest of the world is doing because that is multiple jurisdictions, is it not? I think you have got to be a bit more precise than that.

Ms ABIGAIL BOYD: I think that the witnesses we have here today are able to answer the question in a general way.

The Hon. TREVOR KHAN: With respect, answering in a general way is of no help at all.

The CHAIR: I think the question Ms Boyd was asking was to identify world's best practice. You can choose what you regard as world's best practice and then identify the features of that regime that you think could be adopted. That might be the way forward, Ms Boyd.

Ms ABIGAIL BOYD: Sure, or you can answer it as you see fit.

The CHAIR: Incidentally there has been some reference to the Kingston incident. Let us be clear for Hansard and for ourselves: What exactly are you talking about when it comes to the Kingston incident?

The Hon. SHAYNE MALLARD: I just picked up Tennessee in the discussion. No-one has told us about it.

The CHAIR: If you can take us through both it would be useful.

Ms ABIGAIL BOYD: Could we start, perhaps, with Ms Lipski?

Ms LIPSKI: Thank you. I would put forward the developments in the way that coal ash repositories have been remediated or the additional regulations that have been posed on US operators as one of the examples of best practice management and rehabilitation, and certainly engineering of new sites. I suppose to answer this question the best place to start is with the Kingston, Tennessee coal ash dam spill because that was the incident that provoked the Environmental Protection Agency [EPA] to start to adopt these new, stringent regulations around coal ash dams. Essentially what happened was the ash dam failed for various reasons. It was a poorly constructed ash dam. It was not lined appropriately. It was full of wet sludge, which is how Australian operators for the most part dump their coal ash into landfill sites. Over time it just failed. It was not subject to stringent regulatory oversight while it was in operation and the wall just collapsed.

It spewed millions and millions and millions of cubic metres of this toxic material into the surrounding waterways. It destroyed a few houses. As Ms Hadjia mentioned before, a lot of workers died as a result of their exposure to cleaning up this material. The company that oversaw the rehabilitation process, the Jacobs Group, essentially prevented workers from having access to safety gear while they were completing that clean-up. Without seeing the photographs and without reading the stories of the people that were involved it is very hard to comprehend the extent of the damage that was done at this site and the extent of the damage that is continuing today.

As I mentioned in my opening statement, folks are still getting considerably sick and dying from their exposure to this material as a result of not being protected while they were cleaning it up. It polluted groundwater wells that people relied on for their drinking water. It was simply an enormous event that was the impetus for changing the law. Unfortunately, humans consistently need events like this before they will utilise existing regulatory regimes in order to prevent this type of thing from happening. As a result of this absolute catastrophe, the United States' Environmental Protection Agency [EPA] started to develop the coal combustion residuals rule, which is a very large piece of legislation. In that, it imposed several—I would call them best-practice regulatory obligations on operators, particularly where they are new repositories that are proposed to be built.

A lot of those we have actually embedded in the recommendations that we have made for this inquiry. These best practices include a range of things that ought to be really straightforward. We are talking about landfill sites. Humans have been building landfill sites for hundreds of years. It is not actually rocket science. The best-practice way to start remediating these issues or the types of regulatory obligations that should be imposed are things like appropriate lining: Do not build a landfill site that is not lined when it is containing such toxic material. The stuff should not be wet in the first instance. The only reason that it is wet and piped into landfill sites as a sludge is because it is cheaper to do so. The safer way to do it is to keep it dry. It is just a matter of cost, as opposed to anything else, that prevents it from being landfilled in a dry way.

Comprehensive groundwater monitoring is required. Generally, I would say that the groundwater monitoring that works in Australia for power stations and coal ash dams is inadequate. The best way to ensure that you know exactly what is going on under the ground is to have a comprehensive groundwater monitoring system and have that information be publicly available so that people who live around it can have access to that information so that they know what is going on. Best practice also includes involving the community in the development of management and rehabilitation plans and enclosure plans. I encourage you to read the regulations that we have set out in our submissions. I will not take up the inquiry's time in going through it all, but most of those recommendations that we have made around what regulation ought to look like is contained in our submission. As I said, a lot of it is actually quite straightforward. Humans have been building landfill sites for hundreds of years. It is not rocket science.

Ms ABIGAIL BOYD: Ms Hadjia, did you want to comment on that from the NCC's perspective?

Ms HADJIA: I think the only thing that I would add to that is best practice also means recycling the coal ash as well, so you do not just have mass amounts sitting there in ash dams. We definitely support Environmental Justice Australia's and Hunter Community Environment Centre's recommendations that they put forward in terms of policy on that. But, yes, funding research into coal ash re-use is what Mr Gambian mentioned in his opening statement, and thinking through ways that that can be developed into an industry here in Australia would be best practice.

Ms ABIGAIL BOYD: One of the other things that we heard this morning, which is sort of conflicting with the evidence that you are all giving today, is in relation to just how toxic and hazardous this coal ash actually is. We heard this morning from the operators of these power stations that it was not seen as being a hazardous substance. Can I ask you, Dr Wild, is there any difference in the make-up of the coal ash in Australia versus that in other parts of the world that makes this not toxic and hazardous?

The Hon. TREVOR KHAN: That is actually not quite what they said in their evidence. I think, fairly, what they said is that the bulk of these substances are bound up within the silica, within the fly or within the ash. The point was that it was stable. That, I think, was the point, as best as I understand.

Ms ABIGAIL BOYD: I think you might be putting words into their mouths, but it will be in *Hansard*.

The Hon. TREVOR KHAN: No, I think your assertion of hazardous was not their description of what they are dealing with.

The Hon. SHAYNE MALLARD: They said it was inert.

Ms ABIGAIL BOYD: They also said it was not hazardous.

The CHAIR: Perhaps we could get these witnesses' view on how hazardous they think the material is and why they think it is hazardous.

The Hon. SHAYNE MALLARD: Where is the science?

Ms ABIGAIL BOYD: Dr Wild?

Dr WILD: I would refer to some of the epidemiological studies that have been undertaken internationally. They have discovered that there are poorer health outcomes and some signifiers of poor health in, for example, children who live nearer to coal ash sites and coal-fired power station repositories than those who live further away. I believe that is cited in the submission that we put forward—Hagemeyer et al and Sears et al. Also, there have been studies done on workers at these sites which show that there are some markers of DNA damage when those workers' health has been assessed. On trying to assess the literature as to whether any similar effort epidemiological studies have been conducted in Australia, I could not find any evidence to that effect. I think it is premature to assert that the communities are not suffering any health outcomes when those studies have not been performed.

Ms ABIGAIL BOYD: Ms Lipski, do you have a comment on that as well, in terms of what is in these ash dams?

Ms LIPSKI: I do. Coal ash contains concentrated forms of the types of heavy metals that are emitted from coal-fired power stations. It contains concentrated amounts of mercury and lead and selenium and a whole range of toxic heavy metals that are otherwise not emitted into the atmosphere. When you dump that in a wet format in a landfill site that is not appropriately engineered, you are risking—as you will hear again today several times, there are instances of contamination of these types of heavy metals into waterways. There are serious aquatic impacts of that at the moment. As Ms Hadjia was saying before, the Hunter Community Environment Centre is going to present on this later on. To say that it is inert—that is often a word that is used to say that it is stable, to say that it is not safe, I think, is misleading. I think that we need a lot more information about what is actually going there. I would say to the operators, "If that is indeed the case then show us the data. Show us the tests that you have conducted on your coal ash that say that it is actually safe and that dumping it into those unlined pits is not going to breach safe water drinking standards and is not going to impact on aquatic ecosystems."

The CHAIR: Do the witnesses at the table want to say anything on this?

Mr GAMBIAN: It will come as no particular surprise to the Committee that I am not an expert in coal ash or its toxic effects. I am about as expert as the Committee is, but I know that there are colleagues here who certainly are experts. Taking a step back from those questions of toxicity, history is littered with examples of corporations that have got money to be saved from not adequately dealing with a waste stream. From the beginning of the time we know there have been instances where operators have told us that there is nothing to worry about in a particular waste stream when, in fact, there has been everything to worry about. I do not want to find in 10 or 20 or 30 years' time that a failure to Act now has dire consequences for residents of, for example, Lake Macquarie or the Central Coast where you can drive past that ash dam and not realised that the dam is even there. But it sits adjacent to the waterway. It certainly is massive in its scale. The size of it is just enormous. None of us would happily go and set up a house next door to the ash dam because we know instinctively that it is very unlikely to be benign.

The question that I think should be on the table is are we prepared to deal with coal ash in the same way that we deal with any other waste stream? It is one fifth of Australia's waste. Will we prioritise making sure that it is as contained as it possibly can be? The question of wetting it versus keeping it dry—is it kept as safely as we know how to keep it at the moment? Is there an opportunity to recycle it? Is there an opportunity to turn this ash into something that can have some productive use? We would have no qualms doing that with any other waste streams. We do that with woodchips, plastics, paper and all sorts of waste. To my mind, and certainly our

submission would be, it needs to be a priority of government to work out what to do with this massive contribution to Australia's waste.

The Hon. TREVOR KHAN: Mr Gambian, I think there is probably not as much difference in positions as one might anticipate. If you are confronted with building a new coal ash dam, I do not think there would be any question that you would look towards requiring, for instance, lining and a variety of other things if you were going to deal with it in that way. We have large amounts of historically accumulated coal ash in dams and the question is—at least in my mind, from some are things that were thrown around—do you dig all this stuff up? And, if so, what the heck do you do with it whilst you dig it up to then line a fresh pit? Is that viable as an option? I suspect the answer is no. You may be creating more environmental problems than you resolve by going through that process.

If you are going to retain it in the current pits, how do you cap it and how do you monitor it to try to ensure that it does not contaminate groundwater and the like? That, to me, seems to be on the whole what we are talking about with regards to historically existing stuff. With regards to going forward, in terms of recycling, I think part of the question is identifying from the evidence that we heard this morning, what do you use this stuff for and is there a market for it? Because if there is not a market for it, you are still going to be sticking it in a hole in the ground. So if you can help the Committee in regards to those sorts of questions, go your hardest—and anyone else here.

Mr GAMBIAN: Look, I think they are the right questions to be asking. I think that is spot on. To my mind, when you are talking about the market for these products, sometimes markets—particularly new markets—need help. If there is not a price on keeping the ash in these largely unregulated pits, then there is not a structural incentive to get it out of the pits. We have had that kind of arrangement for any number of other waste streams in the past where, yes, sometimes the market needs to get a little kick along. If concrete, for example, is not really viable—that seems to be the one that people talk about—then this new kind of technology is competing with the existing market and the existing operators and all of that and that is where the Government can play a role in assisting that market along. There are big long-term advantages for the community, for the environment, for industry and for the economy if we kick it along. But you can see that there would be some short-term disadvantages to existing concrete market operators to the set-up cost of creating these new bits of equipment to do the re-use and all of that. I think this is an example of an emerging industry that needs a little bit of assistance from the Government to become viable. If we achieve that, then, in the long run, there is a huge payoff.

The Hon. TREVOR KHAN: I suppose in terms of an emerging thing, unless I am wrong, when does the last power station anticipate to close in New South Wales?

Mr GAMBIAN: It sort of depends on who you ask.

The Hon. TREVOR KHAN: Well, that is right.

Ms ABIGAIL BOYD: Around 2035.

The Hon. TREVOR KHAN: About 2035. So I am a bit concerned that we do not actually have an emerging market, we have a market that is fast disappearing. We are still left, one way or another, with an historic pile of coal ash. Do we look at leaving that where it is or do we try to develop a market, dig the stuff up and use that with all the problems that that may create?

Mr GAMBIAN: At the risk of the blind leading the blind, I might refer to my colleagues on videoconference for the question of the historical ash. But in terms of whether this market is emerging or not, it is 2020 and the last coal-fired power station could have a life right through to 2035, or even later. We are certainly working for that not to be the case—

The Hon. TREVOR KHAN: Indeed.

Mr GAMBIAN: —but I am prepared to hedge my bets. There is plenty of ash here to be produced and I think we have to be cognisant of the fact that that ash will need some space. Bayswater just applied to have its dam increased in size and the others will have to follow suit over the next few years. I think there is a very live question here that needs to be resolved about future ash, despite the fact that, as you rightly say, we are hopefully retiring those coal-fired power stations over the next 10 or so years. I will refer the historical question to my colleagues.

The CHAIR: Yes, we will go to the panel on videoconference, if they have any extra expertise on that question.

Ms LIPSKI: Yes, I will say a couple of things. Firstly, in some ways New South Wales has started to turn its mind to developing a coal ash re-use market. As Mr Gambian mentioned, AGL has just put in a submission to expand its coal ash dam at Bayswater. Part of the environmental impact statement required AGL to start to consider how it would bolster the existing coal ash re-use market or, in the event that it did not see any clear pathways, how to create a new coal ash re-use market. We wait to see what the results of that will be. AGL did not actually answer that question as part of its obligations in its environmental impact statement, but the Department of Planning, Industry and Environment has required it to turn its mind to working out how to effectively create or bolster the existing market, which we will all watch with interest. With respect to the issue of what to do with it historically, there is definitely a relationship between starting to move it out of those ash dams as they currently are and using the coal ash for a range of purposes, including as a light-weight aggregate or as concrete. So there is no reason why you cannot build the re-use industry directly next to the sites where the coal ash exists.

It is really important to understand that a lot of the contamination issues associated with coal ash landfill sites do not make themselves fully apparent for potentially decades after the sites have been closed. Capping it and sticking in some monitoring bores will not do anything to prevent the contamination issues that are likely to arise from the types of coal ash repositories in New South Wales, considering that they are not engineered to prevent contamination in the first instance. If the Government or the operators and the coal ash re-use market work together to prepare a strategy that utilises the material directly where it is so that you can get it out and start to use it—however you are going to—you have that twofold benefit of generating a market for its re-use, and there are clear market opportunities, as has been described today and will be described later, and it gets it out of those poorly engineered sites to prevent that contamination into the future. This is certainly something that has been done in other areas, such as the United States, where the importance of removing the material rather than just capping it and walking away have become very apparent and have been causing a whole range of contamination issues throughout the country.

The CHAIR: Dr Wild, did you want to add anything to that?

Dr WILD: I would defer any questions about structural and chemical engineering to the people with expertise in those topics.

The CHAIR: Wise. I want to return to some of the other risks that were identified as we stay on and try to understand what the evidence base is around them in general and specifically in New South Wales. In the course of this morning's proceedings, I think at least four risks were identified. There is a risk to groundwater, which we have discussed. I think the point being that there is not enough evidence in New South Wales yet to make a determination either way and we should therefore not presume that it is safe, in line with the precautionary principle, which is what you are saying. But do we have any evidence about air contamination in New South Wales or internationally? Does it fall within the same category?

The Hon. TREVOR KHAN: If it is not contained, it will dry and blow away. I think we all agree with that.

The CHAIR: Yes, but I am just wondering whether or not there is actual evidence that we can rely upon to make any findings in respect to the risk to air contamination of the existing sites in New South Wales, or any other sites internationally that you think are relevant.

Ms ABIGAIL BOYD: Perhaps go to Dr Wild on that.

Dr WILD: If I can make a comment about the air quality monitoring, at least around the Lake Macquarie/Central Coast region, where I am currently sitting. There is currently no particular air quality monitoring between Wyong and Newcastle, which means that people living at Lake Macquarie, who may be vulnerable to particular matter pollution around the Lake Macquarie power stations, do not have access to that information at the current point. I believe that a monitoring station is due to be installed around Lake Macquarie in the coming months to give us further information, but at the moment that has been blind spot in the air quality monitoring for some time.

The CHAIR: Ms Lipsi, did you want to say anything?

Ms LIPSKI: There have been several instances, especially with the Eraring Power Station ash dam where coal ash has blown over the communities and certainly contributed to poor air quality. Without thorough management of these types of sites these types of issues are going to continue well in to the future. We need to make sure that the coal ash is appropriately contained so that it does not contribute to poorer air quality. AGL has been fined $15,000 a pop I think several times over the last few years for coal ash blowing off its ash dams.

I would add that it has just had an approval to expand its ash dam as well. It certainly does contribute to poorer air quality from time to time and there is clearly not enough is being done to make sure that that ash is suppressed to prevent that poorer air quality when those events occur.

Dr WILD: I was just going to add, in terms of particulate matter when it is blown over residential communities that then turns into pollution of the soil, which then can be easily ingested, particularly by children who are more vulnerable to consuming things like lead and mercury because they are the ones who are likely to put their fingers in the dirt and their fingers in their mouth. Even if something is more likely to cause poisoning by ingestion once something has been blown over a community it then turns into a different kinds of pollution from there.

The Hon. TREVOR KHAN: Ms Lipski, you indicated that AGL has been fined $15,000 a number of times. Is that right?

Ms LIPSKI: Origin.

The Hon. TREVOR KHAN: How many times do you say it has been fined for breaches with respect to coal ash?

Ms LIPSKI: With respect to the air pollution escaping from the boundaries, that is a condition of their environment protection licence.

The Hon. TREVOR KHAN: I am sure it is.

Ms LIPSKI: My understanding is that with respect to air pollution it has happened three or four times over the last few years.

The Hon. TREVOR KHAN: Are you able to provide details of that on notice?

Ms LIPSKI: I guess I can.

The CHAIR: As a person who spent the weekend explaining to my two-year-old why he should not eat dirt, I understand your point. On the third risk that was identified this morning, which was effectively the risk of dam failure, I invite the panel to talk about both its probability of occurring in New South Wales and what you think we should do to prevent it—assuming that we all agree that we should prevent dams from failing?

Mr GAMBIAN: I certainly agree the dams should not fail but I might refer to Ms Lipski for the technical details.

Ms LIPSKI: As I am sure you are all very well aware, Origin submitted a structural engineering report to the Office of Sport in March 2019 that said that in the event of, I believe, a 5.7 earthquake the Eraring coal ash dam was potentially going to fail and potentially going to spill the material that it contains all over the Myuna Bay Sport and Recreation Centre which is, of course very close to a waterway. My understanding is that there has been some independent scrutiny of that says that it may not be a risk. I would add that I am not an engineer. I would say that the best way to prevent ash dams from failing is to make sure that we have got access to the information that has been undertaken by Dam Safety NSW which oversees the structural integrity of these sites.

So that we understand what is going on and we understand the engineering requirements that have been imposed or have been developed over the last several years, if that has indeed been the case, and so that independent engineers can scrutinise the safety of the structural integrity of those sites and, in the event that there are any concerns around structural integrity, to move them. As I was saying before, and as other people will say, it is not rocket science to build a safe landfill site. We need to make sure that we have access to the information that says that these sites are safe in the first instance so that we can plan around how to move them where they do pose an enormous threat to the surrounding environment and communities, and to make sure that that structural integrity is maintained so we are not faced with the event of a collapse.

Ms ABIGAIL BOYD: How much information do we have from the work of Dam Safety NSW and its assessment of dam safety? What do we know?

Ms LIPSKI: We do not know a lot. We know that it has reporting requirements that operators must submit every five years. Those reports are not publicly available. The short answer is: I cannot tell you. Short of submitting a GIPA request, it is very difficult to have access to that information. That is exactly the type of information that should be publicly available.

The Hon. TREVOR KHAN: One of the things that interested me with regards to the generating companies was a discussion that occurred with regards to the dam safety regulator being responsible essentially

for the integrity of the dam wall, and the EPA then being responsible for other issues relating to the material contained—I think that is a fair way of putting it. Do you know of any interaction with the dam safety regulator has in a formal sense with the EPA with regards to the structure as a whole, including the material contained. It seems to me that there would be an interaction between, for instance, the level of water or other material contained within the dam wall compared to the solids that are in it. That seems to perhaps have been the issue in terms of the Kingston Dam failure: that there was a high degree of water contained within the dam and that may have contributed to the failure.

Ms LIPSKI: That is right. There is a whole range of extremely technical information about the hydraulic brakes with which you pipe the coal ash into the ash dam and the rate that you did so that you do not have a huge increase in the amount of material in the landfill site at any given time. To answer your question about the relationship between the EPA and Dam Safety NSW, if they do have a relationship and they do interact with each other to ensure that these sites are really safe, it is very opaque. There is nothing to suggest that there is a formal relationship between the two agencies. I think that community expectation is that those two agencies would have a strong relationship in order to support each other to make sure that these sites are as safe as possible.

I note too that neither the EPA nor Dam Safety NSW have prepared submissions to this inquiry. I would strongly encourage the Committee to seek out the views of both the EPA and Dam Safety NSW because I think they are in an excellent position to advise the Committee on the types of liability that the New South Wales Government is up for when these sites are eventually handed back to the State Government.

The Hon. TREVOR KHAN: I am not quite sure whether they would have the answer. Nevertheless your suggestion is probably worthwhile.

Ms LIPSKI: They may not have all the answers but they can certainly answer a range of questions around the types of remediation that ought to occur to make sure that these sites are safe well into the future, and the types of contamination risks that are associated with the repositories to give the Committee a really good understanding of what they are up for in the event that they are not appropriately remediated or in the event they do actually collapse.

The CHAIR: Is it unreasonable to say that the extent to which we know about the risks that are posed by the dams it depends on the operators to assess them at first instance?

Ms LIPSKI: My understanding is that occurred to some extent at point of sale when the New South Wales Government was in negotiation with the private operators. So these baseline studies were undertaken essentially to draw a line in the sand between the extent to which the sites were causing contamination and the contamination risks associated with them before the power stations were sold, so therefore the power stations would be in a position to understand what has gone on beforehand and they would be held to particular management obligations in their sale and purchase agreements.

So the short answer is that information is out there, it is just not publicly available. The public Treasury will have that information out there somewhere. The baseline studies that were undertaken will provide a whole range of information around what was going on before the sites were privately operated. So it is out there and there should be ongoing, annual far assessment of what has happened since then and I would certainly encourage that type of analysis is undertaken so that we have a really good understanding of what is going on now and how that differs potentially from when those baseline studies were undertaken.

The CHAIR: I put this to the panel: The conclusion that I am drawing is that the risk to groundwater, air contamination and dam failure are not known, and I am trying to explore the reasons why they are not known, but the first proposition is they are not known and the second reason is it seems because no-one has decided whose job it is to know the risks. In my opinion, it would be a useful finding of this Committee to say that we really should be quantifying or calling on, be it the regulators or others to quantify the risks that are posed to groundwater, air contamination and dam failure.

The Hon. TREVOR KHAN: I do not think you can necessarily make that finding on the basis of two lots of witnesses so far.

The CHAIR: Hence the proposition that I am putting to you as well, which is would you like to comment on that?

Mr GAMBIAN: Yes, I would like to comment on that. I think that what we have here is a classic situation where there is a socialised problem in the context of a private business operation—in this instance, a private business that did not start out as a private business; it started out as a public utility. So there is across the board, in my view, a lack of regulation of how these dams operate full stop and a lack of a recognition that the

ultimate price that will be paid in the event of some of this possible risk in the future is going to be borne by the community; it is not going to end up being the problem of the operators to solve.

So it would be a really, really helpful recommendation of this Committee and a very helpful intervention by government to establish that in the first instance the private operator must be responsible for the consequences of the waste that they are creating, as any private operator in any other context would be. Then it is the role of regulators to ensure proper compliance and to set conditions that all of the other things that the EPA in particular might seek to do. But we have got this situation where—I did not hear the testimony this morning, but if there is a culture that suggests that there is really nothing to worry about here, nothing to be seen, it exists in the context of a series of private operators that know very well that the consequences may very well be down the track, long after their current budget cycle is over, potentially even at the end of life of their power stations—beyond the end of life of their power stations. So there is no incentive whatsoever to maintain good corporate practice that we would expect of any other private business in Australia.

The Hon. TREVOR KHAN: I do not think that is the evidence that they gave this morning.

Mr GAMBIAN: I am happy to be corrected on that, Mr Khan, because I did not hear it.

The Hon. TREVOR KHAN: I think the evidence that they gave this morning, as I took it, was that essentially they are responsible for, in essence, the pollution that they create. That, of course, is difficult in the context of a pre-existing facility that they have acquired and which may have operated for decades before they got it, and what happens to the end I think is a very legitimate question, but I do not think any of the witnesses coming here today said it is not their problem in terms of what they are doing now. I am not trying to be defensive of them; I think the general point you make is that actually it is the community as a whole that inevitably bears—I grew up in Wollongong and I see the slag heaps still around the steelworks—I think it is the community that in the end bears the burden when a southerly comes through and it all ends north; it is not BHP.

Mr GAMBIAN: Yes, exactly, and if that was the testimony this morning that is certainly reassuring. I guess the role that this Committee, I think, has and the Government as a whole has is to put some boundaries and to set some standards for how these operators should operate in best practice. We are going to have these power stations for years to come, but we are going to have these dams for decades to come.

The CHAIR: Mr Mallard did want to ask questions but Ms Boyd has been patiently waiting. I will exercise my privilege as Chair.

The Hon. SHAYNE MALLARD: *Hansard* will show that Ms Boyd has had a fair go.

Dr WILD: I was just wondering if I am able to make a comment.

The CHAIR: I am going to allow Mr Mallard to ask questions and then maybe in the course of that it might pick up on what you would like to say, but if not I am sure you will be able to say it.

The Hon. SHAYNE MALLARD: Mr Chair, thank you. I just want to package the assertion that was made again just then, and was made by Ms Lipski and Mr Gambian earlier, that the dams are largely unregulated. We have no evidence that that is the case yet; we have not been given any evidence and it is a good idea to call in—

The Hon. TREVOR KHAN: Actually, we have got evidence now of it.

The Hon. SHAYNE MALLARD: —the Dam Safety authority—that is correct—and the EPA, and it was a good question that Trevor Khan asked about the connection. In a previous life I had some engagement with the Dam Safety authority and they are a pretty tough operation there, so we should talk to them. But you make the assertion; tell us how you know it is poorly regulated.

Mr GAMBIAN: I make the assertion—and, again, I will pass over to Ms Lipski in a second—I make the assertion really on the basis that—and perhaps it is unfair to point a figure; I do not want to be interpreted as pointing a particular finger at a particular operator in this instance—what I am talking about is a legacy where these dams have been created not necessarily with the best—

The Hon. SHAYNE MALLARD: The standards have changed; we heard that this morning.

Mr GAMBIAN: —standards in mind, and there is not—

The Hon. SHAYNE MALLARD: But you make the assertion that they are poorly regulated today. What is poorly regulated about them and what are you saying should be done? Have you got the regulations at all?

Mr GAMBIAN: No, well, I am making a broad point and certainly refer to the submission, but to the extent that we have got this, whether we like it or not, the operators, the community, the Government have got these dams across New South Wales with hundreds of millions of tonnes of toxic waste in them; they were created at a time when, as you rightly say, standards were less than they are today. There is not an imperative on any of the operators currently to do anything additional to improve that set of circumstances. So if you go to our broad point in our submission and in our testimony today, it is that an appropriate intervention from government right now would be to facilitate a set of circumstances where there was a structural incentive to minimise the amount of new waste going into dams and an incentive to re-use the waste that is already in the dams.

The Hon. SHAYNE MALLARD: I am getting at the lack of regulation though.

The CHAIR: Maybe we can hear from Ms Lipski first before we continue the dialogue, because the question was also asked of her.

Ms LIPSKI: Certainly. Firstly I would say that there is clear evidence that there is contamination occurring around these sites. If they were appropriately regulated that contamination would not be escaping from the boundaries of the premises. Yes, standards can change certainly, but we know now how to do better, and the lack of regulation around ensuring that those existing sources of contamination are cleaned up to prevent pollution in the way that the law requires is not being undertaken. It is not dissimilar in places like Victoria and Queensland and Western Australia; New South Wales is certainly not unique in this. So if the regulations were actually working, then there would not be contamination occurring.

Secondly, I would say that the environment protection licences, which is the chief regulatory instrument imposed by the EPA on operators, if that was robust enough then we would have limits on the types of pollutants that can be released into the environment from these sites, and I am sure that you will hear more from the Hunter Community Environment Centre on the specifics on this. There are no clear limits in the environment protection licenses to prevent a whole range of contaminants from escaping into the surrounding environment. If the regulation was robust and if it was working then we would have those types of limits imposed in the environment protection licenses and the contamination would not be occurring. If the regulation was robust enough Origin would not be able to just hand an engineering report to the Office of Sport without it being scrutinised by the Dams Safety Committee, to say that well-loved public spaces have to be closed. If the regulatory regime was working those things would not be occurring. There are clear contamination issues and integrity issues and a lack of oversight that is allowing these types of instances to occur.

The CHAIR: Mr Mallard, did you want to follow up on that?

The Hon. SHAYNE MALLARD: No, no. I did not really get an answer. Thank you.

Ms ABIGAIL BOYD: Did Dr Wild want to comment?

The CHAIR: Dr Wild might want to comment, but I would just remind Committee members that they can refrain from necessarily reflecting on evidence until afterwards. We have deliberatives for that. Dr Wild?

Dr WILD: The last question was regarding current regulation?

The Hon. SHAYNE MALLARD: Yes. I wanted to get a handle on where the regulations are not working. No-one has gone through specific regulations. As I said, I have dealt with the dam authority. They are a pretty tough operation there in terms of the safety of dams. Outline where the regulations are letting us down, specifically for these dams.

Dr WILD: I think that the issues around the regulation [audio malfunction]. What I wanted to say earlier is that a lot of the health issues end up getting isolated down and a lot of the regulations surround minerals and elements and pollution on a case by case basis, which does not really fit with what we know are the health risks of exposure to this kind of complex pollution. It is not the same being exposed to coal ash as it is to, say, being exposed to mercury or lead by itself. These overlapping chemical exposures can cause additive and multiplicative effects. It is really tricky to say what the health outcomes are in people on the ground if we start isolating everything down and monitoring everything on a case by case, mineral by mineral basis.

I think that this is the issue with how we regulate and monitor these kinds of installations, in that we are not looking at the overall health impact on the community. We are looking at pollution—you know, what is the lead? What is the selenium? All of that is important but I think it does not answer the question about what is actually happening to these people. We are assessing health impacts without using a clinical end point. It would be like if we were trying to plan the coronavirus public health response and the only way we knew who had coronavirus was by assessing the viral presence in the sewage. That would tell us that there might be something

around but it would not tell us how many hospital beds we need or what the health impact is going to be on the system. We are not monitoring or making consequences based on what is actually happening to the real people.

Ms ABIGAIL BOYD: Can I just go back to the conversation we were having with the Hon. Trevor Khan, where he was talking about—basically, can we cap this? Can we leave it with a cap or do we need to move it? I think that is a core issue. Perhaps I could direct this to you, Ms Lipski. What are the risks involved in just leaving it with a cap, like they are doing at Vales Point, and then putting soil and vegetation on top—and potentially solar farms? What are the risks of doing that?

The Hon. TREVOR KHAN: I am not saying there is no risk. It is a question of balancing the risks in terms of what you do.

Ms LIPSKI: Certainly. By just leaving the coal ash in these poorly engineered—if they are engineered at all—sites that are not lined, you are faced with a situation where there has been nothing done to remove the source of contamination from the place that it exists. If you do not remove a source of contamination from where it resides, you risk significant environmental impacts well into the future that ought not occur. As I mentioned earlier, the experience in places like the United States has been that the full extent of the contamination issues associated with coal ash dams do not make themselves apparent for decades after those sites are capped and closed. As with any source of contamination, the way to mitigate the risks associated with it is to remove it in the first instance. Where coal ash is concerned there is an opportunity to remove that for re-use purposes, as well as making sure that that source of contamination is removed.

As people have talked about in the inquiry, this material is highly toxic. Letting it just sit in these unlined sites right next to waterways poses an enormous environmental risk into the future. We have already got an instance where certain species of crab cannot be eaten in Lake Macquarie because of the cadmium content in them. How long are we going to allow that to occur by allowing those contaminated sites to sit right next to these waterways that people fish in and swim in and enjoy? It is really difficult to relay the importance of removing this contamination from the source. The only way to mitigate that risk is to remove it.

The Hon. TREVOR KHAN: Ms Lipski, could I ask you this? If you went into various parts of Sydney Harbour—particularly further up the harbour—and went into some of the bays and you took samples out of those bays, you would find the sediments have high levels of pollution in them. You would agree?

Ms LIPSKI: I cannot comment on it.

The Hon. TREVOR KHAN: Well, let me assure you that is the case. Let me assure you that the factories that were responsible for the pollution that caused those have been gone for 20, 30 and maybe 50 years. If I take what you say, then the way to deal with that pollution that is in the sediments is now to go into those bays and suck it up and put it somewhere. I think that runs completely contrary to all the advice that is received. Actually the best thing you can do is to leave it in place and not stir it up. I go back to that problem. I accept that there has been a failure of regulation, particularly in the past, with regards to these coal ash repositories. But the question is: Can you actually, practically dig this stuff up and not create an even bigger problem than we have got now?

Simply saying there is a risk there now, I will accept. The question is: What are the risks of doing what you propose? I think you need to answer that at the same time because I know Dr Wild is concerned, for instance, with regard to a variety of environmental pollutions. Having two children that live in Wollongong and my grandkids, watching them having to periodically wash down the walls of their houses because of the levels of dust in the air—there are real problems. But if you break up one of these sites and start playing with it, you are creating another source of pollution in and of itself.

Ms ABIGAIL BOYD: Point of order: There are a lot of statements going on here. If you could let Ms Lipski comment on that—

The Hon. TREVOR KHAN: Ms Lipski, go for it.

Ms LIPSKI: Thank you. I would say that, yes, you can remove it safely. There are suppression mechanisms that you can employ to reduce the amount of dust, if not entirely mitigate the amount of dust going into the atmosphere when you are removing this material. It has been done in places like the United States for decades. There is no reason why you cannot remove it safely, particularly if you have a facility close by that is going to re-use the material to make a safe by-product for something later on down the track. There are certainly ways that you can take it out safely that are not going to pose an additional environmental issue.

The CHAIR: Just to clarify, are you talking about seepage into water or the existing deposits when you said that is a practice that occurs in the United States? To be fair, the metaphor that Mr Khan was drawing invited the conclusion that perhaps you were talking about extracting sediment from water.

The Hon. TREVOR KHAN: No, no, no.

The CHAIR: You are talking about existing deposits.

The Hon. TREVOR KHAN: I am talking about digging it up and then using it in some way.

The CHAIR: Just to be clear, that is what you were referring to—the prospect that we would remove existing deposits?

Ms ABIGAIL BOYD: From ash dams.

Ms LIPSKI: Sorry, is that directed at me?

The CHAIR: Yes. I am just asking you to clarify.

Ms LIPSKI: Yes, that is correct.

The CHAIR: I am conscious of the fact that this is technically Ms Boyd's line of questioning.

Mr GAMBIAN: If I could just jump in on Mr Khan's—

The Hon. TREVOR KHAN: Puzzlement.

The CHAIR: Perhaps what we can do is just allow Ms Boyd to continue in the line of questioning because we have got 20 minutes and I want to talk to you about levies and recycling.

Ms ABIGAIL BOYD: Thank you. I do want to cover off something that Mr Khan was talking about there. Obviously each of these ash dams are different and have different structural and environmental issues. Do you think there is a case for assessing and treating some of these sites differently to others when it comes to remediating them?

Ms LIPSKI: Potentially, yes. That research certainly needs to be undertaken so that we understand the full extent of the ways that these sites differ from each other. It certainly is the type of research and analysis that I would encourage the Committee to consider as something that ought to be done.

Ms ABIGAIL BOYD: So when we look at something like Tallawarra in the Wollongong area where we have three ash ponds. I have been out there myself and seen those ash ponds. One is completely dried out and the other one, as Mr Khan was referring to as similar to in the harbours, has the sediment at the bottom that perhaps you do not want to disturb. Do you know much about the situation at Tallawarra? I know that Wollongong City Council is concerned about the groundwater and the types of remediation that could occur at that site.

Ms LIPSKI: I am not particularly familiar with that site, sorry.

The Hon. TARA MORIARTY: Mr Gambian, in terms of your recommendations for what should happen going forward, one of those things was a levy or a licence fee, however you want to describe it. Is your proposal that that be placed onto the generators themselves, the power companies themselves? How do you say that will incentivise re-use?

The CHAIR: And can you clarify whether you want that on new deposits or existing deposits as well?

The Hon. SHAYNE MALLARD: And will it will go on to electricity bills?

Mr GAMBIAN: Can you say that again, Mr Mallard?

The Hon. SHAYNE MALLARD: And will it wind up in electricity prices?

Mr GAMBIAN: That is always the right question to be asking. Just to go to the first question, yes. The producer of the waste is rightly the owner of the levy. In an ideal world what would happen is that there would be an incentive there to not incur the levy by re-using the waste.

The Hon. TREVOR KHAN: The polluter pays.

Mr GAMBIAN: Not quite.

The Hon. TREVOR KHAN: I am not being rude.

Mr GAMBIAN: I know you are not. No, I do not mean the polluter pays. What I mean is a bit like a carbon pricing regime. The point of the levy is not to raise money; the point of the levy is to reduce the amount of waste. Yes, it would be on the operators to incentivise them to create the conditions in which the waste could be re-used. Do I mean the existing waste? No, I do not. Would that affect power prices? No, not really, because hopefully the Government does not make a brass razoo from it because all the waste is being re-used.

The CHAIR: I ask you to reply to the point made when this question was put to the energy operators this morning. They made the point that it should be distinguished from a carbon price setting effectively because there is no market. In the absence of their ability to sell it, the only thing left to them is to reduce, which they say they are currently trying to do anyway. Their view is that they are trying to reduce the waste, which would be the intent to the levy if that is the intent, but they will not be in a position to pass it on like a carbon price because there is no market akin to the energy market that means that they pass it on. Their view is that in that absence they will internalise the cost and pass it on to consumers. Do you wish to reply to that?

Mr GAMBIAN: Yes, I do. It is very similar to a carbon price simply because—yes, of course, to the extent it is possible to minimise the amount of waste than there is an economic incentive there to minimise. There is a complementary piece of work however which is to stimulate that market and to do the research that is necessary to support the emerging industries that would be necessary to create that market. We completely accept that there is a potential problem here in the absence of any government intervention, which is that if there is no market for the ash then, yes, we are exactly going to have the problems that you outlined. This is where there is an opportunity for the Government as it thinks about industry policy and thinks about transition options for the Hunter and coast regions to start thinking about trying to stimulate some of these industries in those areas as they have successfully done in places like Germany.

The CHAIR: Ms Lipski and Dr Wild, did you want to respond to the concept of a levy and as well any further comments you have on alternative use? Ms Lipski, in some of your submissions you made reference to alternative use propositions.

Ms LIPSKI: Firstly, yes, certainly we are supportive of a levy that could be imposed. I think that sometimes taking the stick approach is the appropriate way to get new markets working and to inspire folks to work out ways that they can reduce the amount of waste that they are producing in a significant way. As far as re-use goes, the safest way to re-use coal is to encapsulate it in some kind of way. The most environmentally sound ways of doing that that prevent public health risks are through the use of it in concrete and the use of it in aggregates.

Dr WILD: Yes, I believe in our submission we covered that a levy could be used to cover health costs associated with living by the repositories and possibly consider it like a public insurance scheme for people who might have found that their health has been affected. There are conditions internationally that have been found to be increased in likelihood in, say, children who are living around ash dams, and ADHD and the like are very expensive for families to have to bear the burden of.

The CHAIR: Why $20, Mr Gambian?

Mr GAMBIAN: To be honest, Mr Chair, we are supporting HCEC's recommendations. I suggest you ask them that price question. I could make it up for you but I do not think that would be satisfying.

The Hon. TREVOR KHAN: It was not a trick question. My question is to what the price point is that may incentivise.

The CHAIR: We will take that up with the Hunter Community Environment Centre.

The Hon. MARK BANASIAK: I have two questions for Dr Wild. Firstly, touching on your last comment about ADHD, what studies have actually been done to show connection between coal ash repositories contamination and ADHD?

Dr WILD: I believe that the study citations are in the submission we gave back in March. The major one was in the States around an epidemiological study in children, I believe, in North Carolina showing an increased incidence. I believe one was in psychological conditions and one in physical conditions like asthma. They showed an increased incidence in children who lived closer to the dam. This has biologic plausibility because some of the contaminants of coal ash include lead and mercury which are neurotoxic, especially to children and developing brains. There is no safe lower limit that we know of for the consumption of lead and mercury by children.

The Hon. MARK BANASIAK: And my other question is regarding the re-use. Has there been any studies or does your association have any concerns about setting up an industry that re-uses this material that we may then find down the track has negative health impacts and therefore the government is then liable because it has encouraged or helped set up these industries? We already know there are health risks associated with concrete dust and the breathing in of concrete dust. If the Government encourages the industry involved around this re-use, is it setting itself up to be potentially liable down the track?

Dr WILD: Again, in my readings there is definitely a spectrum of risks associated with the engineering process with particular products. That is not a question I have a full amount of evidence to answer with at this moment.

The Hon. TREVOR KHAN: Dr Wild, I take it that the study that you are referring to is *Exposure-Reducing Behaviours Among Residents Living Near a Coal Ash Storage Site*, is that the one?

Dr WILD: No, I think that is about attitudes. I cannot recall off that of my head. I did write this back in March so I cannot completely recall. I believe it was not about behaviours but it was an epidemiological study around children. For some reason I have not printed my citations page so I do not have in front of me at the moment, my apologies.

The Hon. TREVOR KHAN: Dr Wild, I am interested how one would differentiate, taking into account these are generally environmental exposures, a child living near a coal ash dam from a child living near a power station or other heavy industries that are likely to be in the vicinity of those sort of structures. Is it possible to actually define it down to a coal ash dam or is it exposure to the various pollutants that are in those vicinities?

Dr WILD: That is the million-dollar question of epidemiology. What happens in epidemiology is you need to—that first step is to create a dataset. That would involve doing a survey of the health conditions experienced by people in not only affected regions, but also control regions—so people in other regions around the State, preferably with a similar socio-economic status. Then you try and control for different exposures. One of those exposures is living near the coal ash dam. An overlapping exposure is living near the power station, as you recollect. There are a series of statistical models that you can apply to the dataset to try and control for different epidemiological exposures to try and assess to what extent, say, the coal ash dam is accountable for the poor health. The issue that I have is just that this is not being done. We cannot say that these things are not happening, because we are not collecting this data. I think that is the level of data we need to say that these dams are inert or not causing any health issues for the people of, say, Lake Macquarie or any other region near a coal ash repository.

The Hon. TREVOR KHAN: Fair point.

Ms ABIGAIL BOYD: In your view—noting that the data is really limited—are there any indicators pointing towards any increased incidence in any of the things you might expect to see based on the other research in New South Wales?

Dr WILD: I did not have access to an appropriate dataset to be able to try to make the estimation.

The Hon. TREVOR KHAN: Which is a valid point.

Dr WILD: Yes. I think you really need to have access to diagnostic data by postcode for a variety of conditions and make sure that you have got access to other information—for example, parental smoking in that same environment. While you could make very vague suggestions, you really need to collect data for a purpose to be able to make assessment about it. I think that is why making specific studies with the intent of ascertaining these questions is really important, because I think it is hard to back-engineer it from what is already known.

Ms ABIGAIL BOYD: Has it been done in other countries?

Dr WILD: I suppose that is the similar studies that I am referring to. Like I say, it is just that it is very hard. From my perspective as a doctor, I think that making the judgements based on groundwater and all that—we can suppose about health but we are not really asking the right questions to say that these things are safe.

The CHAIR: We have seven minutes left in this session. Do Committee members have any final questions they want to ask? I would like to ask a couple about regulatory changes that might be required.

Ms ABIGAIL BOYD: I could go on forever, but you go first and then come back to me.

The CHAIR: I wish to turn to the proposition that a new regulation is needed, which I think has been argued for by environmental organisations. Can I ask panel members what they would like a new regulation to do that the current regulation does not?

Ms LIPSKI: If I could start, the first thing I would say is there are no coal ash specific regulations in New South Wales. Indeed, there are none in Australia at all. So when we are talking about regulations, we are talking about, essentially, a piecemeal approach to ensuring that contamination does not occur and structural integrity is maintained. Our submission certainly outlines what a coal ash specific regulation ought to look like. I would encourage you to go through those recommendations and get an understanding of what it is that we are proposing. Certainly, there is an opportunity, as well, to amend the environment protection licences to impose a range of conditions on the way that the repositories are managed; to encourage—or to require, rather—the operators to be preparing comprehensive rehabilitation and closure plans well before the sites are decommissioned; and to make all the information that is generated around coal ash repositories publicly available, including monitoring data and structural integrity reports, to help the community understand what is going on.

There is certainly a lot of community anger around the lack of information available to them about what they are living next to. Increasing the transparency of the regulatory regime is very important for making sure that we have got a robust regulatory system that is transparent, that imposes through obligations and that makes sure that the Government is not liable for eye-watering amounts of money in contamination liabilities well after the sites have been decommissioned.

The CHAIR: Does anyone else want to add anything to that, or is that a general view that you would agree with?

Mr GAMBIAN: That is definitely a general view that we agree with. We support EJA's submissions.

Dr WILD: I would reiterate that I think it is important to have patient-centred or human-centred health outcomes as part of the monitoring process. I also would like to touch on the fact that there is no occupational health standards for the workers in coal ash sites. We have very strict and very good occupational health guidelines and standards for the workers in the coal mining industry, but then it is a bit of a blind spot that the workers who are dealing with the highly concentrated and toxic end point of that industry are not protected by similar guidelines and standards. I think that is an important regulatory point as well.

The CHAIR: Forgive my ignorance of some aspects of New South Wales' environmental law, but are you saying that you would also favour, effectively, a third-party audit regime being adopted—that is, not just the regulator and the operators, but the ability for third parties to be auditing data and information and seeking information?

Ms LIPSKI: That can certainly be helpful, and that is something that happens in Victoria, for instance. There is a condition in the licences of power station operators in Victoria to engage an independent third-party environmental auditor to undertake an audit of the way that the ash dams are managed in Victoria.

The Hon. TREVOR KHAN: Can you provide us with some details of what that regulation is?

Ms LIPSKI: I can certainly provide you with some details. I can also provide you with the independent expert analysis of those types of reports. It is certainly something that already happens in Australia and I would absolutely welcome that happening in New South Wales as part of a robust regulatory regime. I would also say that the obligations imposed on those third-party auditors need to be comprehensive and robust as well.

Ms ABIGAIL BOYD: I direct this to everyone on the panel: In terms of looking at possible regulatory change going forward, to what extent do you think we need somebody independent to be helping us to put forward those regulations, given the potential conflict that the Government has in both being liable for some of the contamination at these sites and also being the one responsible for putting in place regulation that might increase the quantum of that liability? Is there a role for an independent party to help draft those regulations or to carry out that regulation?

Ms LIPSKI: Certainly. I would also say, though, that we would hope that the EPA is independent enough to be able to undertake that type of work as well. I certainly will always welcome an independent expert and independent bodies to participate in that type of process to avoid the types of risks that you are referring to. So I do not see why that could not be the case.

Mr GAMBIAN: On that point, Ms Boyd, I think what is really important here is transparency. If the Parliament is made regularly aware of the scale of the liability, if the data is broadly available and if the public has access to actual technical data, then I agree with the submission that the EPA is well equipped to regulate some of these areas and has done so well in the past. Really, what I think is crucial is just a socialisation of knowledge around some of this stuff. I think that most people of New South Wales—including, I imagine, members of this Committee—did not have a lot of information about coal ash until now. I think that is probably our most significant problem.

The CHAIR: I understand the purpose of this inquiry is to understand the liability that might belong to the State. But I understand that there is the contingent that, by handing the sites back to the Government at the conclusion of their lease, provides a perverse incentive for the operator not to rehabilitate. I am struggling to reconcile that with the evidence we heard this morning from the operators, which is that they were trying to rehabilitate and, in fact, they have identified commercial opportunities to rehabilitate. Of course, that is not inconsistent with the view that there is a perverse incentive just by the way in which these arrangements are structured—

Ms ABIGAIL BOYD: That is only Vales Point.

The CHAIR: True, that is only Vales Point—to be fair, Origin said the same thing. My point is, can you identify an example of a behaviour that either of these operators are not doing that they should be? Because they are coming forward saying it is their intention to rehabilitate, that they are investing in rehabilitation and that they are pursuing new market opportunities to rehabilitate and recycle further, meaning that they are not really at cross purposes with what you are saying, which is that they really want to rehabilitate, too. Can you tell us what you think they are not doing that they should be?

Mr GAMBIAN: Again, I will hand over in a second. Just broadly on that point, it would not be the first time an operator with a waste stream has said that we should not be particularly concerned and that they have it under control. Do you remember 15 or so years ago when BP ran a series of ads saying that they were "beyond petroleum"? There is a vast gap between an operator that is assuring a parliamentary inquiry that its self-regulation and good intentions are all that is required and what is actually required.

The Hon. TREVOR KHAN: I do not think that is what they were saying because it is not just what they were saying, it is actually what they are doing. They are seeking to find markets to recycle this stuff and they are.

Mr GAMBIAN: Great. That is terrific.

The Hon. TREVOR KHAN: Their point is that there is a limited market. I understand cynicism and I understand that companies do not always do, but there is some evidence—

Mr GAMBIAN: Indulge my cynicism for just a moment—do not blame a duck for quacking. Let us look at what is on the table. If they are doing all of those things and that is working well, then none of this should cause any concern. But what we say is: Have transparent information, regulate the area more consistently with international best practice, create economic incentives to hasten what they say they are already doing and invest in research and development and potentially new industries so that there is in fact a market that supports what they are doing. This does not have to be punitive. Do not assume that the intervention of the State is necessarily punitive. There is, at the end of the day, a liability that will belong to the people of New South Wales and that makes it very much this Parliament's business to be involved at this stage. I do not think leaving it to private operators is ever going to be enough, even if they are operating good faith. I did not hear the testimony but I do not dispute that they are.

The CHAIR: Ms Lipski or Dr Wild, did you have any final comments on that particular point?

Ms LIPSKI: Thank you. The only additional thing I would add is that, ultimately, the operators are going to undertake the rehabilitation obligations that are imposed on them. At the moment I would not say that any of the rehabilitation obligations that are imposed on them are robust enough to ensure that comprehensive remediation is undertaken. Without a very clear set of regulations that outline what those obligations are, by all means they might be complying with what the law requires of them, but if the law itself is not sufficient to protect the community and to protect the environment then we have a problem with the way that they are regulated.

Dr WILD: My comment is that in terms of accounting the financial liabilities to the State, I think it is important to make sure that the health costs have been accounted for because otherwise our balance sheets will never add up.

The CHAIR: I will close it there because we have gone four minutes over time. I thank the witnesses for their appearance today and I note that you have taken some questions on notice. You have 21 days to provide answers and the secretariat will be in touch. Thank you.

(The witnesses withdrew.)

(Luncheon adjournment)

PAUL WINN, Member, Hunter Community Environment Centre, affirmed and examined

GARY BLANCHE, Member Coal-Ash Community Alliance Inc., affirmed and examined

BERNADETTE MULLANEY, Member Bathurst Community Climate Action Network, before the Committee via videoconference, sworn and examined

CHRIS JONKERS, Vice President, Lithgow Environment Group Inc., before the Committee via teleconference, sworn and examined.

The CHAIR: I invite witnesses to make a short opening statement that is no longer than two minutes.

Mr BLASCHKE: My name is Gary Blaschke. I live at Lake Munmorah on the Central Coast. I represent lots of the communities of the region both in Lake Macquarie and the Central Coast. I have sent a 17-page submission, which I am sure the Committee members have read and comprehended. We do have, as Mr Wild said, 60 million tonnes of stored coal ash just out between Eraring and Vales Point, with a further two million tonnes per year as they produce the electricity. So we eventually will end up with 89 million tonnes between Eraring and Vales Point, and that is including their percentage of what they can recycle. Eraring Power Station itself the last three years has only recycled 27, 29.8 and 34.8 per cent over the last three years, so they are not even getting to 50 per cent recycling and yet their target is for 80 per cent recycling by the end of 2021. I have a bit of a bet going on with one of the employees for $100 to make sure that they do not get there.

It is unbelievable that we have an ash dam—this is Eraring—that has buried asbestos, and they have already admitted to it because I sit on the community consultation committee [CCC] with Eraring. We also have illegally dumped asbestos in the Vales Point site. All the correspondence I have had with the EPA and Ministers are saying all we have done is marked out that position; they have done nothing about telling us how much there was, where it came from, did it come from Sydney originally, because it was all transferred leftover sandstone from the tunnels getting drilled under Sydney. "Identified and marked" is the quote from Adam Gilligan, the regional director of the EPA, and yet recognised as remediation by both Justin Flood, Executive Manager of Delta, and, I will quote, "a progressive cap and cover approach". Also James Griffin, Parliamentary Secretary for the Environment and Veterans, through Yasmin Catley, MP, from Swansea, states, "The ash dam and those at Eraring and Vales Point stations are progressively covered with clean soil and revegetated to rehabilitate these areas and mitigate environmental risk."

The Hon. Matt Kean has also sent me letters stating that he considers the cap and cover approach is the way to go. With due respect to all these people, they do not understand what remediation is. Cap and cover is just capping it and hoping it goes away in the future. This is not going to go away. We are going to have leaching coming from it for the rest of eternity, even if we were able to get most of the ash out of it.

The CHAIR: Mr Blaschke, I just want to give you a 30-second warning because it has been three-and-a half minutes now and we do have three other people we need to hear from. You are welcome to table your opening statement and we will get copies.

Mr BLASCHKE: I have done so. We do not have a world's best practice, we do not even have a decent practice here. We have got reports, that you have, for air pollution from Environmental Justice; the Hunter Community Environment Centre *Out of the Ashes* report; Doctors for the Environment; we have got public health reports that say that the emergency wards are full of young people with asthma and respiratory problems. It just keeps going and going, but the main thing is that we have two preschoolers at Chain Valley Bay—preschoolers—who have been diagnosed with brain cancer; we have just had two 15-year-olds who grew up in the area together pass away nine months apart from one another with spinal tumours; we have met a former manager of the ash dams who came up and called us a bunch of greenies, but when we explained the situation and told the story about the 15-year-olds, he lifted his shirt up, showed us all his scars and said "I was the manager of the ash dams for years and I've got spinal tumours".

And, to top it off, I have lived there for 12 years, I have been a fairly healthy person, I have run the Disabled Service Association for the last 35 years and yet, to make it even personal, I was diagnosed with liver cancer just a couple of days ago. So if this is not a human health issue nothing is a human health issue. I cannot prove that these ash dams are causing it but, by God, we need to have an environmental and human health report. [EVIDENCE OMITTED BY RESOLUTION OF THE COMMITTEE 1 SEPTEMBER 2020] has swept it under the carpet. He is saying that we are only 6 per cent above the average for New South Wales. I have got a report from Torrens University, who did a cancer cluster report on the Central Coast, that we are a minimum of 6 per cent above, up to 20 per cent above for nine different cancers, not including liver, brain or spinal tumours.

So if we have not got something wrong. These reports go back three decades—medical reports from local doctors, from just about everybody, and now we have got all the latest reports. We cannot all be left-wing radical nutcases; we are human beings, we are people who live in the area and, yes, if pollution was purple and we could actually see it, we would all be up in arms. It is because we cannot see it. We have forgotten about the Lake Munmorah Power Station. I went for a walk through there to try to find the ash dams and was told by the rangers that the last 10 years they pumped it up through into the Vales Point ash dam, but what they did not say is what they did with it prior to that, and when I read a book called *Oak Flats to Budgewoi*, the history of the area, the Electricity Commission commissioned 60 scientists to work on a project to dump 8,000 tonnes of coal ash per week out into the ocean at Wybung Head. I have not been able to confirm that to be absolutely correct, but a historical book from Brisbane Waters Historical Society has written it. I have spoken to them.

The CHAIR: Mr Blaschke, I do not want to cut you off but it has been seven minutes and I do have three other people who need to make opening statements as well, so can we please just come to a close? I understand you have put a lot of work into your statement; it will be tabled and in the record as well, but I am conscious that we have to ask people questions and we have three other groups who need to make their opening statements too.

The Hon. SHAYNE MALLARD: It has been very informative though.

The CHAIR: It has been very informative. I do not want to cut you off for that reason.

Mr BLASCHKE: Can I just put forward one proposal?

The CHAIR: Sure, please.

Mr BLASCHKE: My recommendation is that a new community consultation committee be established by the New South Wales Government to oversee the re-use of coal ash at all local coal ash dams in New South Wales; that the coal ash be listed as a hazardous waste under the Act; that a coal ash levy be introduced to the tune as to that of which the community is charged for simply dumping their excess general waste at their local landfill, and I am suggesting $200 per tonne. I get charged as a resident of the Central Coast $329.09 per tonne to dump my rubbish at the landfill, so we need to have Sunset International Limited and Origin Energy each contribute $100,000 per annum to allow the CCCs to employ their own scientists, carry out independent tests and read reports as a gesture of goodwill, as per the Orica site in Botany, which I instigated that $100,000.

The CHAIR: Thank you. I am going to ask the people around the table first, but, Mr Winn, please if we can keep it relatively short.

Mr WINN: Sure, I will. I am a researcher with the Hunter Community Environment Centre. I have been sort of investigating ash dams around the world for the last five years—just a crazy sort of backlot kind of a career—but from my experience looking at about 35 different ash dams around the world, New South Wales ash dams are some of the worst I have ever seen. They are poorly built. I think they are managed as best they can but they are starting off with a sow's ear and it is very difficult to stop the leaches from occurring because there is no impermeable membrane underneath them. Our investigations over the last few years have shown that there is significant contamination coming from these ash dumps. The stage two assessments from Environmental Resources Management [ERM] that were commissioned by the NSW Treasury prior to the sale shows quite concerning groundwater contamination below all of the ash dumps in New South Wales as well as surface waters and sediments around those facilities.

A lot of the talk we see from industry is that the metals contained in Australian coal ash is relatively low—and it may be. But when you have tens of millions of tons of the stuff in one place, that is when you have problems. Our estimates are that the 3.4 million tons of fly-ash that is dumped in New South Wales repositories every year will generate about 145 tonnes of metal leachate. There is another 200 million tons of metal leachate that will be coming from the accumulated ash that has been piling up for the last 50 years in New South Wales. These metal leachates are causing problems, particularly for biodiversity. The human health links are concerning, particularly for those people who eat fish caught from the waterways that have been contaminated. Swimming in those contaminated waters can also lead to metal toxicity in humans.

So, there are certainly health risks associated with these ash dams that really have not been addressed very well by the EPA. I understand that they were in a difficult position. These were government facilities that have been sold to private enterprise. The EPA have been slowly increasing their regulatory regime on these—but certainly well from where it should be in a modern economy. Certainly the re-use rate of ash is very low in New South Wales—about 20 per cent. The global average is about 53 per cent. Australia and New South Wales are

some of the worst in the OEC, as far as coal ash re-use goes. That will be it from me, but I think this Committee has a lot of work to do to get this issue sorted out.

The CHAIR: Thank you, Mr Winn. Have you tabled your statement?

Mr WINN: I just made it up.

The CHAIR: Good man. It was very useful, thank you. Let us just move on now to the two members who are present by videoconference, starting with Ms Mullaney. Would you like to make an opening statement?

Ms MULLANEY: Thank you. I speak on behalf of the Bathurst Community Climate Action Network. A lot of our members have lived—some have lived in and many of us have visited Lithgow for different reasons over the years. We have noticed that the power industry around Lithgow has had damaging signs of side effects in the landscape. We have seen that for a long time. I particularly wanted to point out that, aside from the leachate causing damage to the fish and the birds, there are often very small things in our environment—all the small living creatures—that underpin the health of the environment and that also get affected. I think that often that is forgotten.

So, aside from the leaching of minerals into waterways, I think that effect needs to be mentioned. Also, with much of the remediation cost lying with the Government, it therefore falls on the people. This represents a very expensive subsidy by the people of New South Wales to the coal-fired power industry. Those are main points I wanted to make. I am really grateful that Parliament and the Committee is addressing this. We acknowledge your commitment to the work and facing this involved process. We are sure that you will have the support of many communities across New South Wales. They will be pleased to hear it. Thank you.

The CHAIR: Thank you, Ms Mullaney. Mr Jonkers, would you like to make an opening statement?

Mr JONKERS: Thank you, Mr Mookhey. I am the vice president of the Lithgow Environment Group and I am speaking on behalf of them today. When we formed in 2015 one of the major issues for our group was water quality. To that end, we began water quality monitoring in local streams in 2006. Since that time the worst water quality parameters we have found have been adjacent to two coal ash sites in Lithgow. At one site near the Mount Piper Power Station ash repository salinity levels have increased eightfold from around 1,000 in 2006 to 8,000 now. If it increases another eightfold over the next 14 years the water here is going to be saltier than the seawater off Bondi Beach, and yet this has not been picked up by consultant reports for Energy Australia.

At another ash dam—the old Wallerawang Power Station ash dam—the highest salinity levels recorded since 2006 were this year. Even though Wallerawang Power Station closed seven years ago, the salinity problem is getting worse. When I talk about salts I am not talking about your table variety sodium chloride. I am talking about salts of arsenic, cadmium, lead, zinc, nickel, boron—a whole range of heavy metal salts that you do not find in seawater. I am not sure how safe it is to swim in or how good it is for fish, wildlife or human health. I reiterate what was said earlier about cancer. Lithgow has a very high cancer rate compared to the rest of New South Wales. Kerosene Vale ash dam—the old Wallerawang Power Station ash dam—was known locally as the cancer pond because that is what people think of it.

Not only is the leachate from ash dams getting into local waterways but it is also contaminating underground mine workings and it is having far-afield effects many kilometres away from these ash dams. Unfortunately, historically both ash dams here were built on top of old underground coalmine workings. Those old underground mine tunnels all slope in a north-easterly direction away from the sites. At both sites there have been anomalies of salinity that were recorded five, six or seven kilometres away from the power stations—salinity levels which are much higher than would normally be expected in mines. We suspect that is salinity from the ash dams presenting itself far afield. So, we really believe some further studies need to be done to see where this leachate is actually ending up.

In announcing this inquiry the Government only mentioned one ash dam, which was Mount Piper, but we have actually got three old power stations here in Lithgow. The old Lithgow power station, which closed in 1964, raised concerns in our group because after it was decommissioned the site was sold to a coal mining company, which has since been delisted. That coal mining company then donated the land to a community group. We were concerned at the time that the same was about to happen with the Kerosene Vale ash repository—Wallerawang—because Bettergrow, a company, was looking at buying the site. We raised in our submission in March this year that we were concerned the Government was about to divest all responsibility for that ash dam. But we have since learned that the New South Wales Treasury is going to retain ownership of the Kerosene Vale site—thank goodness. Hopefully the New South Wales Government will remediate that site properly.

The CHAIR: Mr Jonkers, I am just going to put you on a 30 second warning because we need to get to the questions relatively soon.

Mr JONKERS: Yes. The other quick one—it was raised earlier about asbestos being dumped at Eraring. We have the same problem here with other things being dumped in ash dams. Asbestos has been buried at Kerosene Vale before and they are planning to bury all the Wallerawang Power Station asbestos, once it is demolished, into the ash dam. What this creates is a problem for re-use of ash because if they keep burying other things it makes it less attractive for people to come in later and re-use the ash. We really as a group believe the government policies need to be set to allow ash to be re-used. For instance, Badgerys Creek airport is coming up, which will need a lot of construction materials. Government policy can say to use that ash for construction rather than clearing greenfield sites for quarries and things. Thank you for allowing us to speak today and I hope the Government does address what will be a legacy problem for our lifetime. Thank you.

The CHAIR: Thank you. I thank all witnesses for their opening statements. We are going to go to questioning now. We have resolved that questions will be free-flowing from all committee members.

Ms ABIGAIL BOYD: Thank you all so much for being here and making your time available today—and also for the very comprehensive submissions that were put in, particularly by the Hunter Community Environment Centre. I just want to talk firstly about water. We have heard a bit today about the lack of evidence around groundwater contamination—or, perhaps more accurately, people's desire for greater research around that. We have heard less about the impact on nearby water bodies. I was hoping that you could talk us through the findings from your water studies and tell us what you are saying.

Mr WINN: I am at a loss to know how anybody can say there is a lack of evidence about groundwater contamination. The Environmental Resource Management [ERM] stage two assessment was very clear. They were appointed by Treasury as the site assessment advisor before the sale of power stations to private enterprise in 2013-14.

The Hon. TREVOR KHAN: And they made a disclosure document, essentially, that was part of the tender process.

Mr WINN: That is right. It was a baseline-setting job in most of the power stations. In Eraring it was 177 groundwater bores put in around the ash dam and similar amounts at all the ash dams for the five power stations that I have looked at. The other documents I have not been able to find, but for the five operating power stations all those stage two assessments identified substantial groundwater contamination, most of which was sheeted home to the ash dams themselves.

The CHAIR: Before you go much beyond that, you are saying that Treasury's advisor undertook an analysis for Treasury?

Mr WINN: Yes.

The CHAIR: And then that was disclosed to the buyer?

Mr WINN: Yes.

The CHAIR: And on that basis, the Treasury provided warranties to the buyer.

Mr WINN: That is right.

The CHAIR: And are those reports public?

Mr WINN: They were part of the Standing Order 52 documents that we had access to as part of this Committee.

The Hon. TREVOR KHAN: And just to be clear, depending on which one you are going into, that was a document that form part of the tender documents that is available to each.

Mr WINN: That is right. That was part of the data room documents.

The Hon. TREVOR KHAN: That is right, and as best as we know, when we talk about it being a baseline, it was relevant to the contracts that were then entered into by each of the parties in terms of the takeover.

Mr WINN: As well as the agreement that the New South Wales Government would retain liability for decontamination of the sites unless that contamination increased substantially above those baselines that was set.

The Hon. TREVOR KHAN: And that is why it was set as the baseline?

Mr WINN: That is right.

The CHAIR: And that was only for Vales Point?

Mr WINN: No, all.

The CHAIR: All of them?

Mr WINN: Well, all of the power stations that were sold. I have only seen those documents for the five operating power stations.

Ms ABIGAIL BOYD: What did those documents reveal?

Mr WINN: I have helpfully summarised them in my submission.

The Hon. TREVOR KHAN: You would have read them considering it was your Standing Order 52.

Ms ABIGAIL BOYD: I have read them. I am just asking the question.

Mr WINN: I am not known for my entertaining prose.

The CHAIR: I appreciate you asking the question, Ms Boyd.

Ms ABIGAIL BOYD: For the benefit of everyone else. Carry on.

Mr WINN: Vales Point, significantly, had some of the highest metal readings for groundwater I have seen. They were very, very high. One of the issues that was common across particularly Bayswater, Liddell and Vales Point, but also somewhat Eraring as well, was that trying to find background bores was difficult. They were continually finding low pH at their background bores, which because it is low pH means you can have much more metal being mobilised from the ash, so there were questions about the background readings that they used to compare the rest of them.

The Hon. TREVOR KHAN: Can you explain that?

Mr WINN: When you do a scientific experiment or you are a consultant, you need to have some sort of baseline, same sort of background that you can say, "This is not contaminated and therefore this is contaminated" because we can compare it to the background. Those bores that were identified for background were questionable.

The Hon. TREVOR KHAN: And why were they questionable?

Mr WINN: Because of the low pH.

The Hon. TREVOR KHAN: And why does that make it questionable?

Mr WINN: Because if you have a low pH site and you have ash because these were, if you remember, on the boundary of the ash dams. If you have ash with metals in it, the acidic conditions means that more of those metals are going to be leached from than ash than would be if it was, say, alkaline conditions.

The Hon. TREVOR KHAN: Sure. Well, I say sure but I do not know.

Mr WINN: But you get the idea.

The Hon. TREVOR KHAN: Yes.

Mr WINN: The background levels of, say, cadmium at that site were not representative of actual background conditions. They were representative of the site conditions, which were highly acidic metallic contamination. A lot of those estimates of whether it was the ash dam that was actually causing the high metals in the groundwater was confounded by that.

The CHAIR: Is the input of what you just said that, to the extent to which there is any independence on any study, it was the one that Treasury commissioned in 2012 ahead of the 2013-2014 sale?

Mr WINN: Yes.

Mr WINN: And you are saying that that study itself was questionable and it is likely to have understated the risk?

Mr WINN: Yes.

The CHAIR: That summary is accurate?

Mr WINN: Yes, and that is not my reading. That was stated clearly in those reports.

The CHAIR: And since then there has been no additional study that you are aware of?

Mr WINN: No, and unfortunately most of the bores have now been abandoned by the operator.

The Hon. TREVOR KHAN: Sorry, you said "most"?

Mr WINN: Look, I am not 100 per cent clear if the current—there are four groundwater bores for Vales Point; I think there are three for Eraring and a similar number for the other power stations. Just recently, Mount Piper now has significantly increased the number of monitoring bores that they have to look at. There was 177 of them at Vales Point and there are is only four of them being used now.

The Hon. TREVOR KHAN: So there would have been a condition under their Environment Protection Licence [EPL]?

Mr WINN: Yes.

The Hon. TREVOR KHAN: That they would do monitoring at certain points?

Mr WINN: Not everywhere.

The Hon. TREVOR KHAN: No, I said at certain points for a reason.

Mr WINN: And certainly not every power station either. Mount Piper until recently has not had to monitor anything.

The CHAIR: Was there a condition put on the EPL? And if so, on whose EPL?

Mr WINN: There were conditions put on EPLs for Vales Point, Eraring, Bayswater and Liddell to monitor.

The CHAIR: And the EPA put those conditions on?

Mr WINN: That is right.

The CHAIR: The monitoring regime required by the EPL, was that prescribed by the EPA or was that left to the operator?

Mr WINN: I think it is a bit of a negotiation process. The operatives will have some understanding of what is happening in their groundwater. The EPA does not do its own testing so it relies on the operators to do that monitoring for them.

The CHAIR: Just to finalise this so we can demand a response from the EPA on this point, are you saying that there is not a compliance with the condition of the EPL?

Mr WINN: Yes, certainly. At Bayswater, for example, their molybdenum and boron levels are significantly, and have been significantly since AGL took over the site, above the limits imposed.

The CHAIR: You are saying that the non-compliance of the EPL is both in the substantive outcome and also the monitoring of?

Mr WINN: Yes.

The CHAIR: And are you saying that the EPA is aware of this EPL breach?

Mr WINN: Yes.

The CHAIR: And you are saying—

The Hon. TREVOR KHAN: Can we ask why?

The CHAIR: Why do you say that they are aware of it?

Mr WINN: Because it is their monitoring. They are given the monitoring by the power station operators at the time.

The Hon. TREVOR KHAN: How frequently are they given the data?

Mr WINN: We accessed their data on the company websites. I would assume that the EPA would get them the same time that they are uploaded. There is different—

The Hon. TREVOR KHAN: I am not being rude but how often is this?

Mr WINN: Every month.

The Hon. TREVOR KHAN: Right, every month.

Mr WINN: Some of the monitoring sites are quarterly but they still lodge their monitoring results patchily, whichever they have to do, every month.

The CHAIR: Are you aware of the EPA taking any action in response to an EPL breach?

Mr WINN: They have. Unfortunately, the EPA would rather just get the issue solved than get a conviction. Rather than taking them to court, they often take the easy way out which is to issue them with an infringement notice, which is $15,000 maximum. If they plead guilty to that then they just cop a $15,000 fine. They do not always fully address the issue. There are pollution reduction programs at most of the power stations and they really have not been reducing their pollution a great deal. As I said earlier, I think that is because of the nature of the sites. They are going to find it very difficult to stop leaching because there is nothing to stop the water getting on ash, and the ash leaching metals into groundwater.

The Hon. TREVOR KHAN: I suppose that is the problem that we are confronting and the companies to an extent. Is the contamination of the groundwater the result of anything the company has done this year or last year, or is it as a consequence of the fact that various operators have been dumping heaps of coal ash into these repositories for decades and it is now just get leaching out? I am not making an excuse for the company. It is a question of what is the cause and the effect.

Mr WINN: I think you are right. The EPA is in quite an invidious position because all of a sudden they have got to regulate this private operation that was a government operation. The Government may have been favoured by that regulation. I do not know, I was not around at that time. Certainly now it is harder for the EPA to come in very hard and say, "Look, you are polluting groundwater—stop it", when it has been happening for 40 years.

The Hon. TREVOR KHAN: Indeed. It may be what happened 40 years ago, which is now leaching out of the system. I ask that as a question.

Mr WINN: I understand. ACARP, the Australian Coal Industry Research Program, has a very good paper that I found from 2001. They did column leachate tests. Basically, you get a glass jar of the ash and you dribble water through it for 18 months to find out how much metal comes out at the bottom. That is a very good statement on what happens at an ash dam. It represents the ash dam with water falling on it. For some metals it takes quite a number of volumes of water before it starts leaching out. For other metals it happens very quickly. There is a range. I would expect some of those metals to come out almost immediately after the ash has been dumped and for some other metals to take several years. Some of it is still leaching out from what has been dumped there for many years, but they are continually dumping new ash which is continually increasing the overall amount.

The CHAIR: The proportion of ash in the dam is overwhelmingly what was dumped when it was under State ownership.

Mr WINN: That is true.

The CHAIR: Given that they have only owned it for five or six years, I can only imagine that the proportion of ash that has been added under private ownership pales in comparison to the historic deposits. Is that correct?

Mr WINN: I think that you are probably right, yes.

Ms ABIGAIL BOYD: On that basis, how difficult would it be to determine who is responsible for a particular leachate event?

Mr WINN: The New South Wales Government is certainly liable for the majority of the pollution that is occurring around our five operating ash dumps now.

The CHAIR: The excellent question that arises is does the contract prescribe a mechanism to say who is liable, to the best of your knowledge?

Mr WINN: From my understanding, it was just those baselines that stated that as long as contamination doesn't get any worse, the Government will maintain liability. But it has been getting worse.

The Hon. TREVOR KHAN: I don't know what you heard this morning but let's accept that there is a problem. Let's accept that it reflects a combination of changes in technology and inadequate regulation. I suppose we could add a whole series of things. We have a problem that confronts us now, so what is the answer?

Mr WINN: When we released our first report a couple of years ago we were inundated by entrepreneurs wanting to get hold of ash, and they could not get hold of it. They wanted to create industry and regional and rural jobs. They could not get it because the power stations would not let them, because they have these restrictive contracts with the cement industry. Those contracts mean that cement companies who have the contracts for that ash have the sole rights to that ash body. The ACCC has looked at that issue in Queensland and made some prosecutions over restrictive trade issues.

The CHAIR: Can you provide us with the names of that ACCC action on notice?

Mr WINN: Sure, I will provide that.

The Hon. TREVOR KHAN: Do those same restrictions apply to each of the operators of the coal mines in New South Wales?

Mr WINN: Certainly Eraring does, but we would have to check. This is not my territory. I am not an economist.

The Hon. TREVOR KHAN: That is all right.

Mr WINN: We did try to find out what was going on, because there were so many entrepreneurs who wanted to get this ash, and it was, like, "What? What? It is a waste product, isn't it? Why would the power stations not give it to you?" It was largely because of those restrictive contracts. The cement industry is a vertically integrated industry. They own quarries, trucks—the whole box and dice. They have a lot of plant geared towards largely imported limestone clinker. If they utilise something else then all of that plant equipment is not used. Everyone that I have spoken to believes that is the reason. They do not want too much ash on the market at any one time.

A lot of the ash products that we were asked to help with were sintered products, like tiles and aggregates. Basically, the ash is cooked to a certain temperature, I think about 1,000 degrees, so that the silica in the ash melts. All the metals are then contained very nicely in something where if it gets wet it does not leach any metals. We were quite keen that for that to be the best way to do it—onsite manufacturing of these products—but companies need some help from the Government. They need pilot plans and market feasibility studies, that sort of stuff. That is the best way to go. It is going to take a long time but it is really the only thing that is going to stop the problem.

The CHAIR: I am going to invite other panel members to respond to Mr Khan's question of what should be done. Mr Blaschke, do you have anything to add on that question?

Mr BLASCHKE: From that perspective I just feel that the industry, and the Government to a certain extent, has let everybody down. It has let down the community completely. They have taken up the cudgel of trying to find people who can recycle coal ash. In 2019 the Coal-Ash Community Alliance went to Kurri Kurri to speak with the scientists at Central Waste Station. I do not think that it should be left up to the community to come up with answers, but they understand the amount of problems that have been occurring. They have been working with lots of different organisations that have given us information. We read the reports, it does not take much to do, and what scares the pants off us is one part of the Government says that we need to look after the environment, in our area especially, but then the Central Coast Regional Plan estimates that 40,500 new homes will be built in the proximity of the Vales Point and Eraring power station sites.

We are introducing over 101,000 new residents to an area that we already know has a major problem and we have not been able to identify where those problems are coming from. We know that they are there. There is three decades worth of environmental and health reports to showing that. Even Badgerys Creek, which was mentioned a minute ago, is having 34,000 extra homes proposed. But wait a second—the northern part of the Central Coast has 40,500? This is a new city being built in an area that is surrounded by power stations and ash dams. We cannot hide from the fact that we had problems. We need a major environmental and health audit done on the area to understand what the problems are and how we then go about fixing those problems. We are not going to solve this problem next year or next week. It is going to take years, even decades, before this issue is fixed.

The Hon. TREVOR KHAN: The proposition was put forward this morning, and I don't know how much you have heard, suggesting that what we should do is dig up and line the ash dams. I will be quite frank, I accept that there is a problem but I am troubled by a proposition, especially when you see the size of these suckers, that suggests that we dig up and line ash dams. Apart from anything else, I am not quite sure what you do with the stuff that you have dug up, and what sort of pollution you create in the process. If the proposition is not to dig them up, line them and then put it back in, what do you do? I accept that there are issues with regard to health monitoring, but I am interested in the actual repositories themselves. What do we do with them?

Mr BLASCHKE: I do not think world's best practice has been designed yet. You heard this morning that there is one in America digging up ash and putting liners into the dam. I agree with you. As was said this morning, to put between 300 and 400 millimetres of clean fill on it—well, we know it is not clean fill. It has been mixed with asbestos on several occasions. But if we just forget that it exists—

The Hon. TREVOR KHAN: That would be capping it.

Mr BLASCHKE: That is the capping. They are hoping that people like me will be gone by the time that all of a sudden the trees grow on this site, and eventually nature does take over in certain areas. But I believe we have an Erin Brockovich issue happening here, well and truly. As a matter of fact, I have contacted her to get involved because I am that passionate that we are failing miserably to look after the people who live there. This is our biggest asset that we own—our homes. We are bringing our children up and we have so many respiratory troubles in the Lake Munmorah school precinct. We have two high schools, a primary school and a preschool and it is just rampant. I am getting anonymous phone calls from Mannering Park Public School saying, "I cannot tell you who I am but please look into the amount of cancer cases in the kids in this school." They are under the power station. There is something wrong here.

Whether it is the ash dams, the pollution leaching out of it, the dust flying all over the place, or the ashes coming out of the stacks—it is probably a cumulative impact of everything together over the past five decades. That is the problem: We have done nothing about it for five decades and now there is a bit of pressure coming onto the Government, the operators, to everybody. But let us not forget the people who live there. They have the right to be able to breathe the air. I have so many people say they walk out of their house every single day and wipe down the tables on their decks and the decks themselves and they have black soot all over their properties. How about we get it right and look after a few people.

Ms ABIGAIL BOYD: Can we just address that point because I note that the Hon. Trevor Khan asked it earlier, as well.

The Hon. TREVOR KHAN: I am not trying to be provocative.

Ms ABIGAIL BOYD: No, I think it is a good thing to try to understand—how exactly you transfer the ash to new, lined dams. Are you able to explain how that happens?

Mr WINN: Look, I have only ever heard of it happening in the United States, after significant litigation occurred. I think Duke Energy have one that they have to rehabilitate. I am not sure how they do it; I really do not know. It does seem a risky process.

Ms ABIGAIL BOYD: What are the other options then, if it is not to cap it and leave it?

The Hon. TREVOR KHAN: No, one is not to cap it but to dig it up, re-line, then put it back in and then cap it. That is what some people would see as the ultimate.

Mr WINN: It is.

Ms ABIGAIL BOYD: That is right. But if that is not achievable, is there another option that is not just leaving it to leach?

Mr WINN: I think one of the great risks is that once these power stations close, no-one will be managing the sites. It is a concern I have, largely because of what we have found out is happening at Wallerawang. Wallerawang drains into Sawyers Swamp Creek. It is the only pollution source on that creek and we found significantly high concentrations of a number of metals there that we are believe are coming from the ash dump. No-one is managing that place anymore. They still have a license. The NSW Environment Protection Authority [EPA] asked them to look at six metals, I think. None of those metals were the metals we found in the creek; it was other things. There is pollution there, the ash dump is still polluting and nobody is there. There needs to be some continued management until that ash is no longer leaching.

The CHAIR: Mr Winn, can I just unpack that a little? Let us be specific here. Liddell is closing in 2023 and that site will still be owned by AGL. Is that correct?

Mr WINN: I believe so, yes. Well, I do not know about the ash dump.

The Hon. TREVOR KHAN: No, I think that is the position—that AGL retains the site.

The CHAIR: That was my understanding, that AGL would continue to own the site and that they are currently in the process of getting permission for what they would like to do with the site, namely the power

station, not necessarily the ash dam. Why then would AGL not continue to be responsible for managing it until the expiry of their lease of the site, which was 99 years?

Mr WINN: Okay, so EnergyAustralia closed Wallerawang five years ago. There is an Environment Protection Licences [EPL] still covering that but there is no ongoing management of the ash dam. When I say "management", if there is any—they usually have a toe dam at the bottom of the dam wall to catch leach, which needs to be pumped back up into the ash dam. So there is ongoing maintenance to reduce the amount of contamination that comes out of the ash dams. If that maintenance is not continued, it continues to pollute.

The CHAIR: I think I understand what you are saying. You are saying that they might retain legal ownership but they might not necessarily be required to undertake any operational actions.

Mr WINN: That is right. It is the operational management of the ash dam needs to be in place, even for what I am proposing, which is re-use of that ash dam, until that ash is re-used.

The CHAIR: I do not want to infer without putting the question to you, but your suggestion is that the fact that the power station is changing will cause AGL to change their existing operational practice and stop managing it. Is that your contention?

Mr WINN: Well, because of costs. They no longer have an income from that site so they will try to minimise the cost expenditure.

The Hon. TREVOR KHAN: Can I just go back to where Ms Abigail Boyd was at? We will put the recycling issue to one side—not as a criticism but just for the moment. The alternative to digging it up, lining, putting it back and capping, is to cap and cap in a way that creates an impermeable layer over the top to at least stop water penetrating the top and, therefore, leaching through from the surface? That is one effective step, however imperfect, in minimising leaching from the site. Is that right?

Mr WINN: I think if you reduce the amount of water that comes into contact with the ash, you will reduce the amount of pollution. That is right. But the ash dams are wet. You saw the amount of water in there, so it will take a while for that water to move through.

The Hon. TREVOR KHAN: I do not disagree.

Mr WINN: And that will continue for quite some time after the ash dams are capped.

The CHAIR: I will pause there to allow the witnesses on videoconference to respond to that line of questioning, which is: What do you think should happen to the existing deposits, aside from the recycling issue?

Mr JONKERS: If I could say, Mount Piper Power Station has finally admitted that their ash dam is leaking and they are looking at putting in what is called a groundwater interception bore, which will pump the water that is leaking into the groundwater back into some sort of holding pond where they will treat it. They have a treatment plant that can actually treat the salt and turn the salt into a physical, dried crystal. Maybe that will work, maybe it will not. But I think it is a solution because we are not talking vast quantities of water; I think they are only talking about intercepting two megalitres a day or something and they have a treatment plant onsite. That would help in one sense and the other option is to send the water to a proposed goldmine out near Blayney and pump it out there, which is sort of like transferring the problem somewhere else. However, it is better than using clean water for a goldmine when we have contaminated water that we do not know what to do with. Perhaps groundwater interception is a good idea; it has worked in the Murrumbidgee area to intercept salt coming up from underground. So it is one possible solution.

The CHAIR: Ms Mullaney, did you have anything to add?

Ms MULLANEY: I do not have any expertise to be able to comment, no.

Ms ABIGAIL BOYD: Following on from that, we heard this morning that at Vales Point they are going through this sort of capping process and then putting some soil on top and the idea is that it will be revegetated at some point.

The Hon. TREVOR KHAN: Which he made clear was grasses, not trees.

Ms ABIGAIL BOYD: Yes. Could that land ever be used for anything else? Could it be built upon in the future or would that be risky?

Mr WINN: I would not like to live on it, put it that way.

Ms ABIGAIL BOYD: And why is that?

Mr WINN: Because of the concentration of heavy metals that would be below my feet.

Ms ABIGAIL BOYD: Can you draw that conclusion—is that because of it getting into the water, is it the leach risk, is it the proximity?

Mr WINN: Groundwater is everywhere. There is groundwater beneath our feet. Almost everywhere we go there is water beneath our feet—in the individual spaces between the soil and whatever the rock we have—and that level moves up and down. As it rains, groundwater, the watertable moves up and in a drought it will move down. If you are living in an area where you have got metals underneath you and you have an enormous amount of rain, the water table will come up and so will the metals. The metals might be six inches below your feet.

Ms ABIGAIL BOYD: Is there evidence that suggests if you do build on top of an ash dam it should be something lighter rather than heavier? Is there any science around that?

Mr WINN: One of the things if you are putting heavy structures on to an ash dam it is going to have an impact. Ash is a very interesting product. It is quite cementitious—it ends up quite hard and quite dense because it is such fine material—but it does squeeze out like a sponge. So if you put heavy structures on top of it you are likely to have greater amount of movement of leachate more quickly coming out from the areas that it is going to come out from, and at Vales Point that is obviously Lake Macquarie.

Ms ABIGAIL BOYD: Does the presence of asbestos in the ash dumps make it more risky? Are there any additional risks from building on top of something that has got asbestos?

The Hon. TREVOR KHAN: Yes, if somebody digs it up you have got a real problem.

Mr WINN: Yes, that is the biggest thing. That is how they deal with asbestos—they just wrap in plastic and bury it. The asbestos is probably okay as long as nobody digs it up but because it is a garden in your back yard you are probably likely to be digging a bit.

The CHAIR: The Committee has explored in some depth the issue of groundwater risk. Can we turn to air contamination risk? Specifically, did the 2013 report that you mentioned earlier touch upon contaminations?

Mr WINN: No.

The CHAIR: Is there any evidence base you can point to that we can rely upon to assess air contamination risks separate from groundwater risks?

Mr WINN: Yes. The EPA has, to its credit, prosecuted several times Origin for ash blows, basically blowing across into Wangi Wangi, one of which came from our evidence. We saw it. One of the great problems that they have in managing ash dams is trying to reduce the amount of metal leachate that comes out, means you reduce the amount of water you put on the ash but if you have a windy day then it all blows away. So then they put more water on to reduce the amount of wind blow and then that causes more metals leaching out. They are in a tricky position.

The Hon. SHAYNE MALLARD: Is that just tankers or sprinklers?

Mr WINN: Pretty much, just sprinklers. They just hose it down.

The CHAIR: Other than episodic infringement notices issued by the EPA in response to a particular event, are you aware of whether the EPA has commissioned or has anyone done any study about systemic air contamination risk to surrounding communities because, as Mr Blaschke and people particularly from that community pointed out, their area of concern is whether what is blowing in the sky is dangerous to them.

Mr WINN: I am not aware of any studies on air contamination.

The CHAIR: Are the other panel members aware of them?

Mr BLASCHKE: I think Environmental Justice Australia put forward a submission on the *Toxic and terminal* report. The pressure we are putting on to the EPA has just had another monitoring station, not the industry monitoring themselves because we know there is problems there, but we have now got another EPA monitoring station. We have got two. The Hunter region north of us has got something like, I think it is 12 from memory; the Illawarra has got eight; and Sydney has got a whole heap of them. But for the past 50 years we have only had one on the Central Coast and now we are getting our second one. How do we know where that flows? The Cancer Cluster report showed me that Wyong, Wyong east, Wyong north-east, Charmhaven and Gorokan have those nine cancers I spoke about. When you put them on a map they are just south of the power stations. From that *Toxic and terminal* report, Sydney receives a lot of the air pollution from Eraring and Vales Point power stations.

The CHAIR: You have made a good point. Can you separate the risk of the coal ash from the power station in being able to identify air risk according to each source or is it the case that they are so co-mingled that you cannot?

Mr BLASCHKE: It is the power stations that produce the coal ash so you have got fly-ash coming out of the stacks and you have got the bottom ash that gets put into the ash dams. So they create two types of ash: one finer than the other. The finer ones, Vales Point, I think it was, recently got fined for not maintaining what they call its socks, the filters in the actual stacks themselves. So, you know, if we have got private enterprise ignoring something for over 12 months, knowing full well that fine particles are getting out in the air, when we have got residential areas surrounding this particular power station, are we turning a blind eye to it? Totally. I believe we are. I believe a lot of people are sweeping the issue under the carpet and that this needs to be exposed. At least say to both the Government and the operators that they have a responsibility ,which they may not have when they first started. There probably was not the population around these power stations 50 years ago.

The more you put on top of an ash dam the more leachate is going to be produced by the pressure pushing down. We have it now going under the highway, coming out onto properties opposite because the dams are unlined. There is a place called Olivieri's Florist who currently has a legal action happening against Delta because all his freshwater ponds that he had for watering his plants that he grows for a living had actually turned toxic. He spent millions of dollars trying to fix the problem and then turned around and said "I'm going to sue Delta for it" because his hydrologist thought that it was leaching coming under the highway. The walls of the dams have acted for 50 years as a barrier. They are now failing because of the amount of pressure that you are putting on top of them and they are now going under the highway and coming out on the Tuggerah Lakes side. It is not just Lake Macquarie that is copping a lot; it is now the Tuggerah Lakes system that is actually copping it as well.

The CHAIR: You said there were two monitoring stations. Are you talking about the coal ash dam or the coal power stations or both?

Mr WINN: They are the EPA air quality monitoring stations.

The CHAIR: You said there were only two.

Mr BLASCHKE: There are only two official ones but they do their own monitoring on the site.

The CHAIR: What are they monitoring? Are they monitoring the dam or the power station or both?

Mr BLASCHKE: The air pollution.

Mr WINN: Stack emissions.

The CHAIR: Air quality, yes.

Ms ABIGAIL BOYD: I want to ask about one of the things we have not touched on much—that is, the pollution in nearby bodies of water. Lake Macquarie is where you have been doing most of your research Mr Winn. Will you talk us through what contamination you see there, the impact on fishing and also how we might clean that up?

Mr WINN: Yes. We have found contaminated sediments in all the water bodies around the power stations that we have sampled: Lake Macquarie, sub Lake Macquarie particularly, Lake Liddell and Lake Wallace, which is at the top of Sydney's drinking water catchment where Mount Piper operates. The Office of Environment and Heritage did a risk assessment of the metal contamination in fish in Lake Macquarie and found that the selenium, I guess, supported what was previously understood: that selenium in fish was quite high and people should restrict the amount of fish that they eat from Lake Macquarie. But the new evidence was that there was also high levels of cadmium in mud crabs and that you should not eat mud crabs every week anyway. It was certainly higher than the cadmium levels of the European Union that they would say you should not eat it at all. The contamination levels are quite high. We have also done some sampling with just some pilot studies, but we have a broader study that we are entering into quite soon, about taking bird feathers because they are quite easy. Non-invasive research.

The Hon. TREVOR KHAN: I do not know if the birds would say that.

Mr WINN: They have already discarded them themselves. But we found quite high levels of metal contamination in bird feathers as well at all the sites that we have sampled, so much so that, particularly in Lake Macquarie, the white-faced herons that we found feathers from, were at a level that has been shown to interfere with breeding success. So we believe that the breeding success of some of the bird species in these areas is being affected by the metals. I do not know how you remediate that; it just takes time. I think many, many years ago

when Pacific Power owned Eraring and Vales Point, the Government did propose to actually dredge the lake to get rid of the sediment because it was contaminated, and also contaminated in the northern section because of the Pasminco lead smelter, and it was found that that was going to cause more problems than it addressed and the best way was for it to just naturally cover up—as you get new sediments coming in every year the sediments cover up the old sediment—but unfortunately the new sediment is not clean, so that we are just continually adding to the problem.

The Hon. TREVOR KHAN: Could I just add there, you remember I asked questions in terms of Sydney Harbour where essentially in some areas of Sydney Harbour, particularly some areas of Middle Harbour, Homebush Bay—

The Hon. SHAYNE MALLARD: Darling Harbour.

The Hon. TREVOR KHAN: Darling Harbour, Blackwattle Bay—all some extraordinarily high levels, and the position that was adopted there, and I think it also was reinforced in terms of the new Cross Harbour thing, is the best thing you can do is leave it alone. And that is not to excuse what has occurred, but to disturb it creates a whole series of additional problems.

Mr WINN: Yes, but you have to stop the inputs otherwise you are just piling up more metal.

The Hon. TREVOR KHAN: Exactly, yes.

The CHAIR: We have nine minutes left. I wanted to turn to—mainly because I think you are the author of this proposition and other questions have been asked about it—the concept of a levy being applied. Can you set out the reasons why you think there should be a levy and also address why you think it should be set at $20? Mr Winn and Mr Blaschke, I think you have argued for a $200 levy. Do you want to give us the reasons for that too?

Mr WINN: I think I have got the easier job.

The CHAIR: Why do you not start, Mr Winn, given that this is a proposal which originated with the Hunter Community Environment Centre?

Mr WINN: Sure. I think it is one of the levies that is fair. Whenever you are trying to address a market failure you do not want to introduce another problem that the producer of that market failure is going to have to deal with. What you are wanting to do is create an incentive that they can minimise the cost by doing a thing you want them to do, which is open up their gates to all these entrepreneurs who want access to their ash. So I do not think it needs to be set at such a level that it is going to be a cost burden. I think I worked it out at current generation rates it would be about $75 million in total if nothing was done. So the five power stations would have to pay $75 million a year if they did not do anything differently to what they are doing now. So it is not going to close them down; it is just going to hurt a bit if they do not move towards opening up their ash dams to these entrepreneurs.

The CHAIR: And why $20? Was that because it was basically a startup price for that type of levy?

Mr WINN: No. We are looking towards including coal ash as an assessable pollutant under the Protection of the Environment Operations [POEO] regulations for a load-based licence fee to be added, which we think is the easiest regulatory approach, and $20 a tonne is probably about the same as—I mean, it is going to cost them something because the power stations do not want to do it; so there is obviously a reason that they do not want to do it; it is probably that it is going to interfere with their ash management procedures and there may be some additional costs associated with it. So we did not want it to be set at such a large figure that if they did not do anything about the ash because they could not for some reason, it was going to have a material effect on their business. So it is sort of the middle amount. They could absorb it if they needed to, but they would make more money if they did something about the coal ash problem.

The CHAIR: Mr Blaschke, $200—do you want to explain your rationale for that?

Mr BLASCHKE: Simply I rang my council up for Buttonderry landfill yesterday to ask how much I would be charged for clean fill to go into the landfill and they gave me the price of $329.09 per tonne.

The Hon. TREVOR KHAN: And you were being generous.

Mr BLASCHKE: So I think a $200 amount is very cheap; it is a discounted rate. But the thing that upsets me the most is that, especially with Sunset International—who trades as Delta—they bought the whole power plant and its lands and its ash dams for $1 million. They have only owned it for a few years and it was recently valued at $140 million. This is a private company that is making millions and millions of dollars out of

effectively contaminating the local area. They are not to fully blame; the Government is to blame because we did not do something about this years ago. Fifty years ago we should have been looking at the issues of whether this is going to create environmental or human health issues, but we have gone along. Okay, 50 years ago we probably did not know anything about the environment—probably the word "environment" was not even discovered—but we know now over the last decades that science and evidence from people like Mr Winn are showing that we really do have a problem here.

So I am not worried about Sunset International or Eraring or Origin paying big dollars. I know they will probably slug me anyway—they are already slugging me with my electricity bills—but they have some responsibility; they are creating the problem. I, as a resident of the Central Coast, cannot just go down and dump my ordinary rubbish for less than $200. So if I am getting charged $329.09—I do not know where the nine cents comes from—I am just filling up an area the same as what they are doing; they are filling up an area. My rubbish does not necessarily become a major environmental or health issue; their rubbish does.

The CHAIR: Mr Winn, can you respond to the point made by the operators this morning, which is that a pricing of the type that you are suggesting will not work in the absence of demand, and their view is that there are not customers effectively that they can pass it on to and that therefore they will internalise it and recover it from consumers because there is not a demand for it and there are regulatory barriers on new markets forming for this product and until the Government removes those regulatory barriers—namely, use it in road construction—the market mechanism that you are prescribing will not work?

Mr WINN: It is always easy to say something is not going to work when you are proposing it, but I agree it does require government intervention, government assistance, and it was for those areas that I mentioned earlier—pilot plans, market appraisal, logistics—the issues that would need to be met for a new industry to emerge. I think the market demand is there; there is a massive demand for aggregates, particularly lightweight aggregates. These are better than what you get from a quarry because it is light, so you get cheaper transport issues, high-rise construction they are much more favourable, and also the building industry has got big difficulties finding deposits of sand—we have a problem at Stockton Beach; there is only so much sand close to major metropolitan areas, so ash can be made for sand for building materials. So I do not think there is a limit to the market; I think it is that between a cup and a lip. So it is those things where I think government assistance needs to be required to meet up that demand with the requirements of those entrepreneurs who want to make these products.

One particular company, Vecor—I am not sure if they are witnesses or are not being called—they put in a submission. They were talking fifty to hundreds of new employment opportunities coming out of their proposals for lightweight aggregate sands and tiles, which I think at this time of governments looking towards stimulus is a perfect opportunity to get this market moving.

The Hon. TREVOR KHAN: It sort of goes back to a question that I asked this morning. Are you suggesting that you could use coal ash in substitution for sand?

Mr WINN: After processing.

The Hon. TREVOR KHAN: Well, that is where I want to go. If we see this product as being potentially dangerous—toxic, indeed—I just want to know how you get from coal ash to building site sand without spreading the problem more generally.

Mr WINN: I did mention this earlier. The major constituent of coal ash is silica. Silica melts at about 1,000 degrees. If you can melt the silica at 1,000 degrees the metals within that ash are contained and if it gets wet they will not be released.

The Hon. TREVOR KHAN: Alright, I accept all that. Again, take me as the cynic. What is both the energy cost of that—

Mr WINN: Sure. There are costs associated.

The Hon. TREVOR KHAN: —and what is the overall cost of that sort of process?

Mr WINN: All I know is that there are companies wanting to talk to us to do this. At a time when governments all over the world are looking for entrepreneurs to start up new things to employ our people, who are losing their jobs because of COVID, this is an opportunity. There is a waste product that is causing harm and there are entrepreneurs wanting to fix the problem for us. For the Government to sit on its hands at this time is unacceptable. I do not think it is all that hard, really.

Ms ABIGAIL BOYD: Just one final question: The presence of PFAS at these sites—have you found any evidence of that? Was there stuff in the boxes? Do you have any views on that?

Mr WINN: Mr Blaschke might be better. You looked at Munmorah, did you not? There was a bit of a problem with the Munmorah site.

Mr BLASCHKE: At Munmorah there was a problem. About two and a half years ago I got a phone call from Sydney EPA telling me that they had found PFAS and diesel getting put into Lake Munmorah from the old decommissioned site. I did not get cranky. I asked them what they were going to do about it and they said, "We're going to do some fish testing." I said, "Why aren't you going to do some testing of the sea grasses, because they will take it up a lot earlier?" They said, "Oh, no. Fish is what it's all about." I continually harassed Sydney EPA for the next two years and threatened that I would contact the Minister about it because they had not been able to catch a fish or a prawn in two years. When I threatened them, all of a sudden they found five species of fish, had them tested and came out with a media release saying that everything was okay. I do not believe that everything is okay. It is only the pressure that the community put onto them—that they came out with that. PFAS is there. It takes 556 days for the water to turn around in Lake Munmorah. If it is sitting in there, it is sitting in there. It takes a year and a half for the water to completely circulate in that lake itself.

The CHAIR: Thank you very much for your appearance today. That concludes the public hearing for the day. We thank you very much for your time. If you would not mind in time leaving in good order, we have to go to a deliberative meeting to make a couple of decisions.

(The witnesses withdrew.)

The Committee adjourned at 15:19.